E-BANKING TECHNOLOGY CHARACTERISTICS, ADOPTION, INNOVATIVE BEHAVIOUR AND PERFORMANCE OF MICRO AND SMALL ENTERPRISES IN VIHIGA COUNTY, KENYA

BY

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DECLARATION

Declaration by Candidate

This thesis is my original work and has not been presented for a degree in any other university or any other award. No part of this research may be reproduced without prior permission of the author and / or Moi University.

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DEDICATION

Dedicated to my husband Joseph Ngugi and children Ashley, Carlin and Dashel for

their support and understanding throughout the study. Thank you for being with me.

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ABSTRACT

Performance of Micro and Small Enterprises (MSEs) not only play a significant role in a country's economy but are essential to the economic stability of the country. However, many challenges affect MSEs and as a result, they perform dismally leading to high mortality rates. Despite the many studies already done in this area, little is still known concerning the interplay of e-banking technology characteristics, e-banking technology adoption, and innovative behaviour and MSE performance, thus the need to interrogate the link between these variables. Therefore, the focus of this study was to examine the effect of e-banking technology characteristics, e-banking technology adoption and innovative behaviour on MSE performance. The study was guided by the following objectives: to examine the effect of e-banking technology characteristics, e-banking technology adoption and innovative behaviour on MSE performance; e-banking technology characteristics on e-banking technology adoption, to ascertain the mediating effect of e-banking technology adoption, and to evaluate the moderating effect of innovative behaviour on these relationships. This study was grounded on Theory of Constraints, supported by Technology Acceptance Model, Diffusion of Innovation and Entrepreneur Innovation Theory. The research paradigm was positivism, hence utilizing quantitative approach. The study employed explanatory research design with a target population of 5915 MSEs in Vihiga County. A sample size of 455 respondents was selected based on Yamane's formula where multi-stage sampling technique was applied in selecting owner/manager who provided primary data using structured questionnaires. Study hypotheses were tested through hierarchical regression at 0.05 significance level. The findings of the study revealed that E-banking technology characteristics, E-banking technology adoption and Innovative behaviour had a positive and significant effect on MSE performance (β_1 =.557, $p<0.05$); (β_2=.225, $p <0.05$), (β_3=.157, $p <0.05$). E-banking technology characteristics were found to have positive and significant effect on e-banking technology adoption (β_1=.798, $p <0.05$). The findings further revealed that there was a positive and significant mediating effect of e-banking technology adoption on E-banking technology characteristics and MSE performance (β_5 =.792 CI=.088, .283). Moreover, the findings revealed that there was a positive and significant moderating effect of Innovative behaviour on E-banking technology adoption and MSE performance (β_7=.144, $p<0.05$). Finally, the findings on moderated mediation relationship with independent and dependent variables was found to be significant at the lower, mean and upper levels (LL=.025, .334; M=.100, .387; UL=.137, .478). From the study findings, it was deduced that e-banking technology adoption mediates e-banking technology characteristics and MSE performance, and innovative behaviour moderates E-banking technology adoption and MSE performance. The finding further indicated that e-banking technology characteristics accounted for the highest significant variance on MSE performance as compared to the other variables. Moreover, at higher innovative behaviour, e-banking technology adoption had a higher effect on MSE performance than at lower level. These findings constituted the major contributions of this study as they enrich the Theory of Constraints, TAM, DOI and entrepreneurship innovation theories. The study recommends that the government, county and private sector to form policies that will support MSEs to switch from cash to e- banking technology adoption hence enhance their performance. Scholars should use these findings to further interrogate other sectors and sub-sectors of the economy.

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OPERATIONAL DEFINITION OF TERMS

Adoption: The process of accepting and intergrating technology in an enterprise (Robertson, 1971).

E- Banking Technology: The use of electronic channel (internet, mobile, debit and credit cards) to conduct banking activities which include transfer of funds, bill payments, checking account balances, payments to suppliers and receiving funds (M. S. Khan & Mahapatra, 2009).

E-banking technology characteristics: Has two dimensions namely; **Perceived ease of use** which is the degree to which an individual believes that using a particular system would be free of physical and mental effort (Venkatesh & Davis, 1996) and **Perceived usefulness** which is the degree to which an individual believes that using a particular system would enhance his or her job performance (Davis, 1993).

Innovative behaviour: All individual actions directed at the generation, introduction and application of beneficial novelty at any enterprise (Kleysen & Street, 2001).

Micro and Small Enterprise (MSEs): A Micro Enterprise is a business that has 1-9 people working in it while a Small Enterprise is a business that has 10-50 people working in it (Kenya, 2005).

Performance of MSE: The ability to operate efficiently, profitably, grow as well as react to the environmental opportunities and threats (Turyahebwa, 2013).

ABBREVIATIONS AND ACRONYMS

ATM   Automated Teller Machine

CBK   Central Bank of Kenya

EDI   Electronic Data Interchange

EFT   Electronic Funds Transfer

ERP   Enterprise Resource Programme

GDP   Gross Domestic Product

GOK   Government of Kenya

ICT   Information Communication Technology

IS   Information System

IT   Information Technology

KPI   Key Performance Indicator

MPESA   Mobile Money Services

MSE   Micro and Small Enterprise

MSEA   Micro and Small Enterprises Authority

MSHWARI   Mobile Application System for Loans

OECD   Organisation for Economic Cooperation and Development

POS   Point of Sale

SME   Small and Medium Enterprises

CHAPTER ONE

INTRODUCTION

1.1 Overview

This chapter highlights the background of the study, statement of the problem, research objectives, hypotheses, significance and scope of the study.

1.2 Background to the Study

Performance refers to an ongoing process involving the management of the requirements for which an organization, entity or initiative may be kept accountable (Duranti & Thibodeau, 2010). These requirements are represented as components or sections of the internal structure and cover the capacity of the institutions to monitor financial expenditure, satisfy employees, provide timely interventions and respond to target group reactions to interventions. Business performance is the ability to meet the requisite expectations, increase market share, enhance services, guarantee profitability returns and overall cost reduction, and, once this is done, the business is expected to perform effectively (Cruz, Justo, & De Castro, 2012).

Business performance is a multidimensional term, and numerous measures have been used in current literature to calculate it. Researchers analyzed both financial and non-financial indicators as well as the success of domestic and foreign firms. Financial measures are most commonly used in MSE performance analysis and include various growth and profitability measures, while non-financial indicators include measures such as owner satisfaction, global progress scores, targets and other indicators (Rosenbusch, Rauch, & Bausch, 2013). This study focused on the financial measures of Small and Micro Enterprises in Kenya.

Micro and Small Enterprises (MSEs) have gained increased attention because of their role in global economic development, economic growth, and job creation (Ashrafi & Murtaza, 2008). Ashrafi and Murtaza argued that MSEs not only play a major role in the economy of a nation but are also crucial to the country's monetary soundness. The growing attention on MSE sector could be attributed to the importance it contributes to community all over the world. According to some scholars (Mbataru & Wanjau, 2013; Ongori & Migiro, 2011; Zaied, 2012), MSEs are the main financial drivers in both developed and emerging economies and have a significant role to play by reducing poverty and generating jobs (Katua, 2014).

The United Nations Conference on Trade and Development (UNCTAD) points that MSE account for 60-70% of all employment in developing countries (UNCTAD, 2017). In New Zealand, MSEs make up more than 99% of all companies and account for nearly 60% of employment. In the USA, more than 50% of all the employment comes from firms with less than 500 employees. In Malaysia, MSEs account for 98.8 % of all companies that contribute 25.9 % of total manufacturing output, 25.9 % to value added production and 31.1 % of the country's workforce (Modh *et al.*, 2014) while, in Nigeria, MSEs comprise 87% of all registered firms (Akanbi, 2016).

World organizations, for example, the World Bank, UN as well as governments, non-governmental organizations and private entities have recognized the significant role of Micro and Small Enterprises in economies (GEM, 2012; KES, 2009). Moreover, in Kenya, estimates as of 2013 showed that MSEs employed 6.4 million people accounting for 84 % of the total employment and it contributed to 18.4 % of the GDP (RoK, 2009). The National Economic Survey of the Central Bank of Kenya (CBK) estimates that MSEs account for 98% of all Kenyan businesses (CBK, 2014). In

addition, the sector contributed 87% of all the total employemnet and 77% of the total workforce (Ongori & Migiro, 2011; Wachira, 2014).

Considering the importance of MSEs in the economy, there is need to explore and implement new ideas that will lead to competitive advantage and hence improve performance of their enterprises. The exploration of the new ideas will help MSEs to overcome challenges that are hindrance to performance of their enterprises. There is need for research in this area because, once the ideas have been explored, they may be made better by generating new working models and approaches that will improve profitability of these enterprises.

Performance of MSEs has been explored from E-banking technology characteristics perspective. For example, Isaac *et al.* (2011) hold that MSE performance is a function of e-banking in terms of perceived ease of use and perceived usefulness. The performance of MSEs is a component of the characteristics of e-banking technology, which has been described as a significant factor in the success of enterprises. E-banking charactersitics as a function possesses two dimensions, namely: perceived ease of use and perceived usefulness. Although perceived ease of use influences the use of the system, perceived usefulness affects the attitude to the use of the system. It is noted, however, that the perceived ease of use is "the degree to which an individual believes that using a particular system will be effortless" (Davis, 1989) While perceived usefulness is the degree to which a person assumes that using a specific system will increase the efficiency of his or her job (Davis, 1993). Performance of MSEs and e-banking characteristics has attracted an array of studies. For example, a study conducted in Sweden (Kallin, Rydbeck, & Wictorin, 2017), on e-banking technology and how managers' attitude affected technological adoption process, revealed that there was a

close association between the attitude of managers towards emerging technologies and the implementation process. According to Simone and Jean-Paul (2012), change in the e-banking was driven by technology and globalization in South Africa whereas competition was driven by IT developments and the emergence of alternative delivery channels. E-banking technology was seen as one of the most successful markets due to its service quality, client focus and profit performance.

E-banking technology adoption has also been identified as a primary determinant of the company's growth and profitability. It has been linked to high firm growth (Brown, Davidson & Wiklund, 2008), superior performance, and business endurance (Soininen, 2013). The introduction of e-banking provides various benefits to MSEs. For example, MSEs can check balances of accounts, transfer money, pay bills, collect receivables and eventually minimize transaction costs and gain greater control over bank accounts (Frank, Kessler & Fink, 2010). Across the globe, demographic trends, technological advances, fluctuating economies and other competitive forces have changed Micro and Small Enterprise (MSE) operations as never before, bringing new threats and opportunities to the forefront. Responses to these changing forces include increased focus on entrepreneurship among governments, organizations and the public (GEM Global Report, 2012).

E-banking technology adoption was used in the study as a mediator based on the literature of Salimon, Yusoff, and Abdullateef (2014). Adoption is defined as the intergration and use of technology. Thus e-banking technology adoption has to deal with usage and satisfaction. Satisfaction with electronic banking services has to do with the overall result of feeling, evaluating and responding to the customer's experience of the electronic banking service (Musiime & Ramadhan, 2011; Yap,

Ramayah, & Shahidan, 2012). Satisfaction essentially helps the customer to compare his pre-and post-consumption experience with the actual performance (Al-Kasasbeh, Dasgupta, & AL-Faouri, 2011). The customer is satisfied if the performance meets his expectations. In the context of e-banking services, the ability of the MSEs to intergrate and use e-banking channels will determine their performance in relation to e-banking technology characteristics (Al-Majali & Mat, 2011; Chandio et al., 2013; Eid, 2011).

To this note, innovative behaviour is used in this study as a moderator based on entrepreneuship theory of innovation which is very critical in MSE survival as it was indicated by Lumpkin and Dess (1996). A study by Woodman, Sawyer, and Griffin (1993) indicated that individual innovative behaviour is influenced by contextual variables. Under the current environment, innovative behaviour is complex and dynamic (Asad, Shabbir, Salman, Haider, & Ahmad, 2018). Problem solving, finding artistic solutions, and developing new products and services illustrate innovative behaviour (Borland, Barrera Zambrano, Ceusters, & Shorrock, 2011). Furthermore, MSEs have been recognized as a feeder service to large- scale industries in both developed and developing economies and hence need to be innovative (Ibrahim, 2008). There is an array of studies that have been carried out in regards to innovative behaviour (Leung, Huang, Su & Lu, 2011; Salim & Sulaiman, 2011; Terziovski, 2010). Thus an interaction of innovative behaviour on the relationship between e-banking technology characteristics and MSE performance can either be strengthened or weakened. However, a number of academic scholars used different variables to identify e-banking technology factors that affect performance of enterprises without reaching a consensus (Ndubisi & Sinti, 2006).

This discord calls for research that will help to define the factors that can be used to explain the optimal performance of an enterprise. The need for an e-banking system is aimed at reducing the cost of cash management and increasing the efficiency of the payment system, thereby creating a favorable environment for MSEs. Bayero (2015) points out that the increased use of internet banking has contributed to the forecast of a cashless society. According to Nweke (2012), almost 97% of transactions in the western world are without physical cash and this has dramatically reduced prices, corruption and money laundering. Laoye (2011) adds that the scheme is aimed at promoting electronic means of payment and not at discouraging cash transactions.

In a survey of over 2,000 UK adults conducted by Visa, 76% said they would feel comfortable making payments using biometric security. In addition, 69% assumed that this method of payment would make their lives quicker and simpler, while 70% expected that this would become the primary form of identification by 2020 (World Bank, 2017). Most organizations of all types are utilizing IT around the globe to cut costs, improve efficiency, and providg better customer services (Irefin *et al.,* 2012).

In Africa, Nigeria and South African were among the first countries to step into the era of e-banking system. Wizzit, a fast-growing mobile banking business in South Africa, is enabling low-income earners to make long-distance transactions with their mobile phones, thereby reducing their travel costs and minimizing the risks of cash handouts and avoiding most bank charges (Makee & Willy, 2014). These countries have become role models for developing economies to emulate, as they have been able to provide electronic financial transaction across long distance as well as introduce cashless as a policy (Akintaro, 2012). Information is a basic necessity for enterprise development,

growth and survival, and IT is capable of easing information gaps in the MSE sector (Makau & Wawire, 2013).

Furthermore, in Kenya e-banking technology characteristics has led to a steady growth in the use of automated teller machines (ATMs), mobile and online banking, electronic money transfer, direct payments and credit card payments (CBK, 2008). For instance, M-PESA transactions increased from less than one hundred thousand per annum in 2013 to over one hundred and thirty million transactions per annum in 2017; ATMS and POS transactions increased from less than three million in 2013 to over eight million cards by the end of 2017 as indicated by Said and Kaplelach (2019) . Therefore, e-banking technology is becoming the centerpiece of enterprise sales strategies, industry leaders creating new financial systems or changing existing ones to accommodate consumers need to carry out financial transactions and systems without actually affecting the regular functioning of these organisations. Therefore, the current study investigated e-banking technology characteristics, e-banking technology adoption as well as innovative behaviour and their effect on performance of micro and small enterprises in Vihiga County.

1.3 Statement of the Problem

Recent studies have shown that performance of micro and small enterprises generate employment, raise household incomes and are the source of goods and services (Blattman, Fiala, & Martinez, 2014). Similarly, studies have shown that performance of MSE Contribute 18% to the gross domestic product (GDP) due to their role in job creation in Kenya (Maengwe & Otuya, 2016). In addition, the performance of MSE provides a dynamic production network links between small-scale producers and urban, national or export markets. For instance, in 2011, the main driver of performance in

76% of all the MSEs was because of products sold to neighbouring Uganda and Tanzania (Mugo, 2016). Therefore, performance of MSE sector drives competition and innovation by introducing new business methods, products and services that drive industrialization, opportunity seizing, value creation and market access.

However, between 80% to 90% of MSE fail within 5-10 years of start-up (Asad *et al.*, 2018). A report by Statistics (2010) shows that 3 in every 5 enterprises fail before the first year of operation and further 80% of the remaining fail before they reach the fifth year while establishments that are acquired are more vulnerable to closure and they account for 61.3 % of the total businesses closed (Group, 2017). Similarly, the 2013 Kenya Economic Survey indicated a decrease in the rate of growth from 5.4% in 2011 to 4.3% in 2013 of the results of Kenyan MSEs. In addition, Waweru and Ngugi (2014) reported that in the developing countries, poor business performance remained unexplained in the MSE sector. Some of the challenges facing MSEs include limited capital, unskilled employees, competitive markets, informal credit, and lack of innovativeness as well as inadequate IT facilities that affect their performance.

Ngaruiya (2014) describes MSEs performing poorly due to lack creativity, vision and resources such as credit services hence mostly engage in entrepreneurial activities to meet their immediate financial needs. Similarly, poor performance of MSEs is mostly associated with limited financial access while most of them prefer old methods of financial transactions (Asad et al. 2018). Abaenewe, Ogbulu, and Ndugbu (2013) mentioned poor performance of MSEs as a result of competition, lack of technical and managerial skills, poor infrastructure, dynamic customer needs and inaccessibility to appropriate financial facilities. In Kenya, social injustices and crime have increased due to high failure rate and decline in performance of MSEs which has affected economic

growth and led to unemployment (Bunyasi, Bwisa, & Namusonge, 2014). In addition, there is concern over the cost of running the business that is associated with cash transactions (Alawiye-Adams & Afolabi, 2013).

Despite the fact that MSEs play an important role in economic growth and job creation (Ali, Rehman, Ali, Yousaf, & Zia, 2010), most of them are ignorant and have little understanding on how they could improve their performance. The existing literature in this area tends to focus on direct effects as indicated by various scholars who identified e-banking technology characteristics as one of the drivers towards MSE performance (Hasani, Bojei, and Dehghantanha 2017); (Khaksar, Khosla, Singaraju, & Slade, 2019); (Isaac et al, 2018). Very few studies have employed methods that test for mediation, moderation and moderated mediation effects. Borau et al., (2015) asserts that such models provide robust results to the extent that they simultaneously include the different effects, providing an overall vision of the process studied. It is against this background that current research sought to fill the gap by use of a mediation, moderation and moderated mediation model to investigate the effects of e-banking technology characteristics, e-banking technology adoption and innovative behaviour on MSE performance in Vihiga County, Kenya.

1.4 Study Objectives
The following were the study objectives;

1.4.1 General Objective
This study investigated e-banking technology characteristics, e-banking technology adoption as well as innovative behaviour and their effect on performance of MSEs in Vihiga County, Kenya.

1.4.2 Specific Objectives

In order to address the above objective, the following specific objectives were formulated:

  i.   To examine the effect of e-banking technology characteristics on performance of MSEs in Vihiga County, Kenya.

 ii.   To establish the effect of e-banking technology adoption on performance of MSEs in Vihiga County, Kenya.

iii.   To investigate the effect of innovative behaviour on performance of MSEs in Vihiga County, Kenya.

 iv.   To assess the effect of E-banking technology characteristics on E-banking technology adoption in Vihiga County, Kenya.

  v.   To establish the mediating effect of E-banking technology adoption on the relationship between e- banking technology characteristics and performance of MSEs in Vihiga County, Kenya

 vi.   To determine the moderating effect of innovative behaviour on the relationship between e-banking technology characteristics and e-banking technology adoption in Vihiga County, Kenya.

vii.   To determine the moderating effect of innovative behaviour on the relationship between e-banking technology adoption and performance of MSEs in Vihiga County, Kenya.

viii. To establish the moderating effect of innovative behaviour on the indirect relationship between e-banking technology characteristics and performance of MSEs through e-banking technology adoption in Vihiga County, Kenya.

1.5 Hypotheses of the Study

To achieve the study objectives, the following hypotheses were formulated;

H_{01}:   E-banking technology characteristics has no significant effect on performance of MSEs in Vihiga County, Kenya.

H_{02}:   E-banking technology adoption has no significant effect on performance of MSEs in Vihiga County, Kenya.

H_{03}:   Innovative behaviour has no significant effect on performance of MSEs in Vihiga County, Kenya.

H_{04}:   E-banking technology characteristics has no significant effect on banking technology adoption in Vihiga County, Kenya.

H_{05}:   E-banking technology adoption has no mediating effect on the relationship between e-banking technology characteristics and performance of MSEs in Vihiga County, Kenya.

H_{06}:   Innovative behaviour has no moderating effect on relationship between e-banking technology characteristics and e-banking technology adoption in Vihiga County, Kenya.

H_{07}:   Innovative behaviour has no moderating effect on the relationship between e-banking technology adoption and performance of MSEs in Vihiga County, Kenya.

H_{08}:   Innovative behaviour has no moderating effect on the indirect relationship between e-banking technology characteristics and performance of MSEs through e-banking technology adoption in Vihiga County, Kenya.

1.6 Significance of the Study

The study findings contribute to knowledge into the existing e-banking technology characteristics, e-banking technology adoption, innovative behaviour and MSE performance literature. The theories, models, research methods and findings benefits future scholars in knowledge creation and further research who would wish to investigate related phenomena in this research area.

To the MSE sector, the study helps them to understand how e-banking technology characteristics, e-banking technology adoption, and innovative behaviour have a bearing on the performance of enterprises. It is of importance for small businesses to adopt new business practices, have the capabilities and policies that enhance performance in their enterprises. The study postulates that an understanding of MSE performance in Kenya is vital in managing and avoiding the massive failure of small businesses, given that MSEs are important to national economic growth. The findings of this research, therefore, assist MSEs to identify issues that affect performance of their enterprises.

Through research findings, as the present study's, both the National and County Governments have a basis for formulating holistic policies to enable performance of MSEs. Furthermore, policy makers will enable provision of necessary facilities like technological infrastructural support to enable MSEs develop a competitive edge both in local and international markets.

The study contributes to development of future research, particularly in a developing country like Kenya. Specifically, the study contributes current literature and context knowledge to research organizations and scholars who are interested in understanding MSE performance as a key area of development.

The present study is of significant value to practitioners and scholars alike in understanding the level of small business performance and their significance in creation of employment opportunities. Finally, the findings of the study have an enormous potential to contribute to the theory of performance evaluation in the MSE sector and, by extension, bridge the gap that exists in available literature, which shows no evidence of the relationship between e-banking technology characteristics, e-banking technology adoption, innovative behaviour and performance of MSEs.

1.7 Scope of the Study

This study was carried out among micro and small enterprises in Vihiga County between the months of March 2018 and March 2020. This study was limited to MSEs in Vihiga County, Kenya, as defined by the respective boundaries. Vihiga County has five sub-counties, namely Sabatia, Hamisi, Vihiga, Emuhaya and Luanda. The study area was identified and selected because it had an increasing number of small businesses that seemed not to be generating optimum output. The County covers an area of 563 km^2 and, at the time of the study, had a population of 554622, according to the National Statistics for 2009. The County has one of the highest population densities in Kenya at 1,094 people per km^2 compared to the national average of 66 people per km^2 (KNBS, 2014). Therefore, the County had a large target population that translated into a large sample size.

The study was further limited to issues pertaining to e-banking technology characteristics, e-banking technology adoption, innovative behaviour and their effect on MSE performance.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter covers literature on the concept of MSE performance, e-banking technology characteristics, e-banking technology adoption and innovative behaviour. The literature also examines the theoretical concepts with regard to perceived ease of use and perceived usefulness of e-banking technology. Empirical review is presented according to study variables. The theories that guided this research are also discussed critically in this chapter together with research gaps. Lastly, a construction of conceptual model is provided.

2.2 Conceptual Discussion

2.2.1 Concept of MSE Performance

Performance is the ability to work effectively, profitably, thrive and grow as well as respond to opportunities and threats in the environment (Turyahebwa, 2013). In accordance with this statement, it is believed that low performance of enterprises is as the result of poorly performing assets (Lingle & Schiemann, 1996). Wang and Ahmed (2009) opine that performance improvement is known to be the main goal of every organization as it demonstrates the degree of accomplishment of its operations. In this study, conceptulazation of MSE performance was indicated as pfrofitability of enterprises.

MSEs comprise some of the major contributors to economic growth despite the challenges and opportunities they face in developed and developing economies. The definition of the concept of MSE in different nations is based mostly on its economic relevance of these enterprises. According to (Makau, Wawire, & Ofafa, 2013), capital

investment, staff numbers, turnover, style of management and market share are some of the definitive characteristics of MSEs.

The definition of a Micro Enterprise is a business with 1–9 employees with revenues of less than Ksh.500, 000 per annum (Ministry of Trade, 2012). Sales of a Small Business range from Ksh.500, 000-Ksh.1 million per year and has between 10-50 employees. In Kenya, therefore, a business that employs fewer than 10 people and whose annual turnover does not exceed 500,000 shillings can be described as a micro-enterprise, whereas a company that employs between 10 and 50 people and whose annual turnover varies between 500,000 and 5 million shillings is referred to as a small business (Kenya, 2005; Litondo & Ntale, 2013). This conceptulazation of MSE was adopted in this study.

The decision to set up a performance evaluation framework that matches the circumstances and needs is executed at consecutive intervals. It guarantees that the investment targets are met and that the general course of past investment activity behavior is understood and hence the future forecast (Ngumi, 2014).

MSE performance is a multidimensional concept, and numerous measures have been used in the literature to quantify performance. Researchers looked at the financial and non-financial aspects. Financial indicators are most commonly used to estimate success levels and provide different proportions of growth and profitability, while non-financial indicators provide measures such as owner satisfaction, consumer satisfaction, target achievement, good governance and other indicators (Administration, 2009; Rosenbusch *et al*., 2013). This study focused on profitability as financial performance indicator of MSE in Kenya.

In addition, de KOO (2016) opines that key indicators of performance are seen as a good management device and socially developed instruments that are important to the

evaluation of the performance of any organisation. These indicators tend to be quantitative. In respect to MSEs, Ingraham (2005) indicates that entrepreneurs should constantly seek to understand the productivity of their enterprises.

It is evident from literature that MSE performance is a measurement of the degree of the enterprise goal achievement. The dimensions used to measure MSE performance in include profitability (Hughes and Morgan (2007). Indicators measuring performance include return on assets, return on investment, net profits and number of employess. Profit means net wealth gain for owners. Profitability in the enterprise demonstrates the financial strength to support operations, hence increased enterprise performance (Kraus, Rigtering, Hughes, and Hosman (2012).

Sales volumes in an enterprise represent the products that go out of the business and cash flows into the enterprise, which increase profits; therefore, sales volumes are very important for gauging the performance of an enterprise (David, 2017). This implies that for performance to be enhanced, it is necessary to find ways to increase sales. These ways could include introducing and diversifying goods and services, finding new customers, improving the methods of conducting business operations to increase customer satisfaction and loyality, among others. Profitability, therefore, increases value of assets by enhancing customer satisfaction, customer attraction and retention.

Dick and Basu (1994) studied the link between relative attitude towards an enterprise and repeat patronage behavior. They identified customer retention as an indicator of performance. Further, profitability has been measured with regard to asset growth, net revenue growth and number of employees. Jamiya (2010), in his study on SMEs, measured performance using changes in sales, profits and assets to assess performance. On the other hand, Rabiu, Muhammed, Umaru, & Ahmed, (2016) used increase in

sales, profitability, market share and return on investment as performance measure for MSE.

Of importance to this study was on how MSE performance has also been associated with e-banking technology system. In Kenya, most MSEs spend more time running their enterprises with the use of e-banking transactions as they have an opportunity to receive or make payments from anywhere in the country (Omwansa, Waema, Chen, & Sullivan, 2013). Increased profits are realized due to the fact that MSE have more time in the business as well as more clients, which leads to improved performance. The means of sending and receiving money through the electronic means has been found to be preferred due to the low costs compared to costs incurred in banks and money transfer agencies (Omwansa, 2009).

A study by Khandker, Khalily, and Khan (1995) reported that many MSEs are using obsolete technologies that restrict their growth. Similarly, MSEs have limited growth rate due to their small-scale activities that require an expansion of volumes to realize profits (Litondo & Ntale, 2013). Therefore, mobile payments and ATM transactions were found to be cheaper to most of the MSE operators and far below banks charges. The minimal cost of transactions positively affected the performance of the enterprises. In every economy, almost 90% of all commercial business activities are from Small Enterprises. Therefore, there is need for governments and international agencies to work concertedly in promoting and sustaining small enterpries in the current highly competitive environment (Wachira, 2014). In Kenya, MSEs face constraints such as inadequate access to capital, inadequate technological facilities, improper marketing procedures as well as hostile regulatory laws. Despite these limitations, MSEs remain a major contributor to Kenya's economy.

2.2.2 Concept of E-banking Technology Characteristics

Across history, there have been different forms of trading, but barter trade has been the most common. However, barter trading had problems such as the double coincidence of preferences that led to the introduction of different forms of currency. The epoch of currency led to the establishment of physical cash, which most countries are slowly phasing out as they change or transition into a new e-banking technologies (Swartz, Hahn, & Layne-Farrar, 2004). The trend in the evolution of the world economy is to gradually embrace new delivery channels (Yu & Guo, 2008). As a result, in recent years, many organizations have adopted e-banking to make banking simpler for their customers and also to allow them to provide new services. Furthermore, that e-banking technology has raised much interest among scholars and information systems experts because of the vital role it plays in e-commerce (Hussein, Mohamed, Ahlan, Mahmud, & Aditiawarman, 2010).

In the recent literature, e-banking technology characteristics have been documented as constituting a significant factor in performance of enterprises. E-banking technology characteristics, as a composite factor, has two dimensions, namely perceived ease of use and perceived usefulness. They both decide whether or not a system is used. "The degree to which a person assumes that using a specific device would be effortless" Davis (1989) is viewed as ease of use. The perceived usefulness of the system does not mean that it will be used constantly, particularly when the system is perceived to be difficult to understand (Mann & Sahni, 2013). Perceived ease of use depends on how user-friendly the platform is and how the system allows its users to use the services. Rogers and Shoemaker (1971) explain why clients are able to accept or refuse any service or service provided by a business entity on whether or not the service or product is fully understood to them.

Perceived ease of use has a huge influence on users' decisions to use or implement new technologies (Chau & Lai, 2003). In the online context, perceived ease of use had a substantial effect on e-service adoption, indicating the significance of the role of the variable ease of use in the adoption of e-services (Chau & Lai, 2003). Navigability refers to the accessibility and operability that the platform would deliver to its customers (Hernandez-Ortega *et al.*, 2007). The characteristics of browsability include ease of search, which reflects the ability of the website to help users locate the information they need (Huizingh, 2000).

According to Rahmath and Hema (2011), Perceived usefulness is the degree to which a person considers a specific system to improve the efficiency of his / her work. A number of studies have identified perceived usefulness as a significant factor for the adoption of innovation technologies (ACNielsen, 2005).

Perceived usefulness is described as the "subjective probability of a potential user that using a specific program will boost job performance in an organizational context" (Davis, 1989). Perceived usefulness describes the extend to which e-banking users believe that using e-banking technology is beneficial and will enhance their daily transactions than the traditional banking (salhieh 2011). According to Liébana-Cabanillas, Munoz-Leiva and Rejon-Guardia (2013), the system is seen as advantageous from the customer's point of view because it can help them accomplish their daily objectives and thereby increase the performance and competitiveness of an organization. In a study, Eastin (2002) found that perceived usability was a stronger predictor of online banking usage. Finally, the same study also revealed that perceived usability was the most important element in the overall acceptance of the four e-

commerce activities under investigation. These characteristics therefore allow the efficient use of e-banking technology.

Ndalira *et al* (2013) define e-banking technology as use of electronic systems to perform financial commitment that involves buying and selling of commodities. In addition, Briggs & Brooks, (2011) indicate that e-banking technology as a medium of electronic money exchange enabled through inter-connections between firms and individuals. Alawiye-Adams & Afolabi, (2013) view e-banking technology as any form of funds transfer by use of internet. E-banking technology is further defined as digital money transactions that incorporate the use of credit and debit cards, electronic funds transfer, mobile phone payments, online banking, mobile wallets and other newly developed payment channels (Brahma & Dutta, 2018). Similarly, according to Adeoti & Osotimehin, (2012), e-banking technology refers to e-transaction carried out to purchase products done either on online or in an enterprise. E-banking technology is defined further as a form of money exchange through electronic means, where payments are made in e-commerce environment (Kaur & Pathak, 2015).

Salihu *et al* (2019) describe e-banking technology as a situation where there is minimal flow of money in a given enterprise. According to Adu (2016), e-banking technology is where money is spent without physical movement from one location to another. E-banking technology eliminates transaction problems related with giving back balances in terms of cash, and, therefore, it provides the opportunity to transact exact amounts including cents (Oyewole, Gambo, Abba, & Onuh, 2013). Kalia, Arora, and Law (2017) further define e-banking technology as means of purchasing goods/services online via the internet. As such, electronic channels, which include credit and debit cards, mobile phone purchases, transfer of electronic money, and point of sale (POS), have a

significant increase in every other purchases and transactions (Salihu *et al.*, 2019). With e-banking technology, the amount of money in one's pocket is practically irrelevant as transactions are made by use of credit cards or bank transfers (Laoye, 2011).

Digital technologies have enabled great evolutionary development in finance and reduced the operating costs of different economies. This has fundamentally transformed the lives and activities of individuals and organisations (Slozko & Pelo, 2015) and improved efficiency (Ali *et al.*, 2010). With the age of digital innovation, there is a dramatic change in global business climate, with most business transactions continuously shifting to e-transactions from cash-based transactions (Mohamad & Hashim, 2015). In addition, rapid use of e-commerce in global business has been facilitated by the growth of internet (Fernandes, 2013).

E-banking technology does not eliminate use of money as a medium of trade for goods and services. E-banking technology is used instead of paper currency by offering alternative ways to collect and make payments. According to J. Khan and Craig-Lees (2009), consumers pay electronically by use of automated teller machine, point of sale gadgets (POS), debit cards, credit cards, mobile device phones and other electronic payment systems. Moreover, as growth is at stake in the global business environment, governments and commercial institutions have strong incentives and infrastructural support for e-banking technology to enable companies to move from traditional paper-currency transactions to an electronic payment system commonly known as e-payment (Nwankwo & Eze, 2013). Consequently, the world payment system is aligned with the new pattern of e-banking transactions between individuals, businesses and governments (Nwankwo & Eze, 2013).

Because of this, the world is slowly moving from coins and paper currency to a more convenient, fast and safe e-banking system (Premchand & Choudhry, 2015). Additionally, the global e-transactions have been on the increase over the years, except for 2012 where it decreased from 8.6% growth rate in 2011 down to 7.7% in 2012 (Demirguc-Kunt, Klapper, Singer, & Van Oudheusden, 2015).

According to Slozko & Pelo, (2015), e-banking systems are important tools that individuals and organizations use as a safe and easy way to make payments over the Internet and a path to global economic technological innovation. In addition, e-banking has become the key facilitator of e-commerce, on which business performance depends, and improved productivity, the globalized payment system achieves reduced fraud and innovation (Oladeji, 2014). E-banking provides numerous electronic payment types, including credit cards , debit cards, online banking and mobile banking (Premchand & Choudhry, 2015).

An analysis of global e-payment landscape showed that competitive social and policy developments and behavioural patterns among individuals using electronic payment systems in Africa has promoted the growth of e-banking system. According to (Capgemini, 2011), global e-transaction volumes led by emerging markets have increased from 154 billion since 2001, increasing by 7% per year to an estimated 280 billion in 2010. This growth was mainly attributed to an increase in trade volumes in emerging regions of Central Europe, the Middle East and Africa (CEMEA), Asia (ex-China, and India). These regions expanded by an average of 25 per cent in the previous year, compared to a total of 3 per cent in North America and Europe. E-banking technology accounted for an additional 22.5 percent in 2010.

Additionally, it was projected that by 2013, significant development in e-commerce innovation would cause e-payments to rise from 20 percent to 34 percent of transactions compared to cash payments, which would fall from 80 percent to 66 percent (Ijaz, Khalid, Abubaker Ijaz, & Butt, 2017). Similarly, use of debt and credit cards has continued to grow while that of cheque and cash usage decreased. Debt and credit cards remain the prefered e-payment methods globally, with a total market share in Canada being over 40% and a peak of 68%. In addition, cheque use for transactions continued to decline globally from 22 percent to 16 percent. This is a strong predictor of the global push towards electronic payments.

The advent of e-government programmes contributed greatly to the advancement of e-payment systems use. In countries where an e-governance system combines with existing e-payment infrastructure and behaviour, e-government transactions may spur the use of the e-payment system. If the business environment is still dependent on obsolete technology, this may also have a knock-on impact. Exploration of e-payments and money transfer behaviour in Africa is also imperative after reviewing the trend of e-transaction system globally. The key reason the Nigerian government adopted the e-payment system was the indicators of the benefits associated with e-banking system. However, given the advantages related to e-banking technology, online security breach remains a threat and the most difficult to address with regard to people, organizations, and information technology experts (Kamaruzaman, Handrich, & Sullivan, 2010).

Elastic regulation should accompany the evolution of Africa's financial services ecosystem in MSE sector (Odior & Banuso, 2012). Since innovation stems mainly from the private sector, regulations should not be complicated, but more conducive to developing a favorable environment for private investments. However, this does not

imply relaxed regulations, but for regulators in agreement with marketplace agents to create a more enabling economy. This will lead to encouraging more innovations that will improve performance of many enterprises.

For instance, Africa had a compound annual growth rate of 36% in online transactions between 2011 and 2013 and a 52 percent penetration rate in 2012 (Uwamariya & Loebbecke, 2020). Africa is also the fastest-growing area in terms of smartphone penetration and mobile broadband penetration. In Kenya, for example, 31 per cent of the country's GDP is transmitted via cell phones, as mobile money has become the most popular technique for sending money from urban to rural families. (Ejiro, 2012).

2.2.3 Concept of E-banking Technology Adoption

Stenzel and Frenzel (2008) defines technology adoption as the capacity to execute a given task, by the application of knowledge, processes and skills. E-banking has been described by various authors as a banking system that allows customers in an enterprise to move funds, check account balances, bills payments, order and manage stocks online as well as conduct other transactions through electronic communication channels without necessarily visiting banking halls (Liébana-Cabanillas, Muñoz-Leiva & Rejón-Guardia, 2013; Yap, Wong, Loh & Bak, 2010). E-banking platforms include electronic funds transfer, mobile banking, Internet banking, ATMs, electronic cheque clearing among others (Abushanab, Pearson & Setterstrom, 2010; Daniel, 1999; Özkan *et al.*, 2010; Salhieh, Abu-Doleh & Hijazi, 2011). Such alternative banking networks are rapidly emerging and have introduced major paradigm shifts in the e-commerce field. Furthermore, it can be depicted as the combination of computer and correspondence innovations that aid creation, control, stockpiling and correspondence, storage and

communication, and /or dissemination of information. Adoption is refered to as a choice of complete use of an innovation (Rogers, 2003).

In various investigations, adoption has been considered from various perspectives, for example, execution, use, or fulfillment of a specific, or satisfaction of a particular innovation. In this research, the primary point was to investigate e-banking technology adoption usage and satisfaction would be the perfect measure of adoption. Satisfaction with electronic banking services has to do with an aggregate of outcome of feeling, evaluation and reaction towards the experience which a customer has after enjoying e-banking products or services (Musiime & Ramadhan; 2011). Past examinations propose that with regards to Information technology, achievement and fulfillment has frequently been utilized as variable (Delone & McLean, 2003; Montazemi, 1988; Raymond, 1990). An e-banking technology dispenses with the use of cash method to trade goods and services by allowing electronic exchange installments. The use of e-banking technology has various focal points, in contrast to customary money exchange, e-banking technology demoralize theft and other money related violations (Armey, Lipow, & Webb, 2014). This study looked at adoption in terms of system utilization, satisfaction and fulfillment.

The world's most exceptional e-banking technology channels are Point of Sale (POS) terminals, mobile banking, internet banking, electronic cards, , telephone banking and Automated Teller Machine (ATM) (Ovat, 2012). Shoppers can make payments over the internet in a modern society, pay on automated sales machines, POS, mobile phones, debit and credit cards and other electronic payment systems. Governments and business entities give solid consolation and approaches that help the adoption of e-transaction (Khan & Craig-Lees, 2009). When consumers decide to use other alternative methods

of transaction, they will in general tend to hold less money in their wallets. Thus, it takes out the motivating force for looters to perpetrate money related violations.

Similarly, for shop owners, the simplicity of transacting through various payment modes that include mobile phones and point of sale machine builds their income; improve operational effectiveness and lower operating cost (Alliance, 2003). Electronic payments were also viewed as hygienic for food vendors (Ukpong & Friday, 2012). With e-banking technology use, large and small amounts are transacted without any hiccups like the M-shwari and other mobile operator that gives any amount of loans to its customers (Kabir, Saidin, & Ahmi, 2015). A successful cashless society is determined by accessibility of quality goods, a competitive marketplace and a diverse business environment are key factors that can be achieved throught adoption of modern technologies (Ashourizadeh, Chavoushi, & Schøtt, 2014).

Marco & Bandiera, (2004) claim that the expanded use of e-banking technology improves monetary policy efficiency and that the prevailing degree of use of e-transactions does not create a threat to the stability of the monetary system. Notwithstanding, they conclude that regulators may lose power over monetary policy if they do not develop sound financial strategic policies governing the use of the electronic financial system. Furthermore, (Abaenewe et al., 2013) opine that electronic delivery channels include internet banking, smart card banking (the use of ATM machine), mobile phones that enable individuals to check their account balances and make fund transfers, of which regulators and service providers should be encouraged to facilitate. Studies like that of (Itah & Emmanuel, 2014) incorporated the utilization of point of sales for payment for merchandise and enterprises as part of electronic means of executing business.

Most of the micro and small enterprise administrators know the benefits of using e-banking technologies, since these systsms are user friendly and require minimal knowledge or conventional preparation for one to utilize this technology. Numerous unbanked Kenyans are able to get or send cash to any place in the nation, regardless of the level of education (Omwansa *et al.*, 2013). Sivabalan, Booth, Malmi, & Brown, (2009) recommend that adoption of a technology could be analyzed based on whether it is mostly used for guiding decision-making or for the most part for control purposes. Additionally, e-banking technology adoption has has been examined by reflecting on the environment in which they are used. Research in this area shows that the benefits of machine use have to do with the capability of the enterprise. Chenhall & Langfield-Smith, (2003), offering a perspective on the need to research the use based on the contextual conditions of the enterprise and how well the method fits into the market environment. Determining e-banking factors in Africa, according to Doshi & Narwold, (2014), include fixed telephone penetration, rural rate, per capita, Gross Domestic Product (GDP) and population density, but, in terms of behavioral aspects, perceived ease of use and perceived usefulness have been established as the key factors affecting e-banking adoption by customers.

2.2.4 Concept of Innovative Behaviour

According to Waterman et al., (2007), an element of the innovativeness is crucial to the performance of any organization. Innovativeness is an integrated system that includes constant improvements in the production process aimed at minimizing costs, wastages, and job scheduling or increasing the power of production. Innovation could be a worthwhile process as it works to boost any business operations as it improves business performance regardless of the dimensions. Investment in technology ought to be prioritized to reduce prices and increase sales for business to realize growth.

A study by Halim, Ahmad, Ramayah, & Hanifah, (2014) identified innovation and competitive advantage to involve making of a new thing, which is completely unique and distinctive. An entrepreneur should be optimistic and inspired to continously try new stuff like new methods of performing transactions. Therefore, an entrepreneur would become visionary, innovative and equipped with the necessary expertise, skills and ability to develop and implement new ideas effectively, as innovation is crucial to business survival. According to Ndalira et al., (2013), innovative MSEs tend to produce and supply quality product that reciprocally improves sales and therefore growth. Entrepreneurs need to have faith, bravery and strong will to succeed in business, be effective and able to produce high quality products, consistently delivering at reasonable prices.

Innovative behaviour in MSEs involves creation and implementation of new ideas (Liedholm & Mead, 2013). Innovation can either be implemented in phases or at once so long as it is aligned towards achieving a desired objective. Most organizations use innovation to influence environment since it is closely tied to change. Innovation may involve a wide range of different types of adjustments, depending on resources, skills, processes, and requirements of the organization. Innovative behaviour demonstrates an organization's willingness to pursue new ideas and to explore and experiment creatively with them (Borland *et al.*, 2011). Innovation ranges from a desire to seek new goods or services, to a determination to be at the cutting edge of practice that goes beyond the present state of the art (Dess & Lumpkin, 2005).

According to Baregheh, Rowley, & Sambrook, (2009), common styles of innovation relate to new goods, new materials, new methods, new facilities and new organizational forms. Innovations result from new ideas that are realized into new products, new

services and new process (Halim *et al.*, 2014). However, innovation does not always have to be entirely about new concepts. Rather, the word innovation means that something new will happen and will lead to a clear change for the consumer. Innovation is distinguished by unique features, strong originality and perceptible user benefits. Similarly, Gupta & Barua, (2016) indicate that innovative behaviour leads to new products, services, markets and culture.

Innovation can be applied to any section of a business activity or department. Therefore, it is important for MSEs to form, apply and introduce innovation to improve their performance as well as for economic development. In line with (BENSON, 2018), improving the innovation process can greatly improve the production of quality goods which would ultimately improve the performance of MSEs. Creative organizations emphasize the innovative practices of workers and inspire them to pursue creative approaches to problem-solving (Richard *et al*., 2003).

Drucker, (2014); Schillo, (2011) regard innovation as the means by which entrepreneurs take advantage of change for exporing business opportunities. It can be conferred as a discipline, meaning it can be learnt and practiced. Most entrepreneurs specifically search for the sources of innovation, signs that indicate opportunities and changes in business environment to ensure successful businesses. They must comprehend and apply the principles of successful innovation so that, once confronted with market opportunities, they are in a better position to act proactively. Based on the views of Miller, (2011) and Covin & Slevin, (1988), innovation entails taking risks and proactive decisions so as to have a competive advantage over competitors. On their part, Lumpkin & Dess, (1996) perceive innovation as a tool that can be used by entrepreneurs to improve performance through introduction of new products, new

processes and new markets. To Miller, (2011), innovation brings about competitive aggressiveness in organizations.

According to Haroon Hafeez, Shariff, Noor, & Mad Lazim, (2012), innovation is an engine of economic growth. As is the case for large organizations, innovation is considered equally important for the Micro and Small Enterprises (MSEs). With respect to developing countries like Kenya, where most of the MSEs do not embrace rigorous innovation as well as lack sufficient external support to encourage innovation, the role of innovation becomes easily ignored and at the same time this enterprises suffer losses due to poor performance. It has been mentioned earlier that MSEs are facing low growth despite their contribution to the economy.

A study by Zerenler, Hasiloglu, & Sezgin, (2008) examined the effect of innovativeness upon the MSEs performance in the Turkish automotive supplier industry. MSE growth was found to have significantly positive relationships with innovation performance which formed the major findings of the study. Another study Ebeiyamba Oluchukwu, (2014), in Taiwanese manufacturing and non-manufacturing industries, explored the mediating role of innovation on SMEs growth. The study found the effects of innovation existing at significant levels, which suggested a perfect mediating effect of innovation on performance.

In Iran, Zangoueinezhad & Moshabaki, (2009) found that operations and managerial processes are significantly related in achieving innovation in an organization. According to Kabir et al., (2015), value added innovation and its components have a substantial positive relationship with competitiveness of firms. Another study Kafouros, Buckley, Sharp, & Wang, (2008), on innovation and firm performance,

established the importance of innovation to firm success and its contribution to value creation in a business.

2.3 Theoretical Foundation

This study was based on the following theories: the Theory of Constraints Goldratt & Cox, (1984), the Diffusion of Innovations Theory Rogers, (2003), the Technology Acceptance Theory by Davis, (1989), and the Entrepreneur Innovation Theory Schumpeter (1949). These theories are described in detail below:

2.3.1 Theory of Constraints

The Theory of Constraints (TOC) is a management reasoning philosophy that looked into the introduction of Optimized Production Timetables scheduling software propounded by Goldratt and Cox (1984). The theory has been used in studies to show the relationship that has evolved from this simple production scheduling soft-ware program into a suite of integrated management tools embracing three interrelated areas: logistics/production, performance measurement, and problem solving/thinking tools. TOC focus on theoretical constructs concerned with technology software program as determinants of the likelihood of performance. The theory assumes that a multi-faceted programme approach that has been slowly developed to help individuals and organizations think about challenges, create solution breakthroughs and effectively execute those solutions which in turn determines performance (Goldratt & Cox, 1992).

The theory proposes a direct relationship between e-banking technology characteristics and MSE performance which is the main purpose of this study. TOC argues that enterprise performance is limited by constraints. According to Goldratt (1990), the strength of any chain, process, procedure or system is dependent upon its weakest link which affects the overall performance of an organization. TOC help us to identify the

constraints that keep an enterprise from accomplishing its objective of enhancing performance. Constraints can include people, processes, equipment as well as technology and they can be internal or external to the organisation (Hofer, Wysocki, & Zehnder, 2014). The author further categorises the constraints as physical which include a machine with limited capacity, raw materials; policy which emerge when the world under which a corporation operates shifts while the company's policies remain unchanged and regulatory limitations are generally under the power of the organisation's management. Behavioural constraints occur when performance measures or policies lead to behaviors that are ingrained and constrain the performance of a system even after policy or action changes. The above constraints once addressed, MSE performance is enhanced.

There are several methods for overcoming these constraints. These include performance indicators, which concentrate on achieving excellent results on the three financial measures, profit, return on investment (ROI) and cash flow, along with a collection of three operational measures that provide a clear and efficient way of connecting local activities to the overall financial condition of the business (Goldratt 1990). The other strategy is the use of operating indicators, including throughput, defined as sales revenue less totally variable costs; inventory, defined as total money spent in an enterprise that is to be or may be sold; and operating expenses, defined as all non-variable costs associated with transforming inventory into throughput. TOC helps to addresses a diverse range of factors that improve performance such as type of products, quality measures, and application issues like production, services, IS/software, and educational services.

The findings of Goldratt (1990) therefore support this study because technology is found to limit the performance of MSEs and therefore TOC endeavours to identify these constraints to system success and to effect the necessary changes. Therefore, it is a technique for distinguishing the most significant restricting standing in the way of achieving an objective and then improving that constraint systematically until it is no longer the constraining variable.

According to Maylor & Johnson (2010), each framework, regardless of how well it performs, has at least one constraint that limits its performance and that is its weakest link. When there is a maximized cash flow and profitability in an enterprise, it then lead to improved perfoamance. This theory helps to prioritize development activities as the top priority is always the present constraint in environment where there is an immediate need for change and thereby offers a highly oriented approach for rapid improvement and it ultimately enhance performance. The ability of businesses to monitor financial expenditure, satisfy workers, deliveries in good time and respond to interventions is well represented by components of an internal system that improves performance.

The relevance of this theory is to increase profits by focusing on one critical area, improve capacity, reduce time wastages and reduce unnecessary stock in business. This theory underpins the study by explaining on how MSE face internal and external challenges when trying to compete in a dynamic and complex business environment, elimination of these challenges would aid performance improvement. It is argued that unless MSE addresses these challenges, then performance would be an uphill task. However, this theory focuses in manufacturing firms which have repetitive schedules as opposed to MSE environment that is dynamic and highly competitive. Given the numerous literature cited above, this study uses theory of constraints to examine the

relationship between e-banking technology characteristics and MSE performance in Kenya.

2.3.2 Technology Acceptance Model (TAM)

Davis's Technology Acceptance Model (1989) focuses on technological problems. This model explains the behavioral perceptions of people and their use of IT. It posits that individuals'behavioral intention to use an IT is determined by two beliefs: the extent to which a person believes that using an IT will enhance his or her job performance and the degree to which a person believes that using an IT will be free of effort. It is suggested that the true behavior of a person is dictated by his or her expectation, which, in turn, is determined by the user's attitude towards and perceived usefulness of that technology (Ajzen, 2011). TAM describes the relationship between perceived usefulness, perceived ease use and attitudes towards use of a system.

TAM was built from the theory of reasoned action Ajzen (1975). System use is a response that can be explained by user motivation which is directly influenced by an external stimulus consisting of the actual system features and capabilities (Fishbein & Ajzen 1975). TAM considers the use of the system as a behaviour and therefore theory of reasoned action explains this model.

Schultz and slevin (1975) did an exploratory study and identified perceived ease of use a predictor of the use of the system which affects its acceptance. Similarly, Tornatzky and Klein (1982) studied the relationship between the charactristics of an innovation and its use of which it had a positive and significant effect on system performance. The importance of considering both perceived ease of use and perceived usefulness is that it contributes to better performance as a result of continuous use of the system. Bandura

1982 indicated that once a behaviour is executed successfully in implementing perceived ease of use and perceived usefulness, it leads to better performance.

Swanson's (1982) argues that perceived ease of use and perceived usefulness determines the individual behaviour to use a system which in turn determines ones performance. For one to follow the TAM model, it is necessary to understand the conditions of end-users regarding perceived usefulness and perceived ease of use (Pedersen, Methlie & Thorbjornsen, 2002). Under this model, perceived usefulness and perceived ease of use influence consumer attitudes towards any service. Attitudes determine whether an individual perception will embrace or downplay a certain technology. Additionally, Davis, (1993) advises that user specifications should be determined on the basis of perceived usefulness and ease of use, rather than other objective measures. People tend to use a system to the extent that they believe it will help them perform their job better and also that there will be less effort required to use a system.

In this study, the presumption is that Davis' results refer to e-banking technology characteristics. This is due to the fact that TAM provides empirical support to explain dimensions of e-banking technology characteristics as perceived usefulness, perceived ease of use and further explains its use across a wide variety of end-user applications which leads to MSE performance (Agarwal, Animesh, & Prasad, 2009).

Across various empirical studies of TAM, what has been referred to as perceived usefulness has continuously resulted as a strong determinant of use intentions (Venkatesh, Speier, & Morris, 2002). The effectiveness of an organization is characterized by the extent to which a person feels that the use of a specific system will

improve performance (Davis, 1993). The importance of this model is to establish new and better use of technology that creates avenues for improving MSE performance.

A study by Wang, Rau, & Salvendy (2011) delineated the factors that determined users' acceptance of e banking. As stated, perceived ease of use and perceived usefulness constructs were considered the key determinants of the use of various technologies affecting MSEs. These convictions fully describe consumers' actions towards newly emerging technologies, given that the motivation is linked to the benefits of e-banking technology which improves performance (L. Wang et al., 2011)

A study by Shafeek (2011) developed a TAM-based model called online shopping which indicated perceived ease of use and perceived usefulness to have influenced online shopping (Pavlou 2003). TAM model developed by Pikkarainen, Pikkarainen, Karjaluoto, & Pahnila, (2004) identified perceived usefulness of online banking, to have played a key role in the acceptance of online banking among the MSEs in Finland. The proposed model suggested acceptance trend and function of perceived usefulness that played a significant role in e-service usage and in turn affected performance.

Furthermore, Ervasti & Helaakoski, (2010) developed a model based on TAM and TPB on mobile service usage of which perceived usefulness was considered to be a stronger factor in determining usage. Similarly, Müller-Seitz, Dautzenberg, Creusen, & Stromereder, (2009) used the security-related TAM to understand Radio Frequency Identification (RFID) acceptance, which identified apart form security, perceived ease of use and perceived usefulness to affect the choice of RFID.

TAM has enabled most organizations to turn from the traditional approach of making and receiving payments (Malhotra & Singh, 2009). The transition has saved money for such companies even as operating expenses projected to be smaller than conventional

financial operations costs (Ho & Ko, 2008). All the above studies agreed that TAM was a good theoretical model that could be applied to any context of the e-banking technology system, and that is why this study uses it to explain the performance of micro and small businesses (MSEs) (Omillo *et al*., 2018).

Over time, TAM has advanced from the original model and expanded to several models as there has been substantial empirical support in favor of TAM (e.g., Adams *et al*., 1992; Agarwal & Karahanna, 2000; Karahanna, Agarwal, & Angst, 2006; Venkatesh *et al*., 2003, 2007). TAM consistently explains about 40% of the variance in individuals'intention to use an IT and actual usage. TAM 2 included social influence (subjective norm, voluntariness, and image), cognitive instrumental processes (job significance, quality of performance, and demonstrability of outcomes) and experience. The model was tested, and the findings strongly endorsed TAM 2 and clarified 60% of users using this modified version of TAM (Venkatesh & Davis, 2000). TAM 3 by Venkatesh and Bala (2008), included individual differences, system characteristics, social influence, and facilitating conditions and finally the Unified Theory of Acceptance and Use of Technology (UTAUT) which included behaviour expectaions by Venkatesh *et al.* (2016). These models have high explanatory power (R^2) which supports use of the system.

Past tests Pikkarainen *et al*., (2004) show that in several studies, the TAM has been tested and that its ability to clarify the attitude towards the use of IT is stronger than other models. The TAM has therefore been used by numerous researchers to forecast the attitude of customers towards e banking (Arunkumar 2008; Dahlberg 2006; Laforet & Li 2005; Walker & Johnson 2005; Gu, Lee & Suh 2009; Maduku & Mpinganjira 2012).

Although the TAM's suitability to describe user acceptance of different IT systems is pre-dominantly supported in the literature, Moon and Kim (2001) note that the basic constructs of the TAM do not completely reflect the influences of technical and context variables that may alter the acceptance of users. Furthermore, TAM has been geared towards its bias towards the technological / technical dimensions of the technology in question while ignoring other factors, such as the social dimension of users. Although, the Technology Acceptance Model (TAM) has achieved wide acceptance, it neglects to focus on user satisfaction. In practice, constraints such as restricted ability, time, environmental or organizational limitations and implicit behaviors hinder freedom of action. Therefore, Agarwal et al. (2009) recommends the intergration of this theory with other IT approaches that include idiosyncratic characteristics of decision-makers. The theory was considered important to the current study as it guides the direct relationship in that the predictor variables e-banking technology characteristics which includes perceived ease of use and perceived usefulness to explain the outcome variable -MSE performance.

2.3.3 Diffusion of Innovation Theory

Rogers (2003) developed the Diffusion of Innovation theory. The theory offers quantitative methods, for determining technology rate of diffusion in the performance of MSEs. Accordingly, there are four factors that affect the acceptance of innovation, namely: innovation itself, the means of communication used to disseminate knowledge on innovation, time and the essence of the culture to which this innovation has been implemented (Rogers, 2003).

This theory is based on five distinct stages. Nutley, Davies, & Walter (2002) identify knowledge as the first stage where potential adopters have the information about the

innovation. Second, they are persuaded concerning the advantages of this innovation. Third, they decide to take innovation on board. Fourth, once the innovation is accepted, they put it into practice. Fifth, they maintain that their decision to adopt was the right decision. Diffusion occurs after these stages have been completed, thus influencing system use (Rogers, 1995). Completion of these stages is a clear indication of a satisfied individual that a certain technology meets his/her expectations. This is demonstrated through adoption of the system which influence performance.

The theory further proposes that adoption of technology is influenced by several factors which include: relative advantage (the degree to which the technology improves on existing tools), usability (consistency with current standards and requirements for its users), sophistication (facility of use), testability (the probability of testing the innovation before deciding to use it), and observability (the degree to which the results have been achieved) (Rogers & Singhal, 2003). These factors inherently determine the rate of adoption which in turn leads to MSE performance. The theory holds that in the beginning acceptance of an innovation slowly and continously develops, it then grows rapidly and stabilize in the long run (Rogers, 1995). This is an indication that as e-banking technology is adopted, MSE performance is enhanced.

DOI theory has been used and supported in several studies. Moore & Benbasat, (1991) built on the work of Rogers (1995), among others like Brancheau & Wetherbe, (1990); Tornatzky & Klein, (1982) and extended to seven the attributes of adoption of technology which includes Image and the voluntariness.

Similarly, Johannessen, (2009) underlines the fundamental factors that influence diffusion rate of an innovation as gaining a competitive advantage, minimizing costs and safeguarding the organization's strategic place. Furthermore, organizational

structure, the number of past adopters and entrance into the new company may also influence the adoption of a particular innovation (Gatignon, Tushman, Smith, & Anderson, 2002). In the 1990s and beyond, technology has often been noted as the main component of the formulae for performance, productivity and profitability. It is also the key factor driving change for the future in all sectors of the economy (Bednar *et al.*, 2007).

Although many scholars have supported DOI theory, it is noted that there is a possibility that people might refuse to accept an innovation even if they understand it (Waterman *et al.*, 2007). Similarly, the theory gives insufficient consideration to innovation characteristics and how these characteristics change over time (Wolfe, 1994). As indicated by Kole, (2000), the theory is technology driven, hence it is pro-innovation biased. This implies that innovations will be accepted by all members of the social system and embraced more rapidly. Kole, (2000) further demonstrates that: 1) DOI does not consider the fact that diffusion and adoption might fail since it was an impractical notion in the first place; 2) That it mixes state-of-the-art technology with innovation without contemplating alternatives, and 3) that it focuses on the person embracing and thus missing social structures.

Nutley et al. (2002) point to the essence of the use of knowledge in the dissemination of inventions, which further complicates by comparing direct implementation versus re-invention. Lundblad (2003) identifies a few gaps in diffusion of innovation where organizations are described as a social system, yet there may also be other social systems within organisations, such as divisions or teams. However, specific problems and aspects of divisions or teams within a larger organizational framework are not

discussed in terms of how these distinctions can impact the implementation of innovation and how it can affect performance.

The theory specifically begins to depict the process of innovative decision-making within organisations. However, not to the degree that it discusses how and when an innovation's characteristics interact in order to impact its adoption within organizations or where the type, scale or industry of the organization influences its adoption. Furthermore, although the process of innovation-decision is described for individuals and organizations, there is no clarification as to how the factors interact when innovations are distributed through organizations (Lundblad, 2003). In this study, this theory helped to highlight the e-banking technology adoption demonstrated through continuous usage, satisfaction and how it affects MSE performance.

2.3.4 Entrepreneur Innovation Theory

The Entrepreneur Innovation theory was suggested by Schumpeter, (1949); Schumpeter (2005). According to this theory, entrepreneurs help in the process of ecomomic development; they are the people who innovate, create and present the innovations to a given network. Schumpeter (2005) further assumes that innovation occurs when an entrepreneur launches a new product or service, a new manufacturing process, a new market, a new source of raw materials and a new business. The theory explains why enterprises come up with new ideas which affect their performance.

Hence, MSE performance can be realized through using resources differently, such as developing new goods, new methods of production, discovering new sources of raw materials, and establishing a new market standard that shifts the balance of the economic system (Schumpeter, 2005).

Scumpeter assertion is supported by Drucker (2014) that resources that include innovation and entrepreneurial behaviour are the keys to the survival of an enterprise. Innovative behaviour determines customer satisfaction through the development of new values and the accumulation of existing materials and resources in a new and profitable way. According to Schumpeter (2013), innovative behaviour entails developing new goods with more consumer benefits, innovative manufacturing processes, discovering new markets, finding new sources of supply of raw materials and changing current business structures through innovation leading to revolutionary changes in the industry.

Entrepreneurship theory of innovation has been supported in various studies. Miller, (2011); Soininen, Puumalainen, Sjögrén, Syrjä, & Durst, (2013) have affirmed that innovative behaviour determines performance of enterprises. Innovative behaviour determines support for novelty, innovative concepts, creativity and creative process that would result in an improved product, service or technical method. Innovative behaviour facilitates the quicker distribution and accelerated inclusion of information in market prices (Mosongo *et al*., 2013). It involves searching for opportunities and looking forward to the prospect of introducing new products , processes and services to competitors in order to predict needs, preferences and demands (Baird & Thomas, 1985; Lumpkin & Dess, 1996; Soininen *et al*., 2013). Hafeez *et al*., (2013) findings are consistent with this theory, as they found innovation to be positively linked to business performance after carrying a study on SMEs in Pakistan. In addition, a study by Atandi and Bwisa (2013) showed strong relationship linking new technology and business performance.

This theory was important to the current study since MSEs are characterized by intense competition among firms operating in more benign competitive settings and tend to

manifest innovative behaviour which affect their performance. The study thus used new products or services, new methods and new processes as having a relationship with performance of MSEs.

Given the numerous literature supporting entrepreneur theory of innovation, Esbach (2009) noted that this theory stresses innovation but ignores an entrepreneur's ability to take risks and organize. Furthermore, the entrepreneurs of Schumpeter were, essentially, large-scale entrepreneurs who are popular in developed countries. Because of the costs associated with innovation, the types of entrepreneurs typically found in emergerging economies are those who need to emulate rather than innovate to thrive within an industry Schumpeter (2005).

In this study the theory is used to show that the greater the match between innovative behaviour and new technologies such as e-banking systen and other new aspects of financial markets, the more likely it is that the MSE performance will be enhanced (Schumpeter, 2008). Given the literature cited above, the study uses this theory to examine the relationship between innovative behaviour and MSE performance.

2.4 Empirical Literature Review

2.4.1 E-banking Technology Characteristics and Performance of MSEs

Several extant studies on e-banking technology characteristics have cited a number of characteristics affecting the performance of MSEs. These characteristics include perceived ease of use, perceived usefulness, image, as indicated by Rogers, (2003) and vankatesh (2003). Strategically, investments in e-banking technology is strongly influenced by the focus such as cost reduction while striving to add value to an organization (Levy *et al.*, 2001).

Isaac, Abdullah, Ramayah, Mutahar, and Alrajawy (2018) study on Integrating User Satisfaction and Performance Impact with Technology Acceptance Model (TAM) in Yemen. The authors using a multivariate analysis demonstrated that perceived ease of use and perceived usefulness had a strong positive impact on performance impact. The proposed model explained 65% of the variance in performance impact. From the study, perceived ease of use is an element of e-banking technology characteristics which determines the usage of a sysem with very little mental effort. Another element is perceived usefulness which reflects desirable attributes of the system that are superior to the preceeding system. The two elements e-banking technology characteristics which cannot be ignored in influencing MSE performance through continuous usage of the e-banking system. E-banking technology characteristics gives an enterprise a wide range of possibilities for improving their competitiveness such as provide mechanism for getting access to new market opportunities which affects the overall performance (Giovanni and Mano 2003).

The importance of e-banking technology characteristics is highlighted by Isaac et al. (2018) study that examined the affect of internet usage on employee performance within government institutions. This study extended the technology acceptance model (TAM) with one antecedent variable to internet self-efficacy and one output variable (performance impact) and proposed a second-order model performance impact which contains three first-order constructs (knowledge acquisition, communication quality, and decision quality) in order to increase the power of explaining the output. A survey of 530 internet users among employees within government ministries demonstrated that perceived ease of use and perceived usefulness positively influences performance impact. The proposed model explained 60% of the variance in performance impact. It is based on their recommendations for further studies in line with these interesting

results that this study sought to determine the effect of e-banking technology characteristics (perceived ease of use and perceived usefulness), e-banking technology adoption and innovative behaviour on MSE performance in Kenya.

The argument is also supported by Liping Liu (2006) who extended the technology acceptance model (TAM) by examining its influence on perceived system performance (PSP). Perceived ease of use had a positive and significant effect on perceived system performance which explained 46% of the variation in ease of use, a 50% improvement over our current understanding of ease of use while using only one predictor. Perceived ease of use and was found to be the most important determinants of behavioral intention to use e-banking technology which in turn affects MSE performance. Other factors such as perceived confidence, trailability and perceived risk also had a major impact on behavioural intention to use a system which affected system performance.

According to Selvanathan, Tan, Bow, and Supramaniam (2016), cost effects, customer experience, ease of use and trust have an effect on online banking adoption which in turn affects perfoamnce. According to the results, customers' trust and experience had a significant relationship towards the adoption of online banking. However, costs and ease of use in this study were found to be insignificant. The results gave bank providers important information when designing a mass-oriented or user-friendly internet banking system that would attract people to adopt online banking and hence improve their performance.

From a study of Ali *et al*., (2018) on cloud computing as an element of technology has an effect on student academic performance through personal characteristics and knowledge management. Using survey approach, the present study recruited 322 universities students who were well aware of using cloud-based services (G-mail, G-

drive, and WhatsApp). The authors identified knowledge management dimensions and individual characteristics that affected cloud computing adoption and students' academic performance by integrating the TAM. Perceived-enjoyment, perceived-usefulness and perceived-ease-of-use had a significant influence on academic performance. All predictors of research explained 64% variation in criterion construct (i.e., Academic performance). The findings are supported by Al-Sharafi, Arshah, Herzallah, and Alajmi (2017) that confidence increased if online banking was considered useful by users and thus it was a predictor of intention to embrace and use online banking. Additionally, the impact of perceived usefulness and the intention to use online banking services was partially mediated by perceived trust.

Another study done by Kones (2014) on factors affecting the use of mobile banking by small and medium-sized enterprises in Nakuru Central Business District, Kenya, revealed that awareness, protection, perceived cost, perceived trust and information communication technology had a positive and significant impact on the use of mobile banking which affected the performance of these enterprises. The authors asserts that security was one of the key factors affecting the use of mobile banking, followed by perceived usefulness and perceived ease of use.

According to Chong and Syarifuddin (2010) factors such as perceived usefulness, perceived ease of use, trust and government support determines the adoption of online banking services. According to the report, factors that emphasized the use of online banking services included perceived usefulness, trust and government support, which had a significant impact, while user-friendliness was found to be negligible in terms of the technology acceptance model. It was recommended that banks establish new directions as well as good strategies, and also enhance privacy and protection, thus

helping to create trust in online banking services. The government was also advised to play a major role in rising the adoption of online banking services which help in growth of the economy. According to Safeena, Date, and Kammani (2011) perceived usefulness, perceived ease of use and perceived risk are the most important factors for online banking which determines perfornace of an institution, and further can help to formulate a strategic plan. The researchers proposed a longitudinal study in the future to help define the research model in various periods of time and allow comparisons and thus provide further insight into the trend of online banking services.

A study by Herzallah and Mukhtar (2016) on the effect of perceived uselfness, ease of use and trust on the adoption of e-commerce services in small and medium-sized enterprises (SMEs) in Palestine, revealed that perceived trust and perceived usefulness had a positive and significant effect on the behavioral intention of the participating managers to embrace e-commerce services. The perception of the SME owner/manager, including their perceived ease of use, significantly impacted their perceived trust in using e-commerce services. Moreover, the perceived ease of use had a significant effect on perceived usefulness.

This is also echoed by Hamid, Razak, Bakar, and Abdullah (2016) who investigated the relationships between perceived usefulness and perceived ease of use on the continued intention to use e-government and its impact on performance. Perceived usefulness and ease of use were positively linked to the continued intention to use e-government which improved performance of these institutions. This explained a total variance of 56 per cent. In Sweden, Kallin et al., (2017) built a clearer understanding of what consumers have been calling for with respect to e-banking technology and how the mindset of managers had influenced the process of technical adaptation which affected

performance of SMEs within the retail business in Jonkoping. Demand for e-commerce such as mobile payments and online banking from customers had increased which improved performance of these retail businesses. The relationship between the attitude of managers towards new technology and the implementation process was found to be positive which improved performance. Therefore, it calls for SME managers to invest equally in knowledge and technology to adapt to these technological changes which will enhance their performance.

The above argument is supported by Rajanna (2018) who argued that knowledge, digital literacy, sound technology and the rate of consumer engagement in e-banking have a strong relationship with e-transaction which in turn determines their performance. Furthermore, the authors revealed that most of the consumers are aware and agreed that e-transactions would help combat black money, corruption and reduce the risk of cash carrying, as well as faster economic growth. Acar *et al.*, (2005), while studying use of online services by SMEs in Turkish building construction sector found that online services had an impact on construction performance as it was perceived by building contractors.

This perspective is supported by Yaghoubi and Bahmani (2010) whose findings showed that the willingness to use the Internet banking service was strongly affected and motivated by perceived behavioral regulation and perceived usefulness. This finding demonstrated that convergence of the TAM and TPB models had reinforced their robustness towards online banking adoption which in turn affected their performance.

Nasri (2011) points out that the use of internet banking is highly persuaded by factors such as risk, convenience, security, usefulnass and ease of use of the Internet which influences performance. The author indicated that information was the only factor that

did not that show an impact on online banking while demographic factors did however have a significant impact on the behavior of using internet banking which further affected the performance.

The argument is also supported by Ebeiyamba Oluchukwu (2014) who examined the impact of e-banking policy on micro and small businesses in Nigeria. The authors aimed to determine the potential impact of e-banking economy on micro and small businesses in Nigeria. Authors, therefore, examined existing literature on the definition of an e-banking society and its effect on micro and small businesses. Necessary measures if are not put in place and the necessary measures taken along with considerations on how the e-banking policy might affect MSEs, then e-banking policy would adversely affect micro and small-scale enterprises and engineer their failures. In embracing technology, the authors further proposed a full empowerment and education strategy in order to enable ease of use which would enable working effectively. Okoye and Ezejiofor (2013) postulates that perceived usefulness of e-banking system enhances countrys' growth. In addition, the authors showed that most cunsumers are already aware of the e-banking policy and a majority agree that the policy would help combat corruption/money laundering and reduce the risk of cash carrying.

Nyoni and Bonga (2017) study on the factors that enabled transition to e-banking technologywhich unveiled the consequences of using an e-banking system. The authors made some policy recommendations intended to improve the operation of e-banking economy. They identified perceived ease of use and perceived usefulness as the main factors that enabled transition to e-banking technology. The study findings further showed e-banking as an opportunity rather than a challenge; although it was brought up by the works of the invisible hand to counter the cash crisis that plagued Zimbabwe's

economy. The economy would be financially advanced and business transactions would be smoothed out by increasing the use of electronic payment systems and increasing financial literacy to sectors lagging behind including the general population which would affect the growth of the economy.

Rumanyika and Mashenene (2014) evaluated the impediment to embrace e-commerce among small and medium-sized enterprises in Tanzania. Past literature had been reviewed and used to identify impediments for the use of e-commerce among SMEs. Findings from the study indicated that lack of IT education and training, poor telecommunications infrastructure and poor e-commerce security systems were impediments to SMEs' adoption of e-commerce. In addition, weak e-commerce, social cultural values and lack of IT experts have been found to hinder the adoption of e-commerce among small and medium-sized enterprises. In addition, the study recommended that policy makers to remove the impediments that affects the use of e-commerce among small and medium-sized enterprises in Tanzania and therefore there is need for integrated efforts and strategies to address them. This implied that once this SME's went through training, they would perceive e-commerce as useful and will be able to operate with ease due to proper training that affects usage which in turn it affects performance.

In another study Nyaga (2017) asserts that present awareness and multiple mobile money services determines the growth of small and medium-sized enterprises through increased sales or savings and the accessibility of loans. The authors showed that mobile money had made a major contribution to the SME market, as most traders depended on it for their day-to-day transactions, as opposed to the traditional banking method. It was also evident that all the SME owners had a good understanding of the

basic functions of mobile money services, and thus mobile money services had a positive effect on profits and overall performance of their enterprises.

The above argument is supported by Simiyu and Oloko (2015) who points out the effect of mobile money transfers on the growth of small and medium-sized enterprises. Looking at the awareness of the respondents regarding mobile money services, the findings showed that most of the respondents (78%) were optimistic, suggesting widespread local awareness of mobile money services. In addition, the study results identified perceived ease of use and perceived usefulness to influence the growth of small and medium enterprises. In addition, the authors pointed on the most widely used enquiry by the mobile service provider as Safaricom M-Pesa followed by Airtel Money.

In this digital era, e-banking technology can be utilized in any sector of the economy. The implementation of e-payment system in counties has enabled payment of parking fees and application of licenses to be faster. This proposition is backed by Drew (2003) who pointed out that industry changes, trends and opportunities for growth are some of the key driving forces pushing MSEs towards e-banking technology. According to Nguyen, (2009) MSEs who manifest adaptable and flexible culture have a higher propensity to accept e-banking technology related changes.

 A study by KIMARU (2019) showed that user participation, usefulness, ease of use, compatibility and training were the most critical factors that needed to be addressed during the implementation of the e-payment fare system in the public transport which is part of the MSE sector. An e-banking technology system in MSE sector can help MSE owners to have a competitive edge by improving their performance. There is need to provide MSEs with training which would help them in understanding the benefits of a new technology and hence it beomes ease in implementing the new technology (Love

et al., 2001). This is because research indicates that individuals having higher level of education are generally more aware of technology benefits; suggesting better possibility of embracing technology (Pavic *et al.*, 2007). E-banking technology characteristics is regarded as a crucial resource required in the operations of enterprises (Bhagwat & Sharma, 2007) and hence result in improved overall performance of MSEs (Gaith *et al.*, 2009). This therefore implies that e-banking technology characteristics (perceived ease and perceived usefulness) has an influence on MSE performance.

2.4.2 E-banking Technology Adoption and Performance of MSEs

E-banking technology adoption has created a great interest in area of academic research. A study by Riemenschneider *et al.*, (2003) on technology adoption decision in small and medium enterprises showed that satisfactory outcomes to organization are significant contributory factor to the decision process of web site adoption. Similarly, Ozturan and Kutlu, (2010) highlights technology as an important factor for the competitiveness of MSEs in different ways. Benefits of e-banking technology can include increased efficiency and management effectiveness which can lead to improved business performance (Fink, 1998).

A study by Chuwa (2015) showed that age, income , educational level, occupation and demographic factors linked to the adoption of internet banking which determines the performance of an enterprise. Psychological factors, including perceived ease of use, perceived complexity, perceived cost, perceived usefulness and perceived risk, influences internet banking adoption. However, Social forces, including the views of peers , parents and colleagues, have been described as insignificant factors that affected the use of internet banking. E-banking services increases the satisfaction and retention

of customers and reduces the operating cost which enhances performance of enterprises (Polatoglu, & Ekin, S. 2001).

E-banking technology can be used in enterprises to cut costs, create relationships with customers, customer loyalty and retention, innovate and facilitate niche marketing (Fuller 1996). It has also been found that perceived benefits of internet such as market development, efficiency of sale and promotion, ease of accessibility and cost reduction were significant factors on MSEs willingness to accept and adopt new technologies such as electronic banking (Kaynak & Tatoglu, 2005).

The importance of e-banking technology adoption has been recognized and many economies have made great efforts in integrating e-banking technology into their economies as it has been mentioned by Mokaya and Njuguna, (2010). Masocha and Dzomonda (2018) showed that the advantages of mobile money which is an element of e-banking technology and the challenges of conventional financial services have affected the firm adoption of mobile money services. The study concluded that the subsequent adoption of mobile money services has an impact on SME performance. There are several benefits associated with e-banking technology adoption which include; payments to suppliers, receiving payments from customers, bills payments, balance inquiries among others.

This is supported by the findings of Chale and Mbamba (2015) on role of mobile money services in the growth of small and medium-sized enterprises which led to an improvement in sales volume, stock purchasing performance, decreased delivery time, products and services payments, improved saving habits and transfer of money to company growth in terms of market share, income and profitability. Based on technology adoption theories, the authors showed that the growth of small and medium-

sized enterprises was driven by the use of mobile money services in various ways for business purposes, including sales transactions, stock purchasing performance, payment, payment of goods and services, savings and money transfer.

According to InterMedia (2013), mobile money services up-take and use is primarily used by the majority of registered users for business purposes to purchase inventories and collect payments for products and services. The authors also indicated that there was no difference between rural, urban and peri-urban registered users in the way they used mobile money services for business. Inaddition, mobile money uptake had an effect on business growth.

This is also echoed by Tumaini (2016) who examined the effect of mobile money services on performance of MSMEs. The authors identified sales, stock purchases, and service payments through mobile money services having a positive impact on the performance of MSMEs. In addition, the study found that saving and earning credits while enjoying mobile use had a positive effect on the performance of MSMEs. Furthermore, findings revealed that trust and safety had a negative, insignificant impact on MSME development. The study concluded that mobile money adoption had an important influence on MSME performance in rural areas. In support of the above findings, Igudia (2017) identified safety and security concerns in an environment characterized by relative high levels of criminality to have encouraged e-payment adoption. The author identified safety and security to be major factors that encouraged use of e-payment. Other factors included ease, convenience, monitoring and speed of doing business.

Higgins, Xiao, and Katsipataki (2012) argues that owners of small and medium-sized businesses have a higher volumes of both mobile money exchange transactions as they

use mobile money to raise payments, pay bills, wages, or service providers. Findings further shows that 861 (99.5 per cent) of the 865 SME owners who responded used mobile money services in their personal transactions and 67 per cent used them for business transactions which is an indication that SMEs were satisfied with the mobile services and hence improved performance. Mobile money was therefore found to influence SME performance.

Kiwanuka and Machethe (2016) identifies the key drivers of innovation in adopting e-banking practices as innovation for convenience, user-friendly innovation, protection innovation and reliability innovation. Financial institutions are advised to perform audits with the above-described technologies as key benchmarks on their e-banking products and services. Furthermore, the results recommends that financial institutions ensure that they concentrate on strategy and implementation mechanics on enhancing convenience innovation, user-friendly innovation, health innovation, and reliability innovation which would in turn affects performance of their enterprises.

This is also supported by Nthenya (2014) whose findings on the effect of cell phone money transfer services on the financial output of small and medium-sized enterprises highlighted adoption-based mobile phone money transfer was low and thus had low financial performance impacts on SMEs. Lucey, (2005) argues that MSEs within the developing countries have been slow to adopt e-banking technology as they face major constraints such as poor telecommunication infrastructure, limited literacy, inability to integrate e-banking system into enterprise processes, high costs of IT equipment, incomplete government regulations for e-commerce, and a poor understanding of the dynamics in MSE sector.

Makee, Willy, and Atandi (2014) assert that mobile phone applications have an influence on performance of micro and small businesses. Mobile phone apps are the most commonly used with 46 (65.7 percent) of those surveyed admitting to using them in their business, 2 (2.9 percent) of those surveyed said they were using Agent banking, while 3(3.1 percent) were using M-banking; 9 (12.9 percent) applied all three technologies. The authors indicated that the advances in mobile telephone transfer services had an impact on enterprise success. Of the 66.3 percent of the businesses surveyed, it did mean that they helped attract more clients, contributing to more company profits, as technologies were being used. In addition, 69.4 per cent suggested that inventions saved time and money, while 59.2 per cent noted that inventions added to their income and that the more they invested in them, the more income they generated in their companies which affected performance of their enterprises.

According to Simiyu and Oloko (2015), mobile money transfers have an effect on the growth of small and medium-sized enterprises. In this case, majority of traders rely on mobile money for their daily transactions, as opposed to the formal banking system, which makes a significant contribution to the MSE industry. Mobile money transaction costs, convenience and financial usability in terms of the conceptual context have all been shown to have an impact on MSE growth through a service leading to increased enrolment in mobile money services, increased financial transactions resulting in increased sales and thus a perceptible contribution to business growth. Ritches and Brindley (2005) confirm the positive effect of e-banking technology adoption on enterprise performance in terms of productivity, profitability, market value and market share. The authors identify further some effect in terms of intermediate performance measures, such as process efficiency, service quality, cost savings, organization and process flexibility and customer satisfaction (Irefin *et al.*, 2012). Entrprises are

engaging several strategies so as to remain competitive, grow, adapt to a dynamic and hostile environment and innovative abilities have forced MSEs to adopt e-banking technologies (Drew, 2003; Mole *et al.*, 2004; Nguyen, 2009; Premkumar, 2003; Riemenschneider *et al.*, 2003; Ongori & Migiro, 2011). Small enterprises are susceptible to customer pressure, they adopt e-banking technologies in order to meet the customer demands aimed at enhancing efficiencies of their operations (Levy *et al.*, 2003). Based on the above discussion we conclude that e-banking technology adoption has a significant effect on MSE performance.

In the IT literature, proponents of information technology integration (e.g., Bharadwaj, 2000; Tippins and Sohi, 2003) apply the DOI to question the value of adopting technology without regard for firm performance. They argue that the relationship between technology, such as e-business adoption, and firm performance depends on the technology being driven by the processes, systems and values that are embedded in market oriented systems.

There is scarce literature in this field that has used e-banking technology adoption as a mediator. A study by Voola *et al*., (2012) used e-business adoption as a mediator on the relationship between market orientation and performance of which their findings were supported. Their results indicated that e-business doption partially mediates the effects of Market Orientaion and Technological Opportunism and firm performance. E-business has been argued by Wu *et al*., (2003) to mediate the effects of customer orientation on performance. McNaughton *et al*., (2002) argue that mediating variables are key and provides the basis for devising a strategy that creates value for customers, and that such a strategy provides the foundation for a sustainable competitive

advantage. It is argued that e-banking technology characteristics create and shape a firm's e-business adoption strategy, which, in turn, influences firm performance.

Another study by Raut *et al*., (2018) used Cloud computing adoption as a mediating variable to measure the business performance of Indian industries. The results showed that Technology Innovation (TI) and Usage of Technology (UT) positively mediates the relationship Organizational variable 'Industry Usage (IU)' negatively mediates the relationship and Environmental variables 'Management Style (MS)' positively mediates the relationship whereas 'Trust (T)' has no mediation effect. The 'Risk' factors 'Risk Analysis (RA)' positively influences the mediation process and 'Perceived IT Security Risk (PITR)' has no mediation effect on the dependent variable 'Business performance (BP). This implies that understanding the needs of customers allows firms to adopt e-business technologies strategically which then results in competitive advantage.

This causal chain implies an indirect link between e-banking technology characteristics and firm performance in that e-banking technology characteristics may improve firm performance partly because it increases e-business adoption, which, in turn, increases firm performance. The assumption behind this argument is that e-banking technology adoption can improve the relationship between e-banking technology characteristics and MSE performance.

2.4.3 Innovative Behaviour and Performance of MSEs

An empirical research has found that highly innovative individuals are more likely to look for stimulating experiences and have more confidence in their competence which affects their performance (Thatcher and Perrewe 2002). Innovative behaviour will fast track the process of using the technology to improve performance (Thong & Yap, 1995). Omri, Daly, Rault, and Chaibi (2015) analyzed the relationship between

innovative behavior and firm output in order to determine empirically whether the innovative activities of managers had a direct or indirect effect on the firm results through innovative production. This research was carried out through an empirical study which tested the conceptual model of a multi-industry sample of small and medium-sized enterprises in Tunisia. The findings showed that innovative behavior had an effect on innovation production and thus had a positive and significant impact on business success. Innovative actions also had a direct effect on the success of the business, which was found to be positive but weakly significant. Owing to the high competitive business conditions, all positive relationships begin to decline as these conditions increased. Innovative behaviour brings about reduced costs (Ahuja et al., 2009), decline in production and labour costs (Nguyen, 2009), enhanced process and organization flexibility (Ghobakhloo *et al.*, 2011).

A study by Olughor (2015) on innovation impact on market efficiency in Nigeria's small and medium-sized enterprises (SMEs), indicated a high correlation between factors that were used to measure innovation. Innovation however, was found to affect market efficiency. Innovation also leads to discovery of new business opportunities (Tan *et al.*, 2009), and enhancement of competitive advantage and placement of business in the market (Carbonara, 2005; Lai *et al.*, 2006; Pavic *et al.*, 2007).

In another study, which centred on how innovation contributes to educational and learning viability, (Morrone, Gosney, & Engel, 2012) revealed that iPads have been found to improve student participation by offering innovative and creative learning experiences, despite the attempts of both students and instructors to adapt technology which affected their results. In view of the fact that this study highlighted challenges for staff and undergraduates in their work on how to operate with new technology, the

changes found included the working relationship between staff and undergraduates currently involved and improved the enthusiasm and inventiveness of undergraduate study. In addition, this study benefited from enhanced student participation, opportunities to develop different kinds of learning experiences and events, and the opportunity to extend learning opportunities beyond the classroom that had been defined as the most important for the research. Innovation aspect of new products and services are the motivating factors that encouraged use of modern technologies which in turn influenced performance.

Terziovski (2010) asserts that innovation practices have affected SME performance in Australia. After investigating 600 firms in the manufacturing sector, the findings of the study showed that innovation strategy was the key driver of SME performance, which did not appear to be strategically and structurally implementing innovation culture. The study recommended that the performance of small and medium-sized companies would likely improve if they increased the degree to which they understood that the innovation culture and strategy had been closely aligned in the process.

Another study by Salim and Sulaiman (2011) on the organizational learning, innovation and success of small and medium-sized enterprises identified organizational learning which contributed to the ability to innovate, and innovation positively influenced firm performance. Karimi, Biemans, Lans, Chizari, and Mulder (2016) points to new technology, security and regulatory framework as having a significant influence on SME performance, while operating costs having a negative impact on SME performance. New business operating efficiency, new marketing and sales positively affects SME performance.

A study by Leung, Huang, Su, and Lu (2011) identified perceived support for innovation to have a relationship with innovative performance. In the current study, innovative behaviour is used as a contextual factor, which refers to the perception that MSE performance is as a result of new ideas in the enterprises and e-banking technology characteristics (Scott & Bruce, 1994). This is a well-established construct and has been shown to relate to MSE performance positively (Zhou & George, 2001).

The findings of Leung (2011) on moderating effect of perceived support for innovation on relationships between role stress and innovative performance, showed that when perceived support for innovation was high, role conflict showed a generally positive relationship with both self-rated and supervisor-rated innovative performance. Lastly, Rhokeun Park (2014) on looking at the moderating role of innovation on the relationship between group incentives and financial performance, revealed that the relationships of group incentives with organisational commitment and financial performance are stronger in more innovative companies than in less innovative companies. The choice of this well-researched variable as the moderator provides us with a firm theoretical basis to generate predictions about its effects and connect the findings to a well established literature. From the aforementioned discussion, we conclude that innovative behaviour has a positive and significant effect on MSE performance.

2.4.4 E-banking Technology Characteristics and E-Banking Technology Adoption

Davis (1989) argues that the characteristics of e-banking technology have produced positive results with respect to important adoption relationships. Past research has found that the relative benefit of an invention was linked positively to the acceptance rate (Rogers, 2003). Research further indicates that when people consider the value of

a new technology over an old one, they prefer to embrace it while advantages such as immediacy, usability and affordability for customers influenced adoption in the context of mobile banking (Lin, 2011). Mingle and Dzandu (2013) assert that e-banking technology characteristics can be used to improve decision making, to promote information exchange among customers and to enhance the performance in enterprises.

The study is supported by Karjaluoto, Koenig-Lewis, Palmer, and Moll (2010) who did a study on the factors that influenced the continued use of M-banking services by young people in England. The study aimed to document barriers to the adoption of M-banking. Their findings showed that usability, perceived utility and risk were important factors that influenced e-banking adoption. Compatibility had a strong positive impact on e-banking adoption. Compatibility was also identified as one of the most significant independent variables affecting perceived user-friendliness, perceived usefulness and credibility. Trust and credibility variables have been identified as having a significant impact on minimizing the perceived overall risk. Irefin *et al.*, (2012), identified lack of skills and knowledge as one of the major challenges facing MSE performance According to Dutta *et al.*, (2003) challenges that affect the adoption of technology include legal and regulatory issues, weak strategies, lack of research and development, excessive reliance on foreign technology and ongoing weaknesses in IT implementation.

Subsequently, Hanafizadeh & Khedmatgozar, (2012) investigated whether bank customers were aware of the Internet Banking (IB) services and benefits. The authors indicated that the awareness of internert banking was a dominant factor that exceeded all dimensions of perceived risk including time, social and security. Other dimensions of the perceived risk, with the exception of social risk, had a significant negative effect

on the IB adoption intention. Nguyen, (2009) highlights the importance of MSEs considering the appropriate application for their business when deciding whether or not to implement new technologies. Similarly, there is need to single out high costs of technological infrastructure which include tools, software and security concerns as the major barriers of e-banking technology adoption (Tan *et. al.*, 2009). These findings are consistent with a study by Love *et al.*, (2005), which revealed that risks, security and its consequences could negatively impact organizational profitability and survival. Most consumers of e-banking technologies feel sense of insecurity and vulnerability on Internet transactions due to information loss and digital espionage as the main concerns hindering adoption (Tan *et. al.*, 2009). According to Love *et al.*, (2005), risk refers to exposure to such outcomes as failure to achieve some, or all, of the anticipated benefits as a result of implementation costs being higher than expected; technical systems performance significantly below the estimate; incompatibility of the system with selected hardware and software.

A study done by Afshan & Sharif (2016) who assessed the level of acceptance of mobile banking in Pakistan with the goal of exploring the untapped aspects of accepting mobile banking by adopting a more systematic approach to addressing the acceptance of mobile banking. Authors of the study revealed an important contribution of task (TAC) and technology characteristics (TEC) in facilitating fitting task technology (TTF). Structural assurance (SA) and familiarity with the Bank (FB) also facilitated initial trust. The authors support the significant association of task technology fit (TTF), initial trust (IT) and condition facilitation (FC) with the intention of adopting e-banking. Likewise, Kazi & Mannan (2013) after utilizing the TAM framework and regression technique to study the effect on m-banking intention adoption, identified perceived usefulness, perceived ease of use, social influence and perceived risk as having an

influence on m-banking adoption. The sudy concluded that major effects of all of the variables affected the adoption of e-banking by users in Pakistan.

According to Rauf, Rauf, Mehmood, and Kamboh (2018) e-banking services in banking sector have a competitive edge on the adopter perspective. E-banking technology have brought in new dimensions that have modernized banking sector behaviour. But those dimensions also influence efficiency in the banking sector. The authors developed an integrated model that analyzed the impact of e-banking on the performance in terms of the profit margin of those banks that adopted for less than 5 years, while incorporating the effect of all factors that were crucial to the electronic banking process. The authors showed that the adoption of electronic banking have a positive and significant impact on performance in terms of the margins of the banks that have recently adopted it. The study suggested that e-banking would bring competitive edge for these banks in this era of economic loss not only in Pakistan but also internationally.

Sohail and Al-Jabri (2014) identified relative benefit, sophistication, usability, perceived risk, and trial-ability as having a major impact on the adoption of m-banking. Furthermore, the study singled out perceived risk, usability and trial-ability as the major factors contributing to the decision of Saudi consumer m-banking adoption. In addition, Oliveira, Pedron, Nodari, & Ribeiro, (2014) used three unified theory of acceptance and use of technology (UTAUT), task technology fit (TTF) and (ITM) information system theories to test their effect on behavioral intention to adopt mobile banking. The authors suggested that initial confidence, performance goals, system characteristics and task technology fit had an impact on behavioral intention. Furthermore, circumstances and purpose facilitation had a substantial contribution to the adoption of m-banking. The

usefulness of integrating UTAUT, TTF and ITM in improving the framework for supporting decision analyzing the acceptance of new technologies came out strongly.

On the contrarily, a study by Cudjoe, Anim, and Nyanyofio (2015) identified the factors that motivated Ghana's adoption of mobile banking as perceived financial cost and credibility in the adoption intentions which outweighed perceived usefulness and ease-of-use. In addition, perceived financial cost and credibility were the main challenges facing the adoption of the mobile banking practices offered by the underlying bank.

Lastly; Bhatiasevi and Yoopetch (2015) utilized the Extended Framework of Unified Theory of Acceptance and Use of M-Banking Technology. The study incorporated perceived cost, perceived convenience and perceived credibility within the existing UTAUT framework. The findings concluded that expected performance, expected effort, social influence, perceived credibility and perceived convenience had a significant positive effect on the intentions of people to use m-banking. Literature has provided evidence that e-banking technology characteristics has an effect towards-banking technology adoption. According to Nov and Ye, (2008) perceived ease of use and perceived usefulness has been revealed to be a reliable predictor of users' attitude about the simplicity of use and effectiveness of new technologies. Based on above discussion, we can conclude that e-banking technology characteristics have a positive effect on e-banking technology adoption.

2.4.5 Gender on E-Banking Technology Characteristics and Performance of MSEs

Wegulo (2004) looked into gender issues and their relationship to entrepreneurial actitivities. Findings revealed that women have an important role to play in entrepreneurial activities and over 50% were married and had children who were of

school going age group. Most women found employment opportunities in the MSE sector, given that they had been disadvantaged as a group with regard to wage employment (Alila & Pedersen, 2001). Past studies did not directly link gender to technological adoption in general (Taylor & Todd, 1995). Men and women, however, had diverse rates of acceptance of particular computer technologies, with men bound to adopt faster than women (Gefen & Straub, 1997).

Riquelme, Al-Sammak, and Rios (2010) sought to identify the effect of gender, as a moderator, on the adoption of mobile banking in Singapore. The study sought to establish if gender had a moderating effect on the relationship between the mobile banking factors and internet banking adoption. Results of the study showed that the factors influencing the intention to adopt mobile banking services were perceived usefulness, social norms and social risk, respectively. It was also found that social norms influenced more the adoption of internet banking on female respondents than male respondents.

2.4.6 Age on E-Banking Technology Characteristics and Performance of MSEs

Hisrich and Drnovsek (2002) did a study on the relationship between age and enterprise career procession. Age was found to be important, as noted by most enterprisers who initiated their enterprises between the ages of 22 and 45 years. Further findings indicated that male entrepreneurs started their entrepreneurial careers at the age of 30 years as compared to women who tended to did so in their middle thirties. Other factors included entrepreneurial intensity, experience, health, and entrepreneurs drive had an effect on technology and performance of the enterprise. Younger persons were more likely to adopt technologies, (Karjaluoto, Mattila, & Pento, 2002; Lee & Swaminathan, 2000; Trocchia & Janda, 2000; Zeithaml & Gilly, 1987). Relatedly, the age factor has

further been discussed by Nassiuma, (2011) who indicated that entrepreneurs' age at start-up influenced capital accumulation and optimization of entrepreneurial activities.

2.4.7 Education Level on E-Banking Technology Characteristics and Performance of MSEs

According to CBS; Population, Development, Statistics, & Inc., (1999), the status of the educational levels of entrepreneurs in Kenya showed that entrepreneurs without primary educational level were (10%), (primary (54%), secondary (33%) and higher education level (1.8%). In 2014, the highest educational level in Kenya was secondary while in Uganda the highest educational level was primary (Katongole, Mulira & Ahebwa, 2014). Wickham (2006) identified education level as an important factor for the efficient operation of an enterprise. Accordingly, education provides the necessary skills for decision making in areas like; sources of finance, customers, business opportunity identification, market, competition, production, management skills, and technical skills that are vital for enterprise performance. Education level helps entrepreneurs to cope with the problems confronted in their daily operations (Hisrich & Drnovsek, 2002).

Namusonge (1998) did an assessment on the educational level of the MSEs owners or managers. This cohort was important for the study as they are the people who made critical decision with regard to technology in their enterprises. Study findings indicated that skills and knowledge of entrepreneurs were critical in establishing MSEs and hence significant for enterprise performance. This implied that entrepreneurial skills and knowledge had high effect on e-banking technology adoption as well as MSE performance. Earnings and education advancement was positively related to the adoption of technology (Karjaluoto, Riquelme, & Rios, 2010).

2.5 Chapter Summary and Research Gaps

This chapter looked into related literature on e-banking technology characteristics, e-banking technology adoption, innovative behaviour and performance of MSE in Vihiga County. Several research gaps have been identified from the empirical review and they are as shown below in Table 2.1.

Table 2.1: Summary and Research Gap

Author(s)	Objective	Method	Findings	Gaps
Chuwa (2015)	Factors influencing Small and Medium Enterprises (SMEs) adoption of Internet Banking in Nyamagana District, Mwanza-Tanzania	Questionnaire was used to collect data	Demographic factors including age, income, level of education and employment relate to the adoption of internet banking	Focused on SMEs in Tanzania while this study will focus on SMEs in Kenya. Used simple analysis (percentages) while this study used both simple and advanced analysis tools. There's therefore a contextual and methodological gap
Tumaini (2016)	Effect of mobile money services on growth of MSMEs in Rukwa, Tanzania's Nkasi district	Used cross-section survey to study 100 MSEs	Mobile money services have beneficially affected MSME development	Used binary logistic regression (yes and no questions) while this study used Multiple Linear Regression
Igudia (2017)	Factors that influence the adoption and utilization of electronic payment systems (EPS)	Used qualitative analytical approach	In an world plagued by comparatively high rates of crime, protection and security issues facilitated e-payment adoption	Adopted qualitative analytical approach while this study adopted quantitative data analysis
Masocha and Dzomonda (2018)	Drivers of mobile money services and small and medium enterprise performance	160 SMEs participated in the research	Adopting mobile money services improved efficiency	The research used one type of cashless systems while this research focused on multiple e-banking systems. Therefore, there is a contextual and methodological gaps.
Kiwanuka and Machethe (2016)	Key drivers of innovation in Kenya's e-Banking practices	Adopted qualitative methodology	Convenience innovation, user-friendly innovation, health innovation and reliability innovation are central to driving the adoption of eBanking practices	Adopted qualitative analytical approach while this study adopted quantitative data analysis, thus there is a contextual and methodological gaps.
Yaghoubi and Bahmani (2010)&	Factors affecting the decision to adopt Internet Banking services in Iran's Isfahan province	Analyze through Structure Equation Modeling (SEM)	The Internet banking service 's purpose is strongly affected and motivated by perceived behavioral regulation and perceived usefulness	The research used structure equation model while the current study used hierachial and process macro. Therefore there is a contextual and methodological gaps.
Simiyu and Oloko (2015)	Mobile money transfer influence growth for SMEs	Research was conducted among registered SMEs in Kisumu city	Mobile money transfer services have impacted SME growth	The research was conducted in a urban setting while this will mix both urban and rural settings. The study employed mixed methods approach while the current study employed quantitative methods, thus there is a contextual and methodological gaps.

Source: Researcher (2019)

Another observation from the study is that there is limited empirical evidence on e-banking technology characteristics, e-banking technology adoption, innovative behaviour and MSE performance in Vihiga County, a focus of this research. The introduction of e-banking technology adoption and innovative behaviour as a mediator and moderator, respectively, makes the current study unique. Furthermore, none of the studies reviewed have checked e-banking technology characteristics, e-banking technology adoption, innovative behaviour against MSE performance in Kenya and in particular Vihiga County. This research made efforts to fill the above-mentioned gaps.

2.6 Conceptual Framework

The conceptual framework illustrates the relation between dependent variable, independent variable, mediating and moderating variables. The conceptual framework is based on the theory of constraints as well as review of the literature. It explains not only the relationship between the independent and dependent variables but also the mediation and interaction between them.

As indicated in Figure 2.1, the research looked at e-banking technology characteristics (perceived ease of use and perceived usefulness). The focus was on how e-banking technology characteristics determined MSE performance. The independent variables were assumed to have a linear relationship with the dependent variable; MSE performance of which was determined through MSE profitability. The model also demonstrated the mediating role of e-banking technology adoption in the relationship between e-banking technology characteristics and MSE performance. It also evaluated the moderating effect of innovative behaviour on relationship between e-banking technology characteristics and e-banking technology adoption, e-banking technology adoption and MSE performance. The moderated mediation of innovative behaviour on the relationship between e-banking technology characteristics and MSE performance

through e-banking technology adoption. The control variables were gender, age and education level of MSE owners.
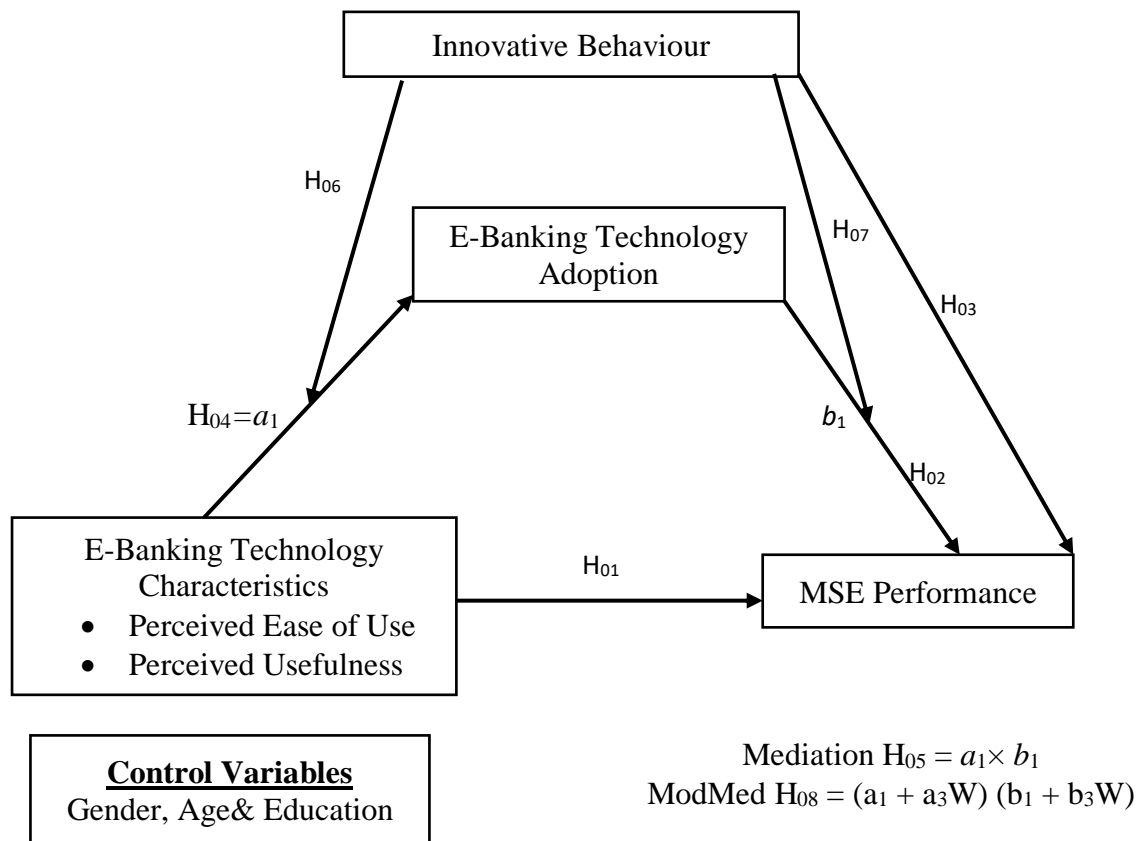
Figure 2.1: Conceptual Framework

Source: Researcher (2019)

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter presents the philosophical assumptions underpinning this research, as well as introduces the research strategy and the empirical techniques applied. It contains the following: research paradigm, research design, study area, target population, sampling design, sample size determination, sampling technique, data collection instruments, data gathering procedure, pilot study, measurement scales, validity and reliability, data analysis and processing, protocol of analysis, model specifications, limitations and ethical consideration.

3.2 Research Paradigm

A research paradigm justifies the approach by which results would be implemented and interpreted (Bryman, 2016). It relates to developing knowledge and the character of that knowledge (Saunders, Lewis, & Thornhill, 2012). studies have indicated that the epistemologies which is the researcher's view regarding what constitutes acceptable knowledge and ontology which is the Researcher's view on the nature of reality chosen to underpin a study must be critically assessed within a research methodology as lack of it can detrimentally impact the quality of research output (Gill & Johnson, 2010; Rutter, 2013). A research philosophy is defined as a belief about the method in which data about a particular phenomenon should be gathered, analyzed and used (Vukojević 2016). According to Rubin and Babbie (2009), the two most predominant philosophies in this area are positivism which means the researcher and reality are separate and interpretivism which means researcher and reality are inseparable. A positivist view of science is seen as a way to identify truths, and if these truths can be understood we may predict outcomes (Rutter, 2013). The basic assumption underlying interpretivism

research philosophy is to uncover meanings and understanding of the issues being studied (Veal, 2005). This paradigm avoids prior assumptions about theory, hypothesis or quantification.

Following Johnson & Duberley (2000) suggestion on the position of management studies, this study followed positivism philosophy. This was because the present research was quantitative and hence would produce facts and accounts that correspond to independent reality. It is value-free and gives priority to observation; a way of explaining causal relationships in both natural and social phenomena (Hollis, 1994). Positivism, being an analytical approach to scientific science, starts with specifics and slowly grows to the most general axioms discovering reality, and rests on observation as the moment of truth when theories are evaluated against worldly facts (Davoudi, 2012). Positivism emphasizes the idea of observation and operationalization of issues that are studied should be measured as the essence of any scientific study, which was the intention of this study.

This study looked at e-banking technology characteristics, e-banking technology adoption, innovative behaviour and MSE performance. The analysis generated information by evaluating objective data using questionnaires as the instrument of collecting primary data (Anderson & Oates, 2010; Muijs, 2010) and the observed data was in a numerical form (Ghauri & Grønhaug, 2010).

According to Cooper & Schindler (2008), positivism is defined by a belief in philosophy before study and theoretical evidence of assumptions based on an empirically testable hypothesis as the foundation of social science concepts and how the social system should be studied as natural science. In this study, the researcher-maintained objectivity hence not influenced by personal opinion and bias. Furthermore

Yilmaz (2013) highlights some key features of positivism as quantitative, uses large samples hence generalizable, hypothesis oriented and has specific data. Deductive logic follows from the particular to the general claims (Creswell & Garrett, 2008). Therefore, the information and statements produced in this study were tested and the results were empirical.

3.3 Research Design

This study was quantitative in approach and adopted explanatory research design. According to Neuman, (2014), the aim of explanatory research design is to understand why things happen and to build, extend, elaborate or test a particular theory. Additionally, Saunders et al (2012) suggest that for a causal relationships between variables to be established, use of explanatory design is appropriate, hence it was adopted in this study. Other scholars also refer to this design as causal research as it determines the extent and nature of cause and effect relationships (Zikmund, Carr, & Griffin, 2013). The design was used to identify any causal links between the factors or variables that pertained to the research question. Data was analyzed quantitatively using descriptive and inferential statistics. The data collected were used to suggest possible reasons for specific relationships between variables and the models produced in those relationships (Saunders & Lewis, 2009).

Therefore, the explanation on why and how there is a relationship between the characteristics of e-banking technology and MSE performance was established using this design. In addition, the statistical analysis of the data showed that the variation in the company's e-banking technology characteristics caused the variation in MSE performance. Mediating role of e-banking technology adoption and moderation of innovative behaviour through e-banking technology adoption represented the indirect

causal link in the relationship between e-banking technology characteristics and MSE performance. The design adopted a cross-sectional survey approach, which was used to gather data from all relevant respondents at one point in time.

The advantage with using this research design is that it performs a significant role in identification of reasons behind a wide range of processes as well as assessing the influence of existing processes. The design is also associated with greater levels of internal validity as a result of systematic selection of respondents. Lastly, it offers advantages of replication if necessity arises (Zikmund *et al.*, 2013).

3.4 Study Area

The study was conducted in Vihiga County in Kenya's western region. To select Vihiga County, random method of sampling was applied using lotery technique. This involved writing the county codes in sheets of paper (47) and mixing the codes thoroughly, after which only one selection was made as representatives of the entire population. Vihiga County covers an area of 563 km^2 and has a population of 554622, according to the National Statistics of 2009. The County has one of the highest population densities in the country of 1,094 people per km^2, compared to the national average of 66 people per km^2 (KNBS, 2014). This study focused on all five sub-counties, namely Hamisi, Emuhaya, Luanda, Vihiga, and Sabatia, all of which traversed the County's urban as well as rural areas and, thus, the information obtained represented the entire population rather than one part of the County.

Crop production in Vihiga County has been found to be the mainstream income earner for both county government and residents with about 64 percent of all county revenue coming from the sector. Maize, beans, sorghum, millet, bananas, sweet potatoes, among others, are the main food crops being cultivated. However, other sectors such as

hospitality, service industries, and light-manufacturing industries are also prevalent in the County's urban centres. Data from the Vihiga Micro and Small Enterprise Authority and County Government showed an increase in the county's number of registered MSEs in the past six years. They attributed the increase to the introduction of devolved government that led to development in various County economy sectors. The researcher was interested in determining how well e-banking technology had been embraced by the MSEs as they conducted business transactions as well as how the use of e-banking had affected their performance. Consequently, this research was of its kind as far as MSEs using e-banking technology in the area was concerned.

3.5 Target Population

Zikmund et al. (2013) define population as an extensive collection of all the subjects from which a sample is taken. Kombo and Tromp (2009) define the target population as a group of persons, objects or items from which samples are taken for measurement. For this study, the target population consisted of micro and small enterprises located in Vihiga County, Kenya. As of December 2018, the list of registered MSEs, obtained from the County Administration in Vihiga County under the Department of Licensing, was indicated as 5,915, which formed the target population of this study. The study population consisted of registered MSEs from sub-counties and owners/managers were the unit of analysis for this study.

Table 3.1: Target Population

Sub-County	Population
Emuhaya	579
Hamisi	1561
Luanda	1176
Sabatia	1234
Vihiga	1365
Total	5915

Source: County Government of Vihiga Registration Database (December 2018)

3.6 Sampling Design

The sample size was determined from all the MSEs that were registered by the County government. A sample size of 455 owners/managers was chosen from a target population of 5915. This was deemed sufficient for an explanatory nature of study, as indicated by Zikmund *et al* (2013) that a sample of 400 to 500 is deemed to be very good for explanatory design. This design included finding an appropriate sample frame, agreeing on an appropriate sample size, choosing the most suitable sampling technique and checking that the sample was representative of the population (Saunders & Lewis, 2012). The study employed multi-stage sampling technique which involved clustering the sub counties. The study further employed proportionate stratified sampling technique to select MSEs who participated in the study.

With reference to Table 3.2 below, the population was split into five clusters representing the five sub-counties in Vihiga County. This entailed dividing the study population into homogenous groups known as clusters. These businesses were stratified under different categories: Transport, Communication, Financial Services, Industrial Plants, Service Contractors and Technical & Professional Services, among others. Proportionate stratified sampling techniques were used to select the respondents in each sub-county as categorized into various sectors of MSE (Kenya, 2005). According to Zikmund et al., (2013), proportionate stratified sampling identifies subgroups in a population into separate heterogeneous subsets which share similar characteristics in order to ensure a fair representation of the population sample. Afterwards, the study selected the owner or manager as the unit of analysis in each of the sampled units while the MSEs were the unit of obervation. The key reason was that decisions relating to IT were considered to often be at the preserve of the two.

For instance, the researcher began by selecting MSEs to participate in study from Emuhaya where, out of the total 579 MSEs, only 44 were selected. Proportionate to each sector, out of 53 MSEs in manufacturing sector, 4 participated in the study. The procedure was repeated for the other three sectors; service, traders and agribusiness for Emuhaya. Thereafter, the researcher proceeded to the second Sub-County until the last one. The advantage of this method was that it allowed the researcher to obtain a sample that best represented the entire population under study (Neuman, 2014). The study further employed simple random technique to select respondents from each strata who participated in the study. To ensure that those who filled the questionnaire were actually the registered MSEs; the researcher requested was obtained from the County Administration in Vihiga County under the Department of Licensing which the researcher used the lottery method to pick the respondents who were issued with the questionnaires. The researcher/research assistants sought the respondents consent in advance before giving them the questionnaire to fill. The questionnaire was handed in after completion but where they were not able to fill-in immediately, were left to be picked later.

Table 3.2: Sampling Frame

	MSE Sectors								
Sub	**Manufacturing**		**Traders**		**Services**		**Agri-business**		**Total**
County	N	n	N	n	N	n	N	n	(n)
Emuhaya	53	4	168	13	107	8	251	19	44
Hamisi	153	12	432	33	355	27	621	48	120
Luanda	160	12	349	27	261	20	406	31	90
Sabatia	123	9	372	29	236	18	503	39	95
Vihiga	143	11	385	30	426	33	411	32	106
Total	**632**	**48**	**1706**	**132**	**1385**	**106**	**2192**	**169**	**455**

Key: N-Target Population, n-Sample Size

Source: County Government of Vihiga (2018)

3.7 Sample Size Determination

Burns & Bush, (2010) avert that a sample size determines how the population correctly reflects the survey results. The larger the sample size in the study, the more likely it is that the generalizations represent exactly the population (Saunders et al., 2012). Properly collected samples make an accurate depiction of the research population while avoiding the prohibitive cost of surveying everyone (Gill & Johnson, 2002). The researcher employed (Yamane, 1967) formula for estimating the sample size. The sample size was estimated on the basis of 5 percent error/precision ratio and 95 percent confidence ratio. The formula is written as below:

$$n = \frac{N}{1 + N(e^2)}$$

Where:

n is the desired sample size

N is the finite population which is 5915 SMEs

e is the margin error/ level of precision taken as 0.045

The formula was thus substituted as:

$$n = \frac{5915}{1 + 5915(0.045^2)} = 455$$

Based on a target population of 5915 enterprises, a sample of 455 enterprises was thus obtained.

3.8 Data and Data Collection Instruments

Data collection includes gathering of information to fit or support facts (Kombo & Tromp, 2009). Primary data was directly obtained from the respondents. The researcher used a standardized questionnaire to collect quantitative information from

owners/managers of MSE. The researchers administered the questionnaires helped by research assistants (2). The aim of employing the research assistants was to speed up the process of collecting data from the Sub-Counties of Vihiga County.

3.9 Data Collection Instrument

Considering this analysis as quantitative in nature, a structured questionnaire was the instrument used for collecting data. A structured questionnaire was developed with a written set of questions, to which respondents reported their answers in a specified order, providing the researcher with data that could be analyzed, interpreted and best suited to obtain standardized data (Sekaran & Bougie, 2010).

Appendix II displays the questionnaire used in the collection of research data. The MSE questionnaire was divided into six sections. Section (A) consisted of questions relating to dependent variable, namely MSE performance. Section B had independent variable questions, namely MSE perceived ease of use, and Section C had concerns regarding the perceived usefluness. Section D had questions on mediating role of e-banking technology adoption by MSE. Section E had questions on moderating effect of innovative behaviour on e-banking technology characteristics, e-banking technology adoption and MSE performance. The last Section F covered the demographic details of the MSEs, which formed the control variables.

Gill and Johnson (2002) argue that the most important aspect is to create a tool that reflects the underlying objectives and hypotheses as there is no best medium for surveys because each instrument has its own distinct advantages and disadvantages. Similarly, Greener (2008) holds that closed-ended questions are intended to check facts or assumptions, validate details and provide responses that qualify the respondent in some way or provide comparable sample data. Although the instrument in this study had

items that had been validated and used before, it was pretested because of modification and the change in context of their use. The respondents who were used for the pretest in Eldoret town did not form part of the actual study process and were only used for pilot testing purposes.

3.9.1 Data Collection Procedure

Quantitative data was collected from the respondents using the questionnaires. The researcher involved research assistants who were recruited and trained to help with the questionnaires being administered to the respondents. The researcher coordinated the process, providing the research assistants with guidance. Before data entry and analysis, all the research instruments were checked for completeness upon completion of data collection. The National Council for Science and Technology issued a research permit allowing the study to be conducted with MSEs.

3.10 Measurement Scales

There was one dependent variable in this analysis, two independent variables, one mediator, one moderator and control variables. The independent variables were the perceived ease of use and perceived usefulness. The mediating variable was adoption of e-banking technology. The moderating variable was innovative behaviour while MSE performance was the dependent variable. All of the four variables were calculated using the Likert scale of five scales. The five-point Likert scale was chosen because it tends to have less complications on the response rate (Bouranta, Chitiris, & Paravantis, 2009). Furthermore, Zikmund et al., (2013) indicates that Likert scales with five-point are more desirable than those that are shorter because they offer more variance, are more sensitive and have a higher degree of measurement and information. In this type of format, the respondents were given five response choices. The responses of the

subjects to the items used to measure each construct. The ratings were assessed on a 5 point likert scale as follows: Strongly Agree (SA), Agree (A), Neutral (N), Disagree (D), and Strongly Disagree (SD). The ratings were averaged and converted into variable indices.

3.10.1 Dependent Variable – MSE Performance

MSE performance was a measurement of the degree of the organizational goal achievement. Profitability was used to measure MSE performance. The profitability factor was calculated using a set of 7 items adopted and amended from Hughes & Morgan (2007) in section A of the questionnaire. Indicators included: "over the last year, my enterprise has generated high sales", "over the last one year, my enterprise has increased the number of employees," among others.

3.10.2 Independent Variable – E-banking Technology Characteristics

E-banking technology dimensions included perceived ease of use and perceived usefulness. Perceived ease of use was measured using 9 items from Wang et al., (2011) with modifications to suit this study shown in section B while perceived usefulness was measured using 9 items shown in section C of the questionnaire. Indicators for perceived ease of use included: "Using electronic banking requires little mental effort", "Learning to operate electronic banking is easy for me," among others.

3.10.3 Mediating Variable – E-Banking Technology Adoption

The e-banking system removes the use of money as a way of exchanging goods and services by making electronic transfer payments possible. The study measured adoption using 9 items adopted from Chong, (2013); Rawashdeh, (2015) shown in section D of the questionnaire. Its constructs included the following: usage and fullfilment. It was

measured using indicators such; "I use e banking to pay my utility bills", "I use e banking to transfer money," among others.

3.10.4 Moderating Variable – Innovative Behaviour

Data on innovative behaviour was generated using a collection of 13 items in questionnaire section E. Innovative behaviour in MSEs involved generation of new ideas and their implementation (Blattman *et al.*, 2014). Its constructs were as follows: uniqueness and new ways of transactions, adopted from Lumpkin & Dess (1996) and modified to fit this study. The measurement were conducted using indicators such as "new methods and services are always worth trying even if they may prove risky"," I involve current and potential customers to identify areas that need improvement," among others.

3.10.5 Control Variables

The study controlled for gender, age and education level of the MSE owner/manager to eliminate their adverse influence on e-banking technology characteristics, e-banking technology adoption, innovative behaviour and MSE performance. Age was measured as: below 25, 26–30, 31–35, 36-40, and over 40 years. Gender was measured using male and female whereas education level was measured as: postgraduate, bachelors, diploma, certificate, secondary, primary and none.

Table 3.3: Summary of Measurement of Variables.

No.	Section in Questionnaire	No. of Items	Level of Measurement	Source(s)
1.	Part A: MSE performance	7	Likert Scale Transformed arithmetically	(Hughes & Morgan, 2007)
2.	Part B: perceived ease of use	9	Likert Scale Transformed arithmetically	Wang (2011)
	Part C: perceived usefulness	9	Likert Scale Transformed arithmetically	Wang (2011)
3.	Part D: e-banking technology adoption	9	Likert Scale Transformed arithmetically	chong (2013); Rawashdeh (2015)
4.	Part E. innovative behaviour	13	Likert Scale Transformed arithmetically	Lumpkin and Dess (1996)

3.11 Reliability and Validity

The findings must be reliable and valid for a research study to be accurate. Therefore, in this study, the following steps were carried out: pilot testing, validity and reliability.

3.11.1 Reliability of the Research Instruments

Reliability is the robustness of the questionnaire, in particular, whether it can yield reliable results at different times and under different conditions (Saunders et al., 2012). To measure consistency within the instrument in this study, Cronbach's alpha was adopted. For a test to be internally consistent, Drost, (2011) suggests that reliability estimates should be based on average inter-correlations between all the individual items in a test. Zikmund et al. (2013) recommend that where Cronbach's Alpha is between 0.80 and 0.95, very good reliability should be considered because it implies very minimal error and therefore the results are replicable. However, according to Uma Sekaran & Roger Bougie (2010), the Alpha value of Cronbach between 0.60 and 0.7 and above is known to be an indicator of reliability. In this study, the reliability of the study measures was determined by the Cronbach alpha coefficient used to evaluate the

internal consistency or homogeneity of the research tool items (Yadav, 2016). In Uasin-Gishu County, Eldoret town, a test ensured that all questions or a sub-group of questions had internal consistency attained. The results for MSE performance was .843, e-banking technology characteristics was .896, e-banking technology adoption was .902 and innovative behaviour was .923. The results indicated that all items were reliable with Cronbach Alpha scores above .7, a very good reliability of the instrument as supported by (Pallant & Manual, 2010).

3.11.2 Validity of Research Instrument

Validity is the degree to which an instrument tests what is supposed to be measured (Bryman, 2016). A valid questionnaire allowed the collection of accurate data and, therefore, consistency in the collection of data. Four approaches to establishing validity were identified in this study: face validity, content validity, criterion validity and construct validity. Face validity refers to the agreement that logically a problem, scale, or variable appears to represent exactly what it was meant to measure. Face validity was calculated by evaluating the concepts being examined for their suitability to reflect what it was supposed to have measured.

Secondly, content validity of the research questionnaire was checked. This is an agreement between experts that the scale measures what it intends to achieve and seems to reflect well the scale. According to Saunders *et al.* (2012), reasonable decision can be reached by a comprehensive analysis of the literature; prior discussion with others; or a panel evaluation to ensure the validity of content. Therefore, the variables under review were defined in this research from past literature on e-banking technology and MSE performance, and various conceptualizations from present literature were considered.

Furthermore, the instrument was given to professionals who rendered intelligent judgment about the adequacy of the instrument to ascertain the content validity. The two supervisors examined the instrument and evaluated the relevance of each item in the instrument to the research questions and objectives. The instrument was specifically checked for clarity and to rectify any ambiguous language used. Pre-testing was carried out to ensure that the questions produced the correct answers, while uncovering unclear wordings or errors before the actual study was conducted (Burns & Bush, 2007; Zikmund, Babin, Carr, & Griffin, 2003).

The researcher used a rating scale to determine the rate of opinions of the professionals for content validity of the research instrument (questionnaire). Thus, the CVI of the research instruments was calculated using the equation;

$$CVI = \frac{Total\ number\ of\ valid\ questions\ in\ the\ instrument\ (N)}{Total\ number\ of\ questions\ in\ the\ instrument\ (n)} \times 100\%$$

The '*n*' above shows items rated by all the supervisors divided by '*N*' the total number of items in the questionnaire. The researcher provided the instructions to assist the experts to rate the items as explained above. The respondents were asked to comment critically on the appropriateness, suitability and ease of understanding of each item. The respondents were asked to find any issues with wording, overloading, reverse and leading questions and prejudice (Zikmund *et al.*, 2013). The study questionnaire had a CVI of more than 60%, which was deemed appropriate for further inspections.

According to Cooper & M. Schindler (2008), criterion validity helps predict something that the researcher is interested in based on a valid measure. The criterion measure should be known to be reliable and valid already (Smithson, 2005). Criterion-related validity can be either predictive or concurrent, depending on how it is measured.

Criterion validity was established by generalizing the results to the population of the MSEs from which the sample had been obtained.

Construct validity refers to the review of data that supports a part of the study's hypothesis or the scale that responds to some of the research questions based on the research theories (Zikmund *et al.*, 2013). Furthermore, Saunders *et al* (2012) view construct validity as the degree to which the measurement questions actually assess the existence of certain measurement constructs. In this study, construct validity was assessed by a detailed analysis of the theories underlying the major variables, which validated constructs of research measurement developed and empirically checked by earlier scholars. In addition, convergent and discriminant validity was developed to achieve construct validity. This was done by looking at the matrix of correlations and the correlation between the constructs. This validity was indicated by predictable low correlations between interest measures and other measures which do not measure the same variable. Hair, Ringle, and Sarstedt (2013) suggest that convergent validity exists when concepts that should be related to each other are in fact related, whereas discriminating validity is when a measure or scale is unique and not just a reflection of other variables.

3.11.3 Pilot Test

Pilot test helped determine how long the questionnaire takes, whether instructions are clear and general opinion of the respondents on each question (Bell, 2005;Cooper & Schindler, 2008; Cooper & Schindler, 2011). A pilot test was carried out in Uasin Gishu county, eldoret town to ensure the research instrument has appropriate content validity. Eldoret town was randomly picked from a list of towns in Uasin Gishu County. The study randomly selected 50 respondents for pre-testing the instrument in order to refine

the questionnaire so that the respondents would have no trouble answering the questions and ensure they meet validity and reliability thresholds. According to Connelly (2008), a pilot study sample of 10% should be deemed appropriate for a study. Similarly, Treece and Treece (1982) suggest 10% of the sample size in the study of which the study met this threshold. The study sought opinion from the supervisors and experts in the research field. Items identified as sensitive, confusing, or biased in any way were modified or omitted to increase content validity of the instrument.

3.12 Data Processing and Analysis

3.12.1 Data Screening and Cleaning

The collected data was edited to ensure completeness and accuracy. Editing is part of the data processing and analysis phase in research (Zikmund *et al.*, 2013). Once edited, the data was then coded. Coding entails assigning numbers for each response (Malhotra, 1996) to allow data transfer through the research system. (De Vaus, 2002) opines that such procedures would be undertaken either before the questionnaire (pre-coding) or after (post-coding). The basic steps in the analytic process consist of identifying issues, determining the availability of suitable data, deciding on which methods are appropriate for answering the questions of interest, applying the methods and evaluating, summarizing and finally, communicating the results.

3.12.2 Data Processing

Data processing involved subjecting data to analysis in such a way that all relevant data used in examining relationships between variables in the study were of help in providing answers to the research problem. Quantitative data in a raw form (as it was collected from the field), before being analysed, conveyed very little meaning to readers. Thus, this data was processed, sorted, edited and coded at this stage in order to

provide the necessary consistency, accuracy and completeness before progressing to the analysis stage. Processing of data included coding the responses, cleaning, screening the data and selecting the appropriate data analysis strategy for testing the hypothesis. Coding involved assigning a numeric symbol to enable quick data entry and to minimize errors hence facilitate further analysis. Each item in the questionnaire was assigned a code that, upon completion was entered into a statistical analysis software package SPSS version 23. Cleaning and screening the data included checking for inconsistencies, missing responses and other errors to ensure accuracy and completeness.

3.13 Protocol of Analysis

3.13.1 Data Analysis and Presentation

Data analysis involved identifying tools, using various tests by each research objective of the study. Descriptive statistics such as frequency distribution was done to describe the characteristics of the respondents" general behavior pattern as well as to profile the respondents" personal information. Since this is a study of cause effect relationship, a correlation analysis was performed to ascertain the existence of relationship between variables. Correlation coefficient test and significant levels were conducted to check the strength of the linear relationships between pairs of variables. Cronbach"s alpha coefficient was conducted to determine the items reliability and internal consistency of the instrument. The determinant of correlation matrix was generated to provide the information on the multicollinearity. Every element was coded in the questionnaire and entered into the SPSS version 23. Checking and cleaning of data, which involved checking for inconsistencies and missing responses, was done to ensure accuracy and completeness of data. Data was also processed by checking on outliers. This study used

Mahalanobis D^2 measure to identify and deal with multivariate outliers that also catered for univariate outliers (Tabachnick, Fidell, & Ullman, 2007).

Descriptive statistics were used to evaluate data for the classification and description of numerical data, and reinforced the need for further analysis of data (Somekh & Lewin, 2011). This provided a basis for the use of correlation and regression analysis for inferential statistics. Results of the study were summed up using frequencies, standard deviation, mean, percentages (Saunders & Lewis, 2009; Uma Sekaran & Roger Bougie, 2010). Hierarchical and multiple regression analysis using Hayes (2018) model 4 was used to test for direct effects and mediation process, and finally Hayes model 58 for testing moderation and moderated mediation effects respectively using Hayes (2017) Process macro computational tool version 3.2. Finally, the findings of the study were presented through tables, percentages, descriptions and discussions. Data analysis process followed the quantitative approach. Preliminary analysis of quantitative data from the questionnaire was initially carried out by validation, coding and tabulation.

3.13.2 Factor Analysis

In this study, the relationship between sets of manifest and latent variables was investigated by the factor analysis. Factor analysis allowed a large number of variables or questions to be reduced to a smaller number of variables, 'super variables' or 'latent variables' or factor variables (Field, 2005). Factor analysis is a multivariate technique for determining if the associations between a series of observed variables stem from their relationship with one or more latent variables in the data, each taking the form of a linear model (Field et al., 2014; Kline & Wagner, 1994).

The researcher analyzed the co-variation between a collections of observed variables to collect knowledge about their underlying latent structures often referred to as Factor

Analysis (DeCoster, 1998; Kaplan, 2000). In this study, the EFA developed the validity of a single factor model, checked the significance of a particular factor load, checked the relationship between two or more factor loadings, tested whether a set of factors were correlated or uncorrelated, and evaluated the convergent and discriminating validity of a set of measures. EFA merged items which were associated but independent of certain sub-sets of items into an underlying factor (Tabachnick & Fidell, 2001). The study sought to explain the nature of a set of variables, confirmed the questionnaire and reduced a dataset to a more manageable size without interfering with originality of the information.

The Kaiser-Mayer-Olkim measure of sampling adequacy and the Bartlett's Sphericity test were examined to determine the appropriateness of factor analysis. The Kaiser-Mayer-Olkim was approved to mean the data used as sufficient with a value of 0.50 or above (Tabachnick & Fidell, 2001). Using the Eigen value of more than 1.0 and a factor loading of 0.5 for the inclusion of element, EFA was useful in calculating the number of subconstructions. The mean scores of each factor were calculated for multiple factored variables and used as indicator variables to evaluate latent variable (Hwang & Wang, 2004).

3.13.3 Data Transformation Process

The researcher transformed data from likert scale to continuum/ ratio scale before analysis of inferential statistics. Data transformation involved moving data from its original data type to a new format using arithmic method to make it suitable for further study. It involved reducing categories, breaking down or combining variables and creating new variables by re-specifying the numerical or logical transformation of data. The researcher used the means of single scores loaded items into creating composite

scores. The items that loaded were MSE performance, e-banking technology characteristics, e-banking technology adoption and innovative behaviour. Thus, data transformation improved the understanding of the tests.

3.13.4 Assumptions of the Model

The researcher tested several assumptions of regression model. This is because if the assumptions are not met the results may not be trustworthy which may result in a Type I or Type II error, over - estimation of significance or effect size(s). The following assumptions were therefore deemed necessary (Pallant & Manual, 2010):

i. Normality Test: Normality is a critical assumption in multivariate analysis (Hair, Money, Samouel, & Page, 2007). It assumes that the errors in the prediction value of Y (dependent variable) are normally distributed. Normality test was tested by the use of histogram and use of P-P plot which indicated that the data points were close to the diagonal line and did not deviate from it. The study used bootstrap samples to check for normality in the data distribution. Similarly, normality of the data was tested using degrees of Skewness and kurtosis of the study variables which was within the acceptable range of between -2 and +2.

ii. Linearity: This helped in knowing the shape of the distribution and to predict dependent variables scores. Nonlinear relationships typically appear as curves when *Y* is plotted as a function of *X*, although other forms of nonlinearity are possible. The aim of the linearity test is to determine whether or not the relationship between each of the predictor variables and the expected variable is linear (Zientek, Kim & Bryn, 2016; Zikmund *et al.*, 2013). The linearity assumption is important because its violation jeopardizes the meaningfulness of the interpretation of the regression coefficient (Darlington, 1990). The rule of

thumb is that, the predictor variables in the regression should have a straight line relationship with the outcome variable. The Pearson's Product Moment correlations and Scatter plots was used to examine the relationship among the study variables.

iii. Homoscedasticity: Homoscedasticity states that the errors in estimation are equally variable conditioned on Y (equal levels of variance maintained between independent and dependent variables, which can be tested through Levene's test) (Al Mandil, 2016; Tabachnick & Fidell, 2007). When this condition is not met, the errors in estimation are said to be Heteroscedasticity (Tabachnick & Fidell, 2001). Heteroscedasticity complicates analysis because many methods in regression analysis are based on an assumption of equal variance (Park, 2008). Levene's test is used to examine the null hypothesis which suggests the equality of variances in different groups, however, if the null hypothesis is rejected, the assumption of homogeneity of variances is violated (Field, 2013) and hence should be checked by visual examination of a scatter plot of the standardized residuals (errors) by the standardized predicted value.

iv. Multi-collinearity occurs if two or more variables are highly correlated not independent of each other) thus affecting the estimation of the regression parameters (Hair, Black, Babin, Anderson, & Tatham, 2006). Multicollinearity is the phenomenon of highly correlated predictor variables, making it impossible for one to assess the exact contribution of the respective predictor variables to dependent variable variances (Zikmund *et al.*, 2013; Zhang *et al.*, 2011; Hair *et al.*, 2010). Presence of multi-collinearity makes the assessment and hypothesis testing about regression coefficients unknown, which frustrates interpretations of

the model coefficients (Gujarati & Porter, 2003), thus providing incorrect regression results (Palaniappan, 2017). According to Hair *et al*. (2006), the rule of thumb is that if the value of correlation among explanatory variables >0.9 then it indicates the presence of multi-collinearity. Similarly, if the VIF > 10 then there is multi-collinearity problem (Stevens, 2009) and therefore the independent variable should be dropped from the analysis due to multicollinearity. Therefore, the study employed correlation matrix and VIF to check for multi-collinearity among the study variables.

v. Independence of errors in statistical estimation: If the errors in estimation are independent, this means that for all (i, j) pairs of observations, there is no information contained in the error in estimation for case i that could be used to estimate the error in estimation for case j. Many processes can result in a violation. For example, subsets of cases may share something that is related to *Y*, and a failure to account for that thing in the model can result in estimation errors that are non-independent. Non-independence affects the accuracy of the estimation of the standard error of regression coefficients, as the OLS standard error estimator assumes independence of errors in estimation. Whether the standard error is over- or underestimated will depend on the form of non-independence, but typically the result is underestimation. If the standard error is underestimated, this means that hypothesis tests will be invalid, and confidence intervals too narrow relative to what they should be when the independence assumption is met. This study employed Durbin Watson to test for independence of errors.

3.13.5 Correlation Analysis

Correlational tests are used to establish whether an association existed between two variables, the direction and extent in which two or more variables are related (Uma Sekaran & Roger Bougie, 2010). The values of the coefficients for the correlation vary from a value of +1.00 to a value of -1.00, which represents perfect relations. When independent variables are highly correlated, the effect of each independent variable on the dependent variable becomes difficult to establish (Hair et al., 2007). A negative correlation coefficient (R) means that an inverse relationship exists, which suggests that an increase in one variable will result in a corresponding decrease in another.

Based on correlation analysis, bivariate analysis was carried out to evaluate the relationship between the variables. Pearson Correlation Coefficient was used to determine the relationship between the independent variable (e-banking technology characteristics including perceived ease of use and perceived usefulness) and dependent variable (MSE performance). Correlation tests were also performed to evaluate the relationship between (e-banking technology adoption, innovative behaviour) and performance of MSE.

3.13.6 Inferential Analysis

Data obtained in a statistical format facilitated the identification of important patterns so that more meaningful data analysis would be realized. The statistical tools performed in this study included R, R^2, ΔR, F, ANOVA and t-test. Hypothesis testing was done using a hierarchical and process macro analysis. At each stage, the R^2 that was calculated showed the incremental change in variance accounted for in Y with the addition of a new predictor.

3.14 Model Specifications

For researcher to achieve objectives 1, 2, 3 and 4 being direct effects, hieriachical regression models were tested for the purpose of H_{01}, H_{02}, H_{03} and H_{04} (Baron and Kenny 1986).The test statistics that were computed included the coefficient of regression (R^2); the beta coefficient (β) and the p-values. The significance level (p-value and t values) for each of the variables had to be $\leq$.05 and t values -1.96 to +1.96 to demonstrate that the variable was a significant predictor of the dependent variable (Hair *et al.*, 2007).

3.14.1 Testing for Direct Effects H_{01}-H_{04}

The purpose of this study was to examine whether;

   i.   E-banking technology characteristics has a direct effect on MSE performance (H_{01})

   ii.   E-banking technology adoption has a direct effect on MSE performance (H_{02})

   iii.   Innovative behaviour has a direct effect on MSE performance (H_{03})

   iv.   E-banking technology characteristics has a direct effect on e-banking technology adoption (H_{04})

Secondly, the study analyzed the mediating effect of e-banking technology adoption on the relationship between e-banking technology characteristics and MSE performance (H_{05}).

Further, this study sought to determine the moderating effect of Innovative Behaviour on:

   i.   The relationship between e-banking technology characteristics and MSE performance (H_{06})

ii.   E-banking technology adoption and MSE performance (H_{07})

Finally, the study examined the moderating effect of Innovative behaviour on the indirect relationship between e-banking technology adoption and MSE performance at different levels of the moderator (H_{08}).

To achieve the first purpose of the study, Hierarchical regression model was used to test for all the direct effects. Hierarchical regression model was deemed appropriate for direct effects to show if variables of interest explain a statistically significant amount of variance in the dependent variable (e-banking technology characteristics) after accounting for all other variables in the model. At each stage, several regression models were generated by adding variables to a previous model, with the interest of determining whether newly added variables show a significant increase in R^2 which explained to the dependent variable (Van Dusen & Nissen, 2019). This study adopted the following Hierarchical model:

Model 1. Direct effect

$Y = \beta_0 + C + \varepsilon$…………………………………………………………... model (i) This first model was used to examine how much variance is explained by the demographic characteristics of the respondents (controls) in the study.

$Y = \beta_0 + C + \beta_1 X + \varepsilon$…………………………………………………………. (ii) In the next step, the independent variable was added to the first model to test how much variance it explains the dependent variable while controlling for the covariates (H_{01}).

$Y = \beta_0 + C + \beta_1 X + \beta_2 M + \varepsilon$………………………………………………. (iii) This model was meant to test the variance accounted for by the mediator in the dependent variable while controlling for the covariates and the independent variable (H02)

$Y= \beta_0+C+\beta_1X + \beta_2M+ \beta_3W+ \varepsilon$…………………………………….. (iv) This model was used to test the variance in the dependent variable explained by the moderator while controlling for the covariates, the independent and the mediator variables (H_{03}).

Inaddition, H_{04} was tested using linear equation to identify the effect of the independent variable on the mediator using the following statistical equation.

$M=\beta_0+C+\beta_1X+ \varepsilon$ ………………………………………………… (i) Testing the effect of covariates and independent variable on the mediator (e-banking technology adoption)

Note:

Y= Dependent variable (MSE perfomance)

X= independent variable (e-banking technology characteristics), M = Mediator (e-banking technology adoption), W = moderator (innovative behaviour).

C= Covariates (Gender, Age, education)

β_0 = the constant, β_1, β_2 and β_3 are parameters of estimates, ε- error term

3.14.2 Testing for Mediation

The test for mediation for this study was meant to explain mediating effect of e-banking technology adoption on the relationship between e-banking technology characteristics (perceived ease of use and perceived usefulness) and MSE performance. According to Hayes (2017), mediation is said to occur when a mediator (M) transmits the causal influence of an independent variable (X) on a dependent variable (Y). Mediation explains how or by what means an independent variable influences dependent variable by the possible variable that intervenes (Preacher & Hayes, 2008). Such indirect tests provide a deeper understanding of the relationships between the study variables.

Hayes (2015) model 4 was adopted for testing the mediating effects of e-banking technology adoption on the relationship between e banking technology characteristics and MSE performance. This test was decisive in addressing hypothesis H_{05}. The test involved several steps (MacKinnon, 2012) in model four. In step 1, the predictor variable (e-banking technology characteristics) had to significantly predict the outcome variable (MSE performance). In step 2, the predictor variable (e-banking technology characteristics) had to significantly predict the mediator (e-banking technology adoption). In step 3, the mediator variable had to significantly predict outcome variable in the presence of the independent variable that is the e-banking technology adoption had to significantly predict MSE performance in the presence of e-banking technology characteristics. Decision criterion or step 4 was meant to confirm mediation effect, the independent variable was to predict dependent variable less strongly in model 3 than in model 1. If one or more of these relationships in model 1 to 3 are non-significant, researchers usually concludes that mediation is not possible which has been disputed. According to Sekhon, Zhao, Koenig-Lewis, Hanmer-Lloyd, & Ward, (2010), the mediation intensity should be calculated by the size of the indirect effect, and not by the lack of direct effect; existence of a direct effect can notify theorizing about other mediators and the establishment of mediation that the indirect effect of a× b should be significant.

Zhao, Lynch Jr, and Chen (2010) recommend that the Baron-Kenny's three tests + Sobel steps be replaced by one and only one test in order to establish mediation: the indirect effect bootstrap test a× b. They argue that all that matters to establish mediation is that the indirect effect is significant by generating Bootstrap Results for Indirect Effects.

Mediation should be classified by type of mediation, by estimating the a, b, and c coefficients. The first thing to remember is whether c is important for direct impact. This determines what kind of mediation, or non-mediation, one has:

i.   Complementary mediation: Mediated effect if (a×b) and c' (direct effect) both exist and point at the same direction, which according to (Baron & Kenny, 1986), is full mediation

ii.   Competitive mediation: Mediated effect (a×b) and c' (direct effect) both exist and point in opposite directions which overlaps with baron and Kenny as partial mediation.

iii.   Indirect-only mediation: Mediated effect if (a × b) exists, but no direct effect.

iv.   Direct-only non-mediation: Direct effect (c') exists, but no indirect effect

v.   No-effect non-mediation: Neither direct-effect nor in-direct effect exists.

This study adopted a Process Macro Hayes (2017) to generate output for interpretation of the result of mediation. With the use of process macro, bootstrapping was executed through repeated and randomly sampling observations with replacement from the data set to compute the desired statistic in each resample. Bootstrapping provided point estimates and confidence intervals by which evaluation of the possible significance of the mediation was based. The point estimates showed the mean over the number of bootstrapped samples and where zero did not fall between the resulting confidence interval of bootstrapping method, then the researcher reported that there was a significant mediation effect of e-banking technology adoption.

Model 3. Mediation

X must have an effect on M...$M = a_0 + C + a_1X + \varepsilon$

M must have an effect on Y…$Y = b_0 + C + b_1M + \varepsilon$

Direct effect…$Y = C_0 + C + C'X + b_1M + \varepsilon$

Indirect effect…………… $a_1 \times b_1$ or $C - C'$

$Y = C_0 + C + CX + \varepsilon$ (Total effect)
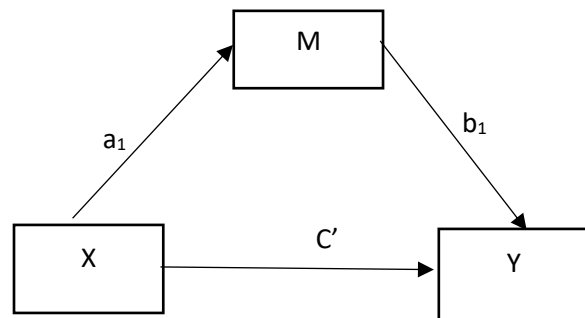
Figure 3.1: Hayes model 4

Source: Hayes (2017)

3.14.3 Testing for Moderation

Moderation in this study was tested using Hayes model 58 (Hayes, 2017). The method was chosen because it showed how the prediction of the independent variables, a moderator, and interactions of the independent variables and a moderator improves the prediction (Hayes, 2017).

Model 4. Equation(s):

(i) $M = a_0 + C + a_1X + a_2W + a_3XW + \varepsilon$ ……………………….H_{06} (testing for the moderating effect of innovative behaviour on the relationship between e-banking technology characteristics and e banking technology adoption, indicated as **a_1** on the conceptual framework)

(ii) $Y = b_0 + C + b_1M + b_2W + b_3MW + \varepsilon$ ……………………….H_{07} (testing for the moderating effect of innovative behaviour on the relationship between e-

banking technology adoption and MSE performance, indicated as **b₁** on the conceptual framework).

3.14.4 Testing for Moderated Mediation

According to Hayes (2017), moderated mediation is the indirect effect of independent variable (e-banking technology characteristics) on the dependent variable (MSE performance) through the mediator (e-banking technology adoption) moderated by innovative behaviour.

The study built on the traditional works of James & Brett, 1984; Preacher & Hayes, (2008). This study adopted model 58 to test the moderated mediation. When testing for moderated mediation, it is of essence to confirm that a mediation exists between the independent variable and the dependent variable. The moderation, in this case, was conducted after confirmation of the fact that e banking technology adoption mediates the relationship between e-banking technology characteristics and MSE performance (Hayes, 2017). Moderated mediation was tested using process macro. The decision on H_{08} was based on the significance or insignificance of the effect of the moderator (innovative behaviour) no the mediator (e-banking technology adoption) and the effect of the interaction on independent and dependent variables subject to 95% confidence interval. Where the confidence interval generated based on 0.05 includes zero, then a decision of no relationship had to be arrived and null hypothesis was rejected.

The research hypothesis for moderated mediation was to confirm the indirect effect of innovative behaviour on the relationship of e-banking technology characteristics and MSE performance through e banking technology adoption.

Hence... grouping terms into form $Y = a + bX$

$$Y = (b_0 + a_0b1 + a_2b_1W + b_2W + a_0b_3W + a_2b_3W) + (a_1b_1 + a_3b_1W + a_1b_3W +$$

$$a_3b_3W + c')\ X$$

Hence...One indirect effect(s) of X on Y, conditional on W:

$$a_1b_1 + a_3b_1W + a_1b_3W + a_3b_3W = (a_1 + a_3W)\ (b_1 + b_3W)$$
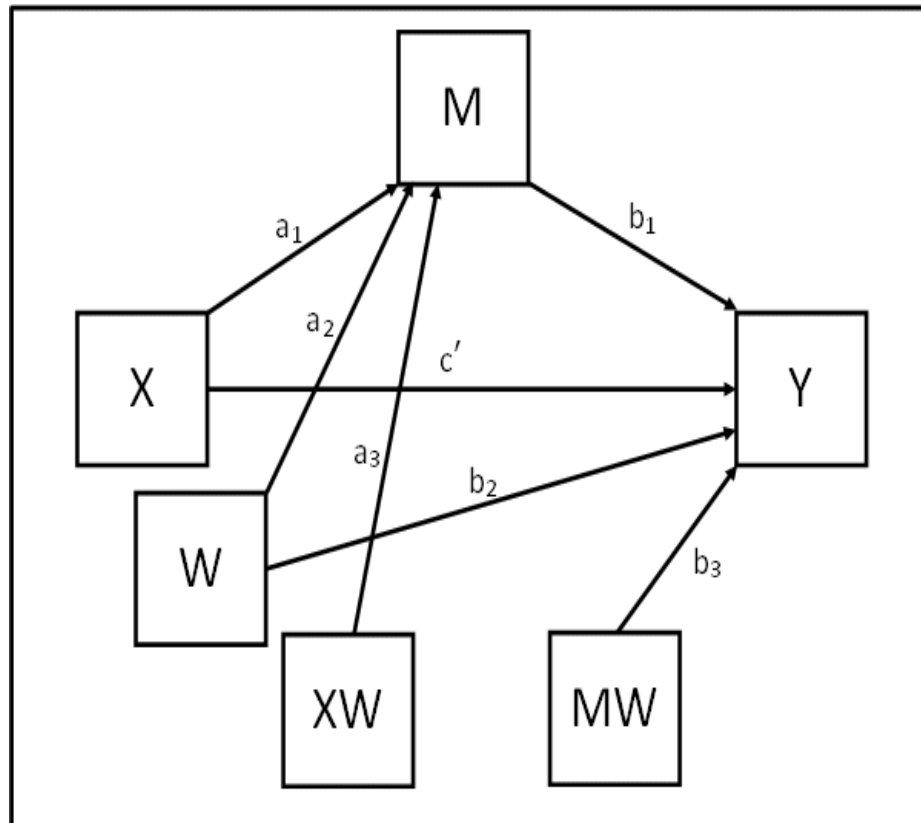
Figure 3.2: Statistical Diagram for Hayes Model 58
Source: Hayes (2017)

Where:

C- Gender, Age and Education (control variables)

Y=MSE performance

X- E-banking technology characteristics

M- E-banking technology adoption

W- Innovative behaviour

β_0, a_0, b_0, c'_0 - constants

$\beta_1 - \beta_3$ - co-efficients of regression

$a_1 - a_3$ & $b_1 - b_3$ co-efficients of regression

ε = Error term

3.15 Summary of Hypothesis Testing

Hypotheses were tested using Multiple Regression. This study was suited for multiple regression because it allowed the slope of one or more of the independent variables to vary across mediator and moderator variable values, thus facilitating the investigation of a wide range of relationships and function forms (Goode & Harris, 2007). This approach has been used widely to test hypotheses regarding effects of mediator and moderator variables (Gardner, Hutchings, Bywater, & Whitaker, 2010).

Table 3.4: Summary of Hypothesis Testing

H_0	Statement	Test Statistics	Critical values/Decision Point
H_{01}	E-banking technology characteristics has no significant effect on MSE performance.	β_1, p_1, F, R^2, t- test, ΔR^2,	$P \le .05$ significant
H_{02}	E-banking technology adoption has no significant effect on MSE performance	β_1, p_2, F, R^2, t- test, ΔR^2,	$P \le .05$ significant
H_{03}	Innovative behaviour has no significant effect on MSE performance.	β_1, p_3, F, R^2, ΔR^2, t- test	$P \le .05$ significant
H_{04}	E-banking technology characteristics has no significant effect on e-banking technology adoption.	β_1, p_3, F, R^2, ΔR^2, t- test	$P \le .05$ significant
H_{05}	E banking technology adoption has no mediating effect on the relationship between e banking technology characteristics and MSE performance.	β_1, p_4, R^2, ΔR^2, t- test, CI	CI must be non-zero. $P \le .05$ significant
H_{06}	Innovative behaviour has no moderating effect on e banking technology characteristics and e banking technology adoption.	β_1, p_6, F, R^2, ΔR^2, t- test	$P \le .05$ significant
H_{07}	Innovative behaviour has no moderating effect on the relationship between e banking technology adoption and MSE performance.	β_1, p_6, F, R^2, ΔR^2, t- test	$P \le .05$ significant
H_{08}	Innovative behaviour has no moderating effect on the relationship between e banking technology characteristics and MSE performance through e banking technology adoption.	CI	CI must be non-zero

Source: Researcher (2019)

3.16 Limitations of the Study

The study was quantitative in nature. As such, it employed only structured questionnaires to collect primary data. A mixed methods approach might have yielded more richer and in-depth findings.

This study used survey to collect data, which could not gain a full sense of the social processes in their natural settings. Furthermore, the respondents might have falsified their responses to do away with the questionnaire as the researcher and research

assistants waited for them to be filled up completely before picking them. This was in consideration of the view by Sharma & Yetton (2001) that respondents may not always be true in their responses to a survey.

The other limitation of this study arose from the questionnaire where the owners as well as the managers filled the survey to evaluate their enterprise performance. This could have led to some response bias as some, particularly the managers may not have been quite objective in their evaluation considering the role they play as managers and not owners of this enterprises.

This research based on the managers and owners of micro and small enterprises of which 1.5% had no education. Their lack of education could have led to wrong interpretation of the questions. Higher educated respondents could have provided more accurate and richer findings that would be useful in the industry which further researchers may consider studying.

The study collected data at a single point in time, which meant the study was cross-sectional in nature. It would, therefore, be more appropriate to use longitudinal research, which is a process, to ascertain the issue of the adoption of e-banking technology,

3.17 Ethical Considerations

Approval for research was obtained from the National Commission for Science, Technology and Innovation and subject to authority from the County Director Education of Vihiga County, respectively. Honesty was vital to enable communication above the board to increase trust and credibility in research outcomes (Walliman, 2017). Walliman (2017) further indicates that there are two aspects relating to ethics in research, namely: the researcher's individual values relating to honesty, frankness and

personal integrity, and the researcher 's treatment of other research subjects, relating to informed consent, confidentiality, anonymity and courtesy.

As for data and analysis, the researcher retained impartiality to give some latitude of credibility to the results. Rejecting or denying information that is contrary to one's convictions or being overly selective in the data used and reporting the findings of the study is an infringement of honesty (Walliman, 2017). Before undertaking the study, the researcher sought informed consent from the respondents. Respect for anonymity and confidentiality of the respondents was respected by ensuring that the research instruments did not carry any names of the respondents. Saunders et al. (2012) points to the importance of general ethical concerns such as secrecy, voluntary engagement, informed consent, confidentiality and anonymity. He further identifies participants' reactions to the way the researcher seeks to gather data, including, but not limited to, embarrassment, stress, pain and harm. The researcher adhered to the privacy principle to ensure openness, fairness and flexibility with respondents when obtaining information from them.

Therefore, the ethical issues considered while undertaking this research included enabling voluntary participation of the respondents, seeking approvals, avoiding deception, guaranteeing of anonymity, confidentiality in responses and ensuring safety of the participants.

CHAPTER FOUR

DATA ANALYSIS, PRESENTATION, INTERPRETATION AND

DISCUSSION OF THE FINDINGS

4.1 Introduction

The chapter begins by presenting the response rate, which seeks to establish if the collected data was adequate for analysis and can thus be relied on. This is followed by the data preparation and screening and analysis of outliers. The next sub-section presents an analysis of the demographic characteristics, followed by a reporting of data pertaining to study objectives, factor analysis, reliability, t-test, ANOVA, correlation and regression analysis.

4.2 Response Rate

The study targeted micro and small enterprises in Vihiga County, Kenya. Four hundred and fifty-five questionnaires were prepared and administered to the potential respondents. Out of the 455 potential respondents, 413 returned their questionnaires duly filled, yielding 88.35% response rate. The researcher engaged research assistants to monitor the respondents through phone calls to ascertain that the questionnaires were fully answered. This was deemed fit for the study, based on the recommendations of a response rate in the range of 50% - 70% (Saldivar, 2012). A higher response rate was also enhanced through personal appearances, incentives and personalization (Kaplowitz, Hadlock, & Levine, 2004). A total of 11 questionnaires were found to have influential outliers (2.4%), while 42 questionnaires were not returned (9.2%). Table 4.1 gives a summary of the response rate to the administered questionnaires.

Table 4.1: Response Rate

Description	Questionnaires distributed	
	No.	**Percentage**
Number of questionnaires distributed	455	100
Usable questionnaires	402	88.35
Unusable questionnaires	11	2.4
unreturned questionnaires	42	9.2

Source: Researcher (2019)

4.3 Data Coding, Editing and Screening

Data coding, editing and screening is a preliminary phase of data processing and analysis (Zikmund *et al.*, 2003). The study used coding to assign each answer to numbers (Malhotra, 1996). This ensured that data could be transferred easily into the analysis programme. A precoding technique was followed in the analysis. Upon data entry, data editing procedures were undertaken to help detect and eliminate errors that could have occurred during data entry. This was done by checking the descriptive statistics.

4.3.1 Missing Data and Non-Response Rate

Missing data can affect results of statistical analysis (Tsikriktsis, 2005). Therefore, the study eliminated missing values right from the field by ensuring that each questionnaire was delivered personally to the MSE owners and, in the absence of the owner, it was given to the manager who ran the business on behalf of the owner. As such, there were no issues of missing data or missing values (Hair, Black, Babin, Anderson, & Tatham, 1998). Subsequently, treatment of missing data was not included in this study. All the respondents who completed the questionnaire (413) were included in the analysis.

4.4 Demographic Profile of Respondents

Respondents were asked to provide information on their demographic profile, including gender, age, educational level, ownership and designation. This knowledge was

considered important in assessing of e-banking technology characteristics, the adoption of e-banking technology, innovative behaviour and MSE performance, as these characteristics might have had confounding effects on this relationship.

4.4.1 Respondent Gender

As shown in Table 4.3, the majority of MSE owners/managers were females with a proportion of 208(51.75%) while males accounted for 194(48.25%). Therefore, although the majority of respondents were females, the male population was more than one-third of the sample population. This suggested the analysis was reflected by data obtained from both groups. Therefore, the views of both categories were captured in the study.

4.4.2 Respondents' Age

The results for the ages of respondents, who were the owners/managers of MSEs, were as shown on Table 4.3. As indicated, 66(16.4%) were below 25 years of age, 98(24.4%) were between 26 to 30 years, 81(20.1%) were between 31 and 35 years, 70(17.4%) were between 36-40 years and 87(21.6) were above 40 years of age. Consequently, majority of respondents for this study were at the youthful age, which is an age full of energy. As such, the MSE owners were at the right stage to make decisions or take risks that could enhance performance of their enterprises.

4.4.3 Respondent Level of Education

Education level has an impact on how people respond to different opinions. The study sought to find out the education levels of the respondents. As indicated in Table 4.3, 5(1.5%) of the respondents had no education, 53(13.2%) were primary school leavers, majority, 132(33.9%), were secondary school leavers, 80(19.4%) had certificate level education, 70(16.9%) diploma level, 41(10.4%) held bachelor's degrees and 21(5.1%)

had postgraduate level education. This implied that majority of the respondents had tertiary level education (colleges and polytechnics and university level education, then secondary level). Therefore, we make the general conclusion that a large percentage of the entrepreneurs were well-educated and, as a consequence, were able to choose and adopt e-banking technology in their enterprises.

4.4.4 Business Ownership

As indicated in Table 4.3, 284(70.6%) of the MSEs were solely owned, 72(17.9%) was a partnership while 46(11.4) were companies. This implied that most of the MSEs in Vihiga County were privately-owned.

4.4.5 Designation

As indicated in Table 4.3, 309(76.9%) were the actual MSE owners and 93(23.1%) were MSE managers. This is advantageous as having more owners resulted in a higher level of validity of the information received as these were well-versed with all the challenges they experienced while doing business since inception.

Table 4.2: Demographic Profile of Respondents

Profile	Description	Frequency	Percent
Gender	Female	208	51.7
	Male	194	48.3
	Total	402	100.0
Age	Below 25	66	16.4
	26-30	98	24.4
	31-35	81	20.1
	36-40	70	17.4
	Above40	87	21.6
	Total	402	100.0
Education level	None	5	1.2
	Primary	53	13.2
	Secondary	132	32.8
	Certificate	80	19.9
	Diploma	70	17.4
	Bachelor	41	10.2
	Postgraduate	21	5.2
	Total	402	100.0
Business ownership	Sole Proprietorship	284	70.6
	Partnership	72	17.9
	Company	46	11.4
	Total	402	100.0
Designation	Owner	309	76.9
	Manager	93	23.1
	Total	402	100.0

Source: Researcher (2019)

4.5 Analysis of Outliers

Outliers in statistics are extreme values that do not appear to match any of a collection

of data. If not eliminated, these extreme values may have a huge effect on any

conclusions drawn from the data in question, because they can distort correlation

coefficients and best fit lines in the wrong direction (Tabachnick & Fidell, 2013). The

study identified influential outliers which were further identified as prediction and

model fit outliers whose presence alters parameter estimates and model fit (R^2)

respectively (Aguinis *et al*., 2013). There is a high tendency of outliers in any random

distribution, but they are often indicative either of measurement errors or of hard-tail

distribution among the population. Hair et al. (2006) state that the scrutiny of outliers

is a key step before analysis, since missing the initial scrutiny of outliers will distort

statistical tests if problem of outliers occur. Aguinis *et al*., (2013) argued that, such data

points to be removed from the analysis or from the data set, once the outliers have been

identified so as to avoid improper inferences about a population.

This research adopted the Mahalanobis D^2 formula for defining and dealing with

multivariate outliers (Tabachnick & Fidell, 2013). Thus, in SPSS, Mahalanobis D^2 was

calculated using linear regression methods, followed by the Chi-square value

calculation. Because four items were used, three represented the degree of freedom in

the Chi-square table with $p < 0.001$ (Tabachnick & Fidell, 2013). This meant that any

case with a probability value of less than 0.001 for Mahalanobis D^2 was a multivariate

outlier and was removed. Therefore, all data that had values more than 0.001 retained

for further analysis apart from eleven questionnaires which were considered to have

outliers and were deleted from subsequent analyses as shown in Table 4.3.

Table 4.3: Mahalanobis Distance

	Criteria	**Statistic**	**Std. error**
Mahalanobis distance	Mean	3.990	.070
	Std. Deviation	4.674	.027
	Maximum	48.767	.236
	Minimum	.080	.035
	Case number	11	

Source: Researcher (2019)

4.6 Descriptive Statistics for the Study Variables

4.6.1 Descriptive Statistics for MSE Performance

This section of the analysis highlights the research results on the performance of MSEs.

The findings indicate that, over the last one year, their enterprises had generated high

sales (mean = 3.95, SD = 1.053, Skewness = -0.878, kurtosis = -0.018). The implication

was that the MSEs had been performing well. Likewise, the managers and owners of

MSEs agreed that, over the last one year, the enterprises had increased the number of

employees (mean = 3.47, standard deviation = 1.1273), Skewness = -0.435, kurtosis =

-0.917). This showed that employee numbers had increased due to high margins hence contributing positively to enterprise annual profitability. E-banking had, therefore, enhanced MSE performance. The implication is that MSEs understood the use of e-banking technology and their benefits.

Furthermore, the managers and owners agreed that their enterprises had fully met their financial expectations, as investment in e-banking had been mostly motivated by profits to the enterprise (mean = 3.56, standard deviation = 1.204, Skewness= -0.588, kurtosis= -0.660). The respndents considered investment in e-banking as being crucial in for enterprises' profitability. The results on MSEs having acquired more assets summed up to a mean of 3.57, a standard deviation of 1.197, Skewness of-0.545 and kurtosis of -0.740.

The results on the issue that there was increase in MSEs' net revenue summed up to a mean of 3.64, a standard deviation of 1.163, Skewness of-0.750 and kurtosis of -0.350. Lastly, the results that the MSE performance had been satisfactory summed up to a mean of 3.70, a standard deviation of 1.201, Skewness of -0.755 and kurtosis of -0.447. The above findings were as summarized in Table 4.4 below.

Table 4.4: Descriptive Statistics for MSE Performance

Items	Min	Max	Mean	SD	Skewness	Kurtosis
Over the last one year, my enterprise has generated high sales	1	5	3.95	1.053	-.878	-.018
Over the last one year, my enterprise has increased the number of employees	1	5	3.47	1.273	-.435	-.917
Over last year, my enterprise has fully met my financial expectations	1	5	3.56	1.204	-.588	-.660
Over the last one year, I have acquired more assets	1	5	3.57	1.197	-.545	-.740
Over the last one year, I have an increase in my net revenue	1	5	3.64	1.163	-.750	-.350
Over the last one year, the performance of my enterprise has been satisfactory	1	5	3.70	1.201	-.755	-.447
Average	**1**	**5**	**3.65**	**1.182**	**-0.659**	**-0.522**

Source: Researcher (2019)

4.6.2 Descriptive Statistics for Perceived Ease of Use of E-Banking Technology by MSEs

This section describes the research findings that relate to the effect of perceived ease of use on MSE performance. The findings indicated that the managers and owners of enterprises agreed that e-banking required little mental effort (mean = 4.07, standard deviation = 0.921, Skewness = -1.178, kurtosis = 1.548). The implication was that the enterprises had the ability to adopt e-banking technologies as they perceived them to be easy to use. As a result, the MSEs had witnessed improved profitability. Moreover, the managers and owners of MSEs understood most of the operations they performed during e-transaction (mean = 4.17, standard deviation = 0.856, Skewness = 1.061, Kurtosis = 1.076). The implication is that managers and owners of MSEs were knowledgeable on the use of e-banking technology. Besides, they agreed that learning to operate e banking was easy for them (mean = 4.15, standard deviation = 0.881,

Skewness = -1.176, kurtosis = 1.478). Consequently, employees and owners in their enterprises perceived e-banking as an easy way to conduct a banking transaction hence value it and were motivated to work towards attaining e-transaction (mean = 4.24, standard deviation = 0.829, Skewness = -1.215, kurtosis = 1.800).

In addition, the managers and owners of MSEs agreed that information displayed on the screen during electronic banking was clear, well organized and easy to read (mean = 4.14, standard deviation = 0.855, Skewness = -0.974, kurtosis = 0.769). On the issue that e-banking platform offered information in more than one languages, the results summed up to a mean of 4.07, a standard deviation of 0.970, Skewness of-0.943 and kurtosis of 0.253). Furthermore, managers and owners of MSEs agreed that e-banking system was flexible to interact with (mean = 4.13, standard deviation = 0.874, Skewness = -1.342, kurtosis of 2.355).

The results on the willingness to frequently use e-banking summed up to a mean of 4.20, standard deviation of 0.877, Skewness of -1.381 and kurtosis of 2.096. Lastly, on whether or not the managers and owners of MSEs understand the terms and conditions of e-banking, since they were simple and clear, the results summed up to a mean of 4.05, standard deviation of 0.974, Skewness of -1.007 and kurtosis of 0.601. This finding implied that that managers and owners perceived e-banking technology as being easy to use and had thus impacted the lives and activities of people and organisations. Table 4.5 below depicts the results as explained above.

Table 4.5: Descriptive Statistics for Perceived Ease of Use of E-Banking Technology by MSEs

Items	Min	Max	Mean	SD	Skewness	Kurtosis
Using e banking requires little mental effort.	1	5	4.07	.921	-1.178	1.548
I understand most of the operations I perform during any transaction	1	5	4.17	.856	-1.061	1.076
Learning to operate e banking is easy for me	1	5	4.15	.881	-1.176	1.478
E-banking is an easy way to conduct a banking transaction.	1	5	4.24	.829	-1.215	1.800
Information displayed on the screen during electronic banking is clear, well organized and easy to read.	1	5	4.14	.855	-.974	.769
The e-banking platform offers information in more than one language.	1	5	4.07	.970	-.943	.253
I find e banking system flexible to interact with	1	5	4.13	.874	-1.342	2.355
I am willing to use e banking frequently	1	5	4.20	.877	-1.381	2.096
I understand the terms and conditions of e banking since they are simple and clear	1	5	4.05	.974	-1.007	.601
Average	**1**	**5**	**4.14**	**0.893**	**-1.142**	**1.331**

Source: Researcher (2019)

4.6.3 Descriptive Statistics for Perceived Usefulness of E-Banking Technology

This section describes the study findings for perceived usefulness of e-banking technology. The findings indicated that the managers and owners of MSEs agreed that using e-banking had improved efficiency in e-transaction. This was attested to by the descriptive results (mean = 4.41, standard deviation = 0.735, Skewness = -1.598, kurtosis = 4.051). Similarly, they agreed that using e-banking enabled them do their work conveniently (mean = 4.28, standard deviation = 0.800, Skewness = -1.513, kurtosis = 3.315). The results testified of the weight that enterprises in the study

attached to the usefulness of e-banking technology, which they perceived as capable of enhancing their enterprises' performance.

The results also revealed that the managers and owners of MSEs were aware of the benefits of e-banking systems use (mean = 4.15, standard deviation = 0.875, Skewness = .769, kurtosis = .696). In the same way, the results revealed that using e-banking services enabled MSEs to undertake banking activities faster (mean = 4.35, standard deviation = 0.769, Skewness = -1.1481, kurtosis = 3.066).

The results also revealed that using e-banking services gave MSEs greater control over financial banking activities (mean = 4.08, standard deviation = 0.958, Skewness = -1.087, kurtosis = 0.943). This had the implication that e-banking technology allowed MSEs to complete their work easily. This then had the effect of motivating them to be innovative in their organizations in response to them perceiving the usefulness of e-banking technology.

Further, the results also revealed that using e-banking enabled MSEs to organize their banking tasks (mean = 4.06, standard deviation = 0.923, Skewness = -1.004, kurtosis = 0.851). On the issue that using e-banking made it easier to pay MSEs bills, the results summed up to a mean of 4.33, standard deviation of 0.801, Skewness of -1.371 and kurtosis of 2.270. Furthermore, with regard to the preference of using e-banking to pay MSEs' suppliers, the results summed up to a mean of 4.01, standard deviation of 1.083, Skewness of -1.110 and kurtosis of 0.582. Finally, the results revealed that managers and owners of MSEs highly recommended their customers to use e-banking (mean = 4.23, standard deviation = 0.913, Skewness = -1.431, kurtosis = 2.076). It, therefore, implied that owners and managers of MSEs agreed on the usefulness of e-banking

technology to enhance their enterprises' performance. The above results were as shown in Table 4.6 below.

Table 4.6: Descriptive Statistics for Perceived Usefulness of E-banking Technology

Items	Min	Max	Mean	SD	Skewness	Kurtosis
Using e banking improve my efficiency in bank transaction	1	5	4.41	.735	-1.598	4.051
Using e banking enables me to do my work conveniently	1	5	4.28	.800	-1.513	3.315
Am aware of the benefits of e banking systems use	1	5	4.15	.875	-.968	.696
Using e banking services enables me to accomplish banking activities more quickly.	1	5	4.35	.769	-1.481	3.066
Using e banking services gives me greater control over financial banking activities.	1	5	4.08	.958	-1.087	.943
Using e banking enables me to organize banking tasks.	1	5	4.06	.923	-1.004	.851
Using e banking makes it easier to pay my bills.	1	5	4.33	.801	-1.371	2.270
I prefer using e- banking to pay my suppliers	1	5	4.01	1.083	-1.110	.582
I highly recommend my customers to use e banking	1	5	4.23	.913	-1.431	2.076
Average	**1**	**5**	**4.21**	**0.873**	**-1.285**	**1.983**

Source: Researcher (2019)

4.6.4 Descriptive Statistics for E-banking Technology Adoption

This section provides the study findings for e-banking technology adoption. The results for using e-banking to pay utility bills revealed that the respondents agreed (mean = 4.31, standard deviation = 0.855, Skewness = -1.353, kurtosis = -1.632). The results implied that MSE operators were familiar with the use of the e-banking technology transaction services as it was easy to use. Likewise, the managers and owners of MSEs agreed that they used e-banking to check account balances (mean = 4.38, standard deviation = 0.756, Skewness = -1.392, kurtosis = 2.295). Furthermore, the managers and owners agreed that they used e-banking to transfer funds (mean = 4.29, standard deviation = 0.864, Skewness = -1.538, kurtosis = 2.723). These results suggested that

the respondents had skills or additional knowledge to make it easier for them to use e-banking technology.

In addition, the managers and owners of MSEs agreed that they used e-banking to receive funds (mean = 4.27, standard deviation = .852, Skewness = -1.420, kurtosis = 2.363). The managers and owners of MSEs further agreed that they used e-banking to deposit money to the bank (mean = 4.22, standard deviation = .991, Skewness = -1.432, kurtosis = 1.671). Besides, they also slightly agreed that they used e-banking for record keeping (mean = 3.74, standard deviation = 1.223, Skewness = -0.693, kurtosis = -0.637). Furthermore, the managers and owners agreed that they used e-banking to pay their suppliers (mean = 4.06, standard deviation = 1.080, Skewness = -1.212, kurtosis = 0.772).

The the managers and owners agreed that they enjoyed using e-banking technology (mean = 4.26, standard deviation = 0.888, Skewness = -1.402, kurtosis = 1.961). Lastly, the respondents agreed that they were satisfied with e-banking services (mean = 4.28, standard deviation = 0.906, Skewness = -1.454, kurtosis = 2.038). The results implied that the MSEs had adopted e-banking technology because it offered unique contributions towards performance of their enterprises. These results were as presented in Table 4.7 below.

Table 4.7: Descriptive Statistics for E-banking Technology Adoption

Items	Min	Max	Mean	SD	Skewness	Kurtosis
I use e banking to pay my utility bills	1	5	4.31	.855	-1.353	1.632
I use e banking to check account balance	1	5	4.38	.756	-1.392	2.295
I use e banking to Transfer funds	1	5	4.29	.864	-1.538	2.723
I use e banking to receive funds	1	5	4.27	.852	-1.420	2.363
I use e banking to Deposit money to the bank	1	5	4.22	.991	-1.432	1.671
I use e banking for record keeping	1	5	3.74	1.223	-.693	-.637
I use e banking to pay my suppliers.	1	5	4.06	1.080	-1.212	.772
I enjoy using e banking technology	1	5	4.26	.888	-1.402	1.961
I am satisfied with e banking services	1	5	4.28	.906	-1.454	2.038
Average	**1**	**5**	**4.16**	**0.972**	**-1.307**	**1.556**

Source: Researcher (2019)

4.6.5 Descriptive Statistics for Innovative Behaviour

The study also deemed it necessary to establish the effect of innovative behaviour on MSE performance. It was evident from the findings that MSE managers and owners agreed that new business methods and services were always worth the effort, even though the new methods might be risky (mean = 4.24, standard deviation = 0.920, Skewness = -1.635, kurtosis = 3.167). The implication is that the enterprises were more likely to adopt innovative behaviours hence fostering and contributing towards enterprise performance. Moreover, they agreed that their enterprises involved current and potential customers to identify areas that needed improvement (mean = 4.20, standard deviation = 0.803, Skewness = -1.338, kurtosis= 2.904).

On the same note, the managers and owners agreed that they pioneered products, services or business models that added value to their enterprises (mean = 4.18, standard deviation = 0.880, Skewness = -1.229, kurtosis = 1.601). Similarly, they agreed that

new technologies were often perceived as very unique by customers (mean= 4.13, standard deviation = 0.925, Skewness = -1.171, kurtosis = 1.464). The results also showed that employees had a clear understanding of the enterprise's unique value proposition (mean = 3.96, standard deviation = 0.940, Skewness = -.821, kurtosis = .536). Likewise, the managers and owners agreed that they actively observed and adopted the best technologies in the market (mean = 4.19, standard deviation = 0.829, Skewness = -1.130, kurtosis = 1.632). Therefore, MSE owners and managers were very innovative. In addition, the study revealed that managers and owners introduced new productive processes to their enterprises (mean = 4.07, standard deviation = 0.886, Skewness = -1.092, kurtosis = 1.356).

Furthermore, the managers revealed that the desire for innovation was strong in their enterprises (mean = 4.17, standard deviation = 0.828, Skewness = -1.017, kurtosis = 1.044). In such a circumstance, the MSE owners and managers were able to identify innovative aspects that enhanced enterprise performance (mean = 4.37, standard deviation = 0.757, Skewness = -1.248, kurtosis = 1.887). Similarly, the MSE managers and owners agreed that they were open to new information. Furthermore, the results on the issue that MSE owners and managers systematically search for new ideas summed up to mean of 4.29, standard deviation of 0.819, Skewness of -1.377 and kurtosis of 2.372. Additionally, the results revealed that employees were involved in suggesting ideas for improvements to products/processes (mean = 4.06, standard deviation = 0.932, Skewness = -1.132, kurtosis = 1.258).

The results on whether managers and employees regularly evaluated the needs of their customers/end users summed up to mean of 4.21, standard deviation of 0.814, Skewness of -1.398 and kurtosis of 2.823. Finally, the MSE owners and managers

agreed that they integrated business and technology to best develop innovative ideas (mean = 4.23, standard deviation = 0.869, Skewness = -1.469, kurtosis = 2.743). This implied that innovative behaviour in MSEs involved the generation and implementation of new ideas characterized by particular features, clear originality and noticeable user benefits. Table 4.8 below highlights the results.

Table 4.8: Descriptive Statistics for Innovative Behaviour

Items	Min	Max	Mean	SD	Skewnes	Kurtosis
New business methods and services are always worth trying even if they may prove risky.	1	5	4.24	.920	-1.635	3.167
I involve current and potential customers to identify areas that need improvement	1	5	4.20	.803	-1.338	2.904
I pioneer products, services or business models that add value to the enterprise	1	5	4.18	.880	-1.229	1.601
New technologies are often perceived as very unique by customers.	1	5	4.13	.925	-1.171	1.464
Employees have a clear understanding of the company's unique value proposition	1	5	3.96	.940	-.821	.536
I actively observe and adopt the best technologies in the market	1	5	4.19	.829	-1.130	1.632
I introduce new productive processes	1	5	4.07	.886	-1.092	1.356
The desire for innovation is strong in my enterprise	1	5	4.17	.828	-1.017	1.044
I'm Open to new information	1	5	4.37	.757	-1.248	1.887
I systematically search for new ideas	1	5	4.29	.819	-1.377	2.372
Employees are involved in suggesting ideas for improvements to products/processes	1	5	4.06	.932	-1.132	1.258
I regularly evaluate the needs of our customers /end users	1	5	4.21	.814	-1.398	2.823
I integrate business and technology to best develop innovative ideas	1	5	4.23	.869	-1.469	2.743
Average	**1**	**5**	**4.172**	**0.862**	**-1.235**	**1.907**

Source: Researcher (2019)

4.7 T-test and ANOVA for Demographic Characteristics against the Dependent Variable

T-test and one way ANOVA was performed to determine whether any differences exist in relation to the means of responses between the groups on the variables in the study. T-test is used to determine wether there is a statistical difference between means of two groups while ANOVA is used to determine whether there are statistically significant differences between the means of three or more unrelated (independent) groups. The purpose is to compare the means between the groups you are interested in and determines whether any of those means are statistically significantly different from each other.

4.7.1 T-test for Gender against MSE Performance

The study sought to determine the influence of gender on MSE performance. T-test was conducted to determine the difference that existed between the grand mean scores of the two genders on their perception about gender and MSE performance. Study findings showed that there was statistically significant difference between the means of males and females (t = 19.764, ρ= .000<.05). The implication was that gender does play an important role in MSE performance. Furthermore, the mean of females was high, which implied that females had a higher contribution to MSE performance than did males. Table 4.9 highlights the results.

Table 4.9: T-test for Gender against MSE Performance

| Variable | Gender | N | Descriptives | | T- test | |
			Mean	Std. deviation	t	Sig.
Gender	Female	208	3.7294	.97750	19.764	.000
	Male	194	3.5781	.86161		
	Total	402	3.6564	.92535		

Source: Researcher (2019)

4.7.2 ANOVA for Age against MSE Performance

The study sought to establish the relationship between age and MSE performance. The results indicated that there was no statistically significant difference between the age and MSE performance (F = 0. 772, ρ= .544>.05). These results implied that age had no influence on MSE performance, as the enterprise might have been having all ages of owners/managers who influence performance. However, the mean of those below 25 years had a higher contribution towards MSE performance as they tended to take risks with regard to technology adoption, hence influencing the profits of their enterprises. The results were as highlighted in Table 4.10.

Table 4.10: ANOVA for Age against MSE Performance

Variable	Years	N	Descriptives Mean	Std. deviation	ANOVA F	Sig.
Age	Below 25	66	3.7792	.76877		
	26-30	98	3.6676	.92985		
	31-35	81	3.5344	1.01211	.772	.544
	36-40	70	3.6020	.92515		
	Above 40	87	3.7077	.94884		
	Total	402	3.6564	.92535		

Source: Researcher (2019)

4.7.3 ANOVA for Education Level against MSE Performance

The study deemed it important to establish the statistical relationship of education level against MSE performance. Based on the findings, there was statistical significance between education level and MSE performance (F = 2.297, ρ= .034<.05). These findings indicated that the level of education of respondents influenced MSE performance. Precisely, the postgraduate level of education had a greater bearing with regard to performance of the enterprises, as shown in Table 4.11.

Table 4.11: ANOVA for Education Level against MSE Performance

| Variable | Category | N | Descriptives | | ANOVA | |
			Mean	Std. deviation	F	Sig.
Education	None	5	3.1714	.44493		
	Primary	53	3.6846	1.01301		
	Secondary	132	3.8160	.84202		
	Certificate	80	3.5179	.94416	2.297	.034
	Diploma	70	3.4408	.89553		
	Bachelor	41	3.6376	1.01020		
	Postgraduate	21	3.9796	.95328		
	Total	402	3.6564	.92535		

Source: Researcher (2019)

4.8 Reliability of Research Instrument

To provide a preliminary assessment and refinement of the questionnaire's measurement scales, an alpha coefficient was calculated to assess the reliability of the composite variables. A measure's reliability is the consistency of the results each time the same thing is measured using the alpha Coefficient (or Cronbach's) (Hair *et al.*, 2006). The alpha coefficient is an index of the internal consistency of the items and also a useful reliability estimate (Wanjau, Rotich, & Namusonge, 2015). Reliability is high when the elements in the equation are strongly correlated. As a standard of reliability, alpha coefficient values above 0.70 are regarded as acceptable reliability, those above 0.80 as good reliability and those above 0.90 as excellent reliability (Hair *et al.*, 2006). The instrument's reliability was achieved using Cronbach's alpha constant, which is a measure of internal accuracy and mean correlation. As regards the study results, the Cronbach alpha was as follows for standardized items for each of the variables: MSE performance had an α of .900 with 7 items; E-banking technology characteristics had an α of .939 with 20 items; E-banking technology adoption had an α of .910 with 9 items, and Innovative behaviour had an α of .897 with 13 items. These results were as shown in Table 4.12 below. This implies that the instrument was reliable as all the variables met the threshold of a minimum α of 0.70. These findings were consistent

with the suggestion by Hair *et al.* (2006) that a coefficient of above 0.70 indicates a high reliability standard for the instrument.

Table 4.12: Reliability

Variable	Cronbach's Alpha	Cronbach's Alpha standardized items	No. of items
MSE Performance	.900	.900	7
E-baking technology characteristics	.938	.939	20
E-Banking Technology Adoption	.906	.910	9
Innovative Behaviour	.896	.897	13

Source: Researcher (2019)

4.9 Factor Analysis

Factor analysis was done in this research to identify the latent variables in the data constructs and to prepare it for regression analysis (Idinga, 2015; Swartz *et al.*, 2004). In order to do factor analysis, the analysis requirements were assessed starting with settling on exploratory factor analysis (EFA). EFA was selected because it enabled the study to explore the content area, identified underlying factors by clustering variables into homogeneous sets and creation of new variables (factors), map unknown concepts and reduce data sets (Idinga, 2015). Hence, exploratory factor analysis was conducted for all items used to measure independent variables (e-banking technology characteristics) so as to remove redundancy items since it is the only variable with more than one factor loading.

4.9.1 Sampling Adequacy

First, data was assessed for its suitability in terms of sample size and the strength of the relationship between variables or items. A sample of over 300 participants was deemed a appropriate for the study (Tabachnick *et al.*, 2007). The factorability of the data was then evaluated using the Bartlets sphericity test and the Kaiser-Meyer-Olkin (KMO)

sampling adequacy measure (Bartlets sphericity test should be statically significant at p< 0.05, KMO index should range from 0 to 1). Sampling adequacy was tested using the Kaiser- Meyer- Olkin sampling adequacy measure (KMO measure) exceeding 0.5 and the Bartlett test was significant. The findings were as presented in Table 4.13.

4.9.2 Variance Explained

The characteristics of e-banking technology loaded first factor, which accounted for 26.164 % while the second factor accounted for 24.702 percent of the total variance. The first and second set of factors were: named perceived ease of use and perceived usefulness respectively. Factor extraction was performed using principal component analysis (PCA) in which factors were selected with Eigen values greater than 1. PCA was chosen as the most convenient method, as it revealed all the common and unique variances (Idinga, 2015). Orthogonal rotation was chosen as the method of extraction because the results of an orthogonal rotation are more likely to be replicated in future studies and previous investigators have found less sampling error and more parsimonious results. The two factor solution explained 55.8% of the variance.Table 4.13 displays the Kmo Bartlett's test and variance.

Table 4.13:   KMO Bartlett's Test and Variance

Kaiser-Meyer-Olkin Measure of Sampling Adequacy			.943
Bartlett's Test of Sphericity Approx. Chi-Square			4000.313
df			153
sig			.000
Initial		Eigenvalues	
Component	Total	% of Variance	Cumulative %
1. Perceived ease of use	8.565	28.326	28.326
2. Perceived usefulness	1.489	27.529	55.855

4.9.3 Rotated Component Matrix for E-banking Technology Characteristics

Factors with factor loadings of above 0.5 were chosen and retained for further data analysis. E-banking technology characteristics items, namely: I understand most of the operations I perform during any transaction; Learning to operate e-banking is easy for me; E-banking is an easy way to conduct a banking transaction; Information displayed on the screen during electronic banking is clear, well organized and easy to read; The e-banking platform offers information in more than one language; I find e-banking system flexible to interact with; I am willing to use e banking frequently; I understand the terms and conditions of e-banking since they are simple and clear; I rarely refer to user manual when using the e banking system; Using e-banking improve my efficiency in bank transaction; Using e-banking enables me to do my work conveniently, Am aware of the benefits of e banking systems use; Using e-banking services enables me to accomplish banking activities more quickly; Using e-banking services gives me greater control over financial banking activities; Using e-banking enables me to organize banking tasks, Using e-banking makes it easier to pay my bills; I prefer using e-banking to pay my suppliers, and I highly recommend my customers to use e-banking, were later used for further analysis as indicated in table 4:14.

Table 4.14: Rotated Component Matrix for E-banking Technology Characteristics

Item	Factor	
	Perceived ease of use	Perceived usefulness
E banking is easy to use and saves time.		
Using e banking requires little mental effort.	.504	
I understand most of the operations I perform during any transaction	.698	
Learning to operate e banking is easy for me	.708	
E-banking is an easy way to conduct a banking transaction.	.613	
Information displayed on the screen during electronic banking is clear, well organized and easy to read.	.737	
The e-banking platform offers information in more than one language.	.714	
I find e-banking system flexible to interact with	.673	
I am willing to use e-banking frequently	.697	
I understand the terms and conditions of e-banking since they are simple and clear	.711	
I rarely refer to user manual when using the e-banking system		
Using e-banking improve my efficiency in bank transaction		.651
Using e-banking enables me to do my work conveniently		.725
Am aware of the benefits of e-banking systems use		.711
Using e-banking services enables me to accomplish banking activities more quickly.		.695
Using e-banking services gives me greater control over financial banking activities.		.643
Using e-banking enables me to organize banking tasks.		.686
Using e-banking makes it easier to pay my bills.		.603
I prefer using e-banking to pay my suppliers		.576
I highly recommend my customers to use e-banking		.657
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization. a. Rotation converged in 3 iterations.		

Source: Researcher (2019)

4.9.4 Factor Analysis for other Vaviables

Factorability of the 29 items of the study were examined to identify a small number of items which were used to test relationship among interrelated variables, and also to investigate the validity of each construct through measurement purification process,

items with factor loadings less than .5 were to be omitted from the analyses so as to increase construct validity. Construct validity measures the degree to which a scale measures what it intends to measure and it is assessed by factor analysis in this research study (Souza *et al*. 2017).

The Kaiser-Meyer-Olkin measure of sampling adequacy was .941, above the recommended value of .5 (Fisher, 2005), and Bartlett‟s test of sphericity was significant with Chi-square of 6291.387, at *df*= 406 and a significant level of *p* =.000. Further confirming that each item shared some common variance with other items. Communalities refer to the proportion of variability in the original variable that is accounted for by the high loading factors. Given these overall indicators, factor analysis was deemed to be suitable with items of the study as shown in Table 4.15.

Principal components analysis was used with an objective of identifying and computing the composite scores for the factors underlying the study. Initial Eigen values indicated that the first three factors explained 37.6%, 9.1% and 7.3% of the variance respectively. Solutions for these factors were each examined using varimax rotation of the factor loading matrix. The three factor solution, which explained 54% of the variance, was preferred because of its previous theoretical support as discussed in the measurement section of chapter three of this document.

Table 4.15: KMO Bartlett's Test and Variance

Kaiser-Meyer-Olkin Measure of Sampling Adequacy			.941
Bartlett's Test of Sphericity Approx. Chi-Square			6291.387
		df	406
		sig	.000
Component	Initial Total	Eigenvalues % of Variance	Cumulative %
1. MSE performance	10.906	37.609	37.609
2. e-banking technology characteristics	2.660	9.174	46.782
3. innovative behaviour	2.118	7.304	54.087

Source: Researcher (2019)

The factor loading of each item for all the variables of the study are as shown in table 4:16. Any item that fails to meet the criteria of having a factor loading value of greater than .5 and does not load on only one factor was dropped from the study as suggested by literature (Souza *et al.*, 2017). The table indicates that all the 29 items were sorted and clustered into three components: The seven (7) items measuring component three (3) are all related to MSE perrformance adopted from hughes and morgan (2007); component two (2) has five (9) items adopted from chong (2013) and rawashdeh (2015) measuring e-banking technology adoption. The table further indicates that all thirteen (13) items adopted from lumpkin and Dess (1996) measuring innovative behaviour loaded under component one (1). All the items were retained for further analysis as the factor loadings were above .5 as shown in table 4:16

Table 4.156: Rotated Component Matrix for other variables

Variables and measurement items. (Note: 1- 3 component 1 to 3)	Component		
	1	2	3
MSE performance items loaded under component 3			
Over the last one year, my enterprise has generated high sales			.742
Over the last one year, my enterprise has reduced operational costs			.536
Over the last one year, my enterprise has increased the number of employees			.765
Over last year, my enterprise has fully met my financial expectations			.783
Over the last one year, I have acquired more assets			.798
Over the last one year, I have an increase in my net revenue			.785
Over the last one year, the performance of my enterprise has been satisfactory			.800
E-banking technology characteristics items loaded under component 2			
I use e banking to pay my utility bills		.588	
I use e banking to check account balance		.733	
I use e banking to Transfer funds		.774	
I use e banking to receive funds		.796	
I use e banking to Deposit money to the bank		.754	
I use e banking for record keeping		.580	
I use e banking to pay my suppliers.		.674	
I enjoy using e banking technology		.717	
I am satisfied with e banking services		.654	
Innovative Behaviour items loaded under component 1			
New business methods and services are always worth trying even if they may prove risky.	.600		
I involve current and potential customers to identify areas that need improvement	.685		
I pioneer products, services or business models that add value to the enterprise	.626		
New technologies are often perceived as very unique by customers.	.630		
Employees have a clear understanding of the company's unique value proposition	.618		
I actively observe and adopt the best technologies in the market	.631		
I introduce new productive processes	.546		
The desire for innovation is strong in my enterprise	.689		
I'm Open to new information	.643		
I systematically search for new ideas	.631		
Employees are involved in suggesting ideas for improvements to products/processes	.520		
I regularly evaluate the needs of our customers /end users	.587		
I integrate business and technology to best develop innovative ideas	.640		

Source: Researcher (2019)

4.10 Data Transformation Indices

Data was transformed by getting the means of the items that loaded to the respective factors. Subsequently, the means of the various factors derived were then used for further analysis. The descriptive statistics were used for further analysis, as shown in Table 4.17.

Table 4.17: Transformed Variables after Factor Analysis

Items	N	Min	Max	Mean	SD
MSE Performance	402	1.00	5.00	3.6397	.94858
E-banking technology characteristics	402	1.75	5.00	4.1490	.63400
E-banking technology adoption	402	1.00	5.00	4.1752	.75155
Innovative Behaviour	402	1.46	5.00	4.1508	.60212

Source: Researcher (2019)

4.11 Tests for Regression Assumptions

The data set was further tested for assumptions before carrying out regression analysis. According to Hair *et al*. (1998), regression analysis assumptions is essential in order to ensure that the results obtained were actually representative of the sample, in order to achieve the best possible results. The key assumptions tested included normality, linearity, multi-colinearity, homoscedasticity and independence of errors (Hair *et al.*, 1998). The study used the existing sample data to test for the hypotheses after it met the key assumptions.

4.11.1 Normality Test for the Variables

A testing process for assuming normality was used to determine whether or not the data fit the normal distribution. Normality assumptions were tested at univariate level (i.e. scoring distribution at an item-level) and multivariate level (i.e. scoring distribution within a combination of two or more items). The assumption of normality was confirmed by bootstrapping, which generates a customized distribution around the data and then tests the meaning of the results against the custom distribution (Hayes,

2015). In addition, normality was confirmed by examining the variables' distributions (i.e. histograms) and their values of skewness and kurtosis. The distributions of the variables were distributed approximately normally from the histograms (appendix IV). (Tabachnick & Fidell, 2013). This was further confirmed by the results of the skewedness and kurtosis discussed in the construction of variables that suggested data normality ranging from -1.96 to +1.96. Table 4.18 highlights the results.

Table 4.18: Test for Normality for the Variables

	Skewness		**Kurtosis**	
	Statistic	**Std. error**	**Statistic**	**Std. error**
MSE performance	-.524	.122	-.387	.243
E banking technology characteristics	-.822	.122	.619	.243
E banking technology adoption	-.941	.122	.652	.243
Innovative behaviour	-.842	.122	1.505	.243

Source: Researcher (2019)

4.11.2 Multi-collinearity Test for the Variables

Multi-colinearity meant that two or more of the independent variables were highly correlated and this situation could ruin the results of multiple regressions (Cooper & Schindler, 2006). Multi-collinearity was observed using tolerance and variance inflation factor (VIF) in reciprocal variance. The cut-off point for multicollinearity determination was a tolerance value greater than 0.10 and a VIF value less than 10 (Hair *et al.*, 2006). The VIF values in Table 4.19 were less than ten and the tolerance level greater than 0.10 meant that there was no multi-colinearity among the independent variables of the study.

Based on the coefficients output, collinearity diagnostics, the study obtained E-banking Technology Characteristics (VIF= 3.131), E-banking Technology Adoption (VIF= 2.783) and Innovative Behaviour (VIF= 1.886). The values ranged from 1.886 to 3.131 hence being within the acceptable range of 1 to 10. It was concluded that

there was absence of multi-collinearity symptoms and thus the data was malleable to

regression analysis as it met the assumption criteria of absence of multi-collinearity.

Table 4.16: Multi-collinearity of the Variables

	Correlations	Collinearity Statistics	
Model	Zero order	Tolerance	VIF
E-banking Technology Characteristics	0.556	0.319	3.131
E-banking Technology Adoption	0.529	0.359	2.783
Innovative Behaviour	0.477	0.530	1.886

Source: Researcher (2019)

4.11.3 Homoscedasticity Test for the Variables

Homoscedasticity refers to the assumption that for independent variables the dependent

variable exhibits similar amounts of variance over the range of values. To test for the

homogeneity of variances in this study, levene variance equality statistics were used.

The study revealed that the assumption of homogeneity of variances was not violated,

as shown in Table 4.20, since none of the Levene statistics were significant (alpha level

of 0.05) (Tabachnick *et al.*, 2007).

Table 4.20: Test of Homogeneity of Variances

	Levene Statistic	df1	df2	Sig.
MSE performance	1.527	4	397	.193
E-banking technology characteristics	.515	4	397	.725
E-banking technology adoption	.847	4	397	.496
Innovative behaviour	1.522	4	397	.195

Source: Researcher (2019)

4.11.4 Testing the Assumption of Independence of Errors

Prediction of independence of errors might not be perfect particularly when prediction

errors are correlated. The Durbin-Watson method was used in this analysis to check

for the existence of serial interaction between the residuals. The assumption that errors

are independent requires that the residuals or prediction errors do not follow a pattern

from case to case. As recommended by Tabachnick *et al.* (2007), a value of between

1.5 and 2.5 is deemed appropriate to show lack of serial correlation among the errors. As shown in Table 4.21, the Durbin Watson for this study was 1.856, which was within the acceptable threshold.

Table 4.21: Independence of Errors

Model	Change Statistics					Durbin-Watson
	R-Square Change	F Change	df1	df2	Sig. F Change	
1	.343	71.277	3	409	.000	1.856

a. Predictors: (Constant), IB, ETA, EBT
b. Dependent Variable: PF

Source: Researcher (2019)

4.11.5 Linearity Test for the Variables

The assumption that the relationship between independent variable and dependent variables are linear. The relationship between dependent and independent variable can only be estimated by multiple regression if the relationships are linear in nature (Garson, 2012). The argument is that if the relationship between independent variables (IV) and the dependent variable (DV) is not linear, the results of the regression analysis will under-estimate or overestimate the true relationship which leads to an increased chance of a Type I error or Type II errors. In case this condition is not met by the data, then it has to be transformed so as to be subjected to regression analysis (Kothari & Garg, 2014). In this analysis, linearity was evaluated using the correlation coefficient of Pearson Product Moment to measure the strength of a linear association. Linearity was tested using Pearson's Product Moment Correlation coefficient and it was revealed that there was a relationship. This was done to check the actual strength of the correlation. Subsequently, linear models predict values which fall in a straight line by having a constant change of unit or slope of the dependent variable for a constant change of the independent variable. The aim of using correlation was mainly to identify

independent variables that provided the best predictions considered a requirement for running regression analysis. The results were as shown in Table 4.22.

4.12 Correlation Statistics for the Variables

The Pearson product-moment correlation test was used to classify the associations between variables. This method of correlation was chosen as it is used when both variables are at interval level of measurement and the data is parametric. (Tabachnick & Fidell, 2013) recommends that the value of correlation coefficient should range between -1 and +1. A correlation of +1.00 indicates a perfect positive correlation, while a value of -1.00 represents a perfect negative correlation, and a value of 0.00 indicates no linear relationship between variables X and Y or between the two (Tabachnick & Fidell, 2013). Thus the study's correlation findings showed that e-banking technology characteristics was positive and significant with MSE performance ($r = 0.561, p < 0.01$). Further, e-banking technology adoption was positively and significantly correlated to MSE performance ($r = 0.534, p < 0.01$). Likewise, innovative behaviour was positively correlated with MSE performance ($r = 0.482, p < 0.01$). This implied that e-banking technology characteristics, e-banking technology adoption and innovative behaviour were expected to influence MSE performance. Table 4.22 below illustrates Pearson correlation findings of the analysis with dependent and independent variables in order to determine the variables relationship.

Table 4.22: Correlation Statistics for the Variables

Variables	PF	EBT	ETA	IB
MSE Performance (PF)	1			
E-banking technology characteristics (EBT)	.561**	1		
E-banking technology adoption (ETA)	.534**	.792**	1	
Innovative behaviour (IB)	.482**	.670**	.617**	1
**. Correlation is significant at the 0.01 level (2-tailed).				

Source: Researcher (2019)

4.13 Hypothesis Testing

This study adopted hierarchical multiple regression analysis to test hypotheses H_{01}, H_{02}, H_{03} and H_{04} (direct effects) and Hayes Model 4 using process macro version 3.2 for H_{05} (mediation). Additionally, the research used Hayes Model 58 to test for moderation and moderated mediation (H_{06}, H_{07} & H_{08}).

4.13.1 Testing Effect of Control Variables in the Study

A test to identify the effects of the control variables on the dependent variable was done in order to understand how they affected the dependent variable. The findings in Table 4.22 indicate that gender (β= -.046, p>.05), age (β= -.038, p>.05) and education (β= -.030, p>.05) were found to be insignificant. Additionally, the study showed that all the control variables explain 0.04% of the total variance in MSE performance, as indicated by R^2=.004 with F=.493 and shown in Table 4.23.

4.13.2 E-banking Technology Characteristics on MSE Performance

Hypothesis H_{01} stated that e-banking technology characteristics had no significant effect on MSE performance. The control variables gender (β= -.021, p>.05), age (β= -.043, p>.05), and education (β=-.043, p>.05) were included in the study and findings indicated that none of the control variables significantly influenced MSE performance. However, control variables contributed 0.04% to the model. The findings explained a variation of 31.3% on MSE performance (R^2=.313, ΔR^2=.309 with F=178.815, p<.05). Additionally, the study findings showed that e-banking technology characteristics (.557 with p<.05) was positive and had a significant effect on MSE performance. Based on the results, the null hypothesis was rejected, as shown in Table 4.23.

4.13.3 E-banking Technology Adoption on MSE Performance

Hypothesis H_{02} stated that e-banking technology adoption had no significant effect on MSE performance. Table 4.23 reveals that all the variables in the model were found to be insignificant with gender (β= -.016, p>.05), age (β= -.031, p>.05), and education (β= -.031, p>.05). The study further indicates that this model explained 33.2% of the variance on MSE performance with (R^2=.332, ΔR^2=.019, F=11.002, p<.05). The ΔR^2 of 0.019 indicates that e-banking technology adoption contributed 1.9% of the variance on MSE performance while holding constant control variables, e-banking technology characteristics. However, the most important findings were that e-banking technology adoption had significant effect on MSE performance with coefficient estimates of 0.225 with p<.05 thus the null hypothesis was rejected.

4.13.4 Innovative Behaviour on MSE Performance

Hypothesis three stated that innovative behaviour had no significant effect on MSE performance. A test to identify the effects of the independent and control variables on the dependent variable was done. The findings in the Table 4.23 reveals that all the control variables in the model were found to be insignificant with gender (β = .001, p>.05), age (β = -.032, p>.05), education (β = -.020, p>.05). The study further indicates that this model explained 34.5% of the variance on MSE performance with R^2=.345, ΔR=.013, F=7.695, p<.05. The ΔR^2 of 0.013 indicated that e-banking technology adoption contributed 1.3% of the variance on MSE performance while holding constant control variables, e-banking technology characteristics and e-banking technology adoption. Additionally, study findings indicated that e-banking technology adoption had a positive and significant effect on MSE performance with coefficient estimates of 0.157 with p<.05, thus the null hypothesis was rejected.

Table 4.23: Results of the Direct Effects for H_{01}-H_{03}

Variable	Model 1		Model 2		Model 3		Model 4	
	β	*pv*	β	*pv*	β	*pv*	β	*pv*
Gender	-.046	.360	-.021	.617	-.016	.701	.001	.987
Age	-.038	.449	-.043	.312	-.031	.461	-.032	.447
Education	-.030	.551	-.042	.322	-.031	.464	-.020	.629
EBT			.557***	.000	.379***	.000	.301***	.000
ETA	-	-			.225***	.001	.190**	.006
IB							.157**	.006
Model summary								
R^2	.004		.313		.332		.345	
ΔR	.004		.309		.019		.013	
F	.567	.637	178.815	.000	11.002	.001	7.695	.006

Note: ***p < .001, EBT=E banking technology, ETA =e-banking technology adoption, IB= innovative behaviour

Source: Researcher (2019)

4.13.5 E-banking Technology Characteristics on E-Banking Technology Adoption

Hypothesis H_{04} stated that e-banking technology characteristics had no significant effect on e-banking technology adoption. The findings in the Table 4.24 reveals that gender (β= -.032, p>.05) and education (β= -.068, p>.05) were insignificant while age (β= -.053, p<.05) was found to significantly have an effect on e-banking technology adoption. This model explained 64.5% variance on e-banking technology adoption with R^2=.645, ΔR=.645, F=180.489, p<.05. The $ΔR^2$ of 0.645 indicated that e-banking technology characteristics contributed 64.5% of the variance on e-banking technology adoption while holding control variables constant. Furthermore, the findings indicated that the characteristics of e-banking technology had a positive and significant effect on the adoption of e-banking technology with coefficient estimates of 0.798 with p<.05, thus the null hypothesis was rejected.

Table 4.24: Results for E-Banking Technology Characteristics on E-Banking Technology Adoption

Model		Unstandardized Coefficients		Standardize Coefficients	t	Sig.
		B	Std. Error	Beta		
7	Gender	-.065	.061	-.032	-1.065	.287
	Age	-.049	.022	-.068	-2.256	.025
	Education	-.037	.021	-.053	-1.736	.083
	E-bank techn. Charact	.798	.052	.798	26.581	.000
Model summary statistics						
R^2		.645				
ΔR		.645				
F		180.489				.000

Source: Researcher (2019)

4.13.6 Mediating Effect of E-Banking Technology Adoption on the Relationship between E-Banking Technology Characteristics and MSE Performance

Hypothesis five stated that e-banking technology adoption had no mediating effect on the relationship between e-banking technology characteristics and MSE performance. The first step in testing for this hypothesis was to determine whether e-banking technology characteristics had a relationship with e-banking technology adoption. Table 4.25 reveals the findings of this procedure. The study shows that all the control variables, namely gender, age and education, were insignificant as they had $p>.05$. Additionally, results of e-banking technology characteristics ($\beta=.792$, $p<.05$) indicated a positive and significant effect on e-banking technology adoption. Furthermore, the study findings showed that all the variables in this study accounted for 33.8% of the variance on e-banking technology adoption, as shown by $R^2=.338$ with a significant $F=40.426$, $p<.05$. These findings fulfilled the requirement of the first procedure as suggested by (MacKinnon, 2012) and as indicated that X must have a relationship with M.

Table 4.25 model 2 shows the results of b_1 and c' side of Figure 3.1, which was meant to determine the effect of e-banking technology adoption on MSE performance and direct effect of e-banking technology characteristics on MSE performance. The results reveal that all the control variables were insignificant in this model, as indicated by p>.05. Additionally, the findings indicated that e-banking technology adoption had a significant effect on MSE performance with β=.233, p<.05, hence supporting equation $Y=b_0+C+b_1M+\mathcal{E}$. Furthermore, this model was used to test the direct effect of e-banking technology characteristics on MSE performance. The findings in Table 4.24 shows that e-banking technology characteristics had β=.377, p<.05, showing a significant effect on MSE performance. All the variables in this model explained 31.8% of the variance on MSE performance, as shown by R^2=.318 with F=46.255, p<.05

Since a_1 and b_1 were significant, the process of mediation was possible by calculating the product of $a_1 \times b_1$. Results in Table 4.25 indicate that a × b =.792×.233=.184 with confidence interval, CI= .088, .283. Since confidence intervals from the bootstrap analysis were both positive and non-zero, H_{05} was, therefore, rejected. The product of a× b× c for H_{05} (.792×.233 ×.377 =.070) was positive and thus signaled a complementary mediation.

Findings further in model 3 showed the results of total effect (β=.561, p<.05), which was equal to direct effect (β=.377, p<.05) +indirect effect (β=.184, p<.05), which indicated that e-banking technology characteristics had a significant relationship with MSE performance. However, when the mediator was introduced, there was an increase on the relationship between independent and dependent variables.

Table 4.25: Results for Mediating Effect of E-Banking Technology Adoption on the Relationship between E-Banking Technology Characteristics and MSE Performance

	ETA (a₁) =M1		PF (b₁) =M2		Total effect=M3	
	B	pv	β	pv	β	pv
Gender	-.065	.288	-.069	.413	-.084	.324
Age	-.049	.025	.020	.518	-.031	.309
Education	-.037	.083	.007	.803	-.016	.593
E bank tech. charact	.792	.000	.377	.000	.561	.000
E-bank. tech. adopt			.233	.000		
R2	.338		.318		.632	
F	40.426***		46.255***		170.297***	

Mediation= $a_1 \times b_1$= .792 × .233 = 184; CI=.088, .283
Note: ***$p < .001$, Dependent variable: MSE performance
Source: Researcher (2019)

4.13.7 Moderating Effect of Innovative Behaviour on E-Banking Technology Characteristics and E Banking Technology Adoption

The sixth hypothesis stated that innovative behaviour had no moderating effect on e-banking technology characteristics and adoption. The control variables (gender, age and education) were included in the model. All the control variables, namely age (β=-.014 p>.05) gender (β=. -044, p>.05) and education (β=-.030 p>.05), insignificantly affected e-banking technology adoption. Furthermore, e-banking technology characteristics had a positive and significant effect (β=.812, p<.05) on e-banking technology adoption while innovative behaviour had a positive and significant effect (β=.183, p<.05) on e-banking technology adoption. However, innovative behaviour did not moderate the relationship between e-banking technology characteristics and e-banking technology adoption. The model explained 64.4% of the variance between e-banking technology characteristics and e-banking technology adoption (R^2=.644, ΔR^2==.000, F=119.174, p<.05). Innovative behaviour had no contribution to the model. It can be seen from Table 4.26 that the regression coefficient of the interaction term of e-banking

technology characteristics and innovative behaviour was $\beta=-.030$, p=.544. The beta weight suggested that the interaction of e-banking technology characteristics and innovative behaviour had no effect on e-banking technology adoption, hence the influence was not significant. Therefore, innovative behaviour does not significantly moderate the relationship between e-banking technology characteristics and e-banking technology adoption. Thus, this hypothesis H_{06} was not rejected.

4.13.8 Moderating effect of Innovative Behaviour on the Relationship Between E-Banking Technology Adoption and MSE Performance

Hypothesis seven postulated that innovative behaviour had no moderating effect on the relationship between e banking technology adoption and MSE performance. Table 4.26 reveals that all the control variables in this model were insignificant: gender ($\beta=.028$, $p>.05$), age ($\beta=-.025$, $p>.05$), and education ($\beta=-.007$, $p>.05$). Furthermore, e-banking technology characteristics had a positive and significant effect ($\beta=.446$, $p<.05$) on MSE performance while e-banking technology adoption had a positive and significant effect ($\beta=.302$, $p<.05$) on MSE performance as well as innovative behaviour ($\beta=.256$, $p<.05$) had a positive and significant effect on MSE performance. The model explained 35.8% of the variance between e-banking technology adoption and MSE performance ($R^2=.358$, $\Delta R^2==.006$, F=31.329, $p<.05$). Additionally, the regression coefficient of the interaction term of e-banking technology adoption and innovative behaviour was $\beta=.144$, $p<.05$, suggesting that the interaction between e-banking technology adoption and innovative behaviour exerts a positive and significant moderating effect of innovative behaviour on the relationship between e-banking technology adoption and MSE performance. Due to the low p-value associated with the t-value, the hypothesis was not supported. Hence, there was a significant moderating effect of innovative behaviour on the relationship between e-banking technology adoption and MSE

performance. H_{07} was, therefore, rejected. Table 4.26 below presents results on the moderating effect of innovative behaviour.

Table 4.26: Moderating Effect of Innovative Behaviour on E-banking Technology Characteristics, Adoption and MSE Performance

Variables	Model 1	(ETA)	Model 2	(PF)
	Coeff	*pv*	Coeff	*pv*
Gender	-.014	.766	-.028	.723
Age	-.026	.111	-.025	.373
Education	-.021	.204	-.007	.802
E banking technology characteristics	.812***	.000	.446***	.000
E banking technology adoption	-	-	.302**	.001
Innovative Behaviour	.183***	.000	.256***	.004
E bank techn char ×Innovat behavior	-.030	.544	-	-
E banking techn. adoption × Inno Beh	-	-	.144*	.047
R^2	.644		.358	
ΔR^2	.000		.006	
F	119.174	.000	31.329	.000
Note: *p< .05, **p< .01, ***p< .001				

Source: Researcher (2019)

To better understand the nature of the interaction amongst e-banking technology adoption, innovative behaviour and MSE performance, the moderated results were presented on a moderation graph as suggested by Aiken and West (1991) and Jose (2013) that it is insufficient to conclude that there is interaction at different levels of the moderator without investigating the nature of that interaction. Process macro analysis was conducted using model 58 where e-banking technology adoption and innovative behaviour accounted for a significant amount of variance in MSE performance ($R^2 = .358$, F =31.329, p < .05).

The interaction term of e-banking technology adoption, innovative behaviour and control variables were added to the regression model, which accounted for a significant proportion of the variance in MSE performance, $\Delta R^2 = .006$. Examination of the moderation graph showed an enhancing effect that as e-banking technology adoption

and innovative behaviour increased, MSE performance increased. The analysis revealed that e-banking technology adoption had stronger significance on MSE performance at higher levels of innovative behaviour than at the lower levels of the same. The slopes in the figure thus indicated that, at low levels of e-banking technology adoption, MSE performance is high for enterprises with high levels of innovative behaviour than those with low levels of innovative behaviour. However, as e-banking technology increases, MSE performance increases but the increase is high with those enterprises with high levels of innovative behaviour than those with low innovative behaviour, as shown in Figure 4.1 below.
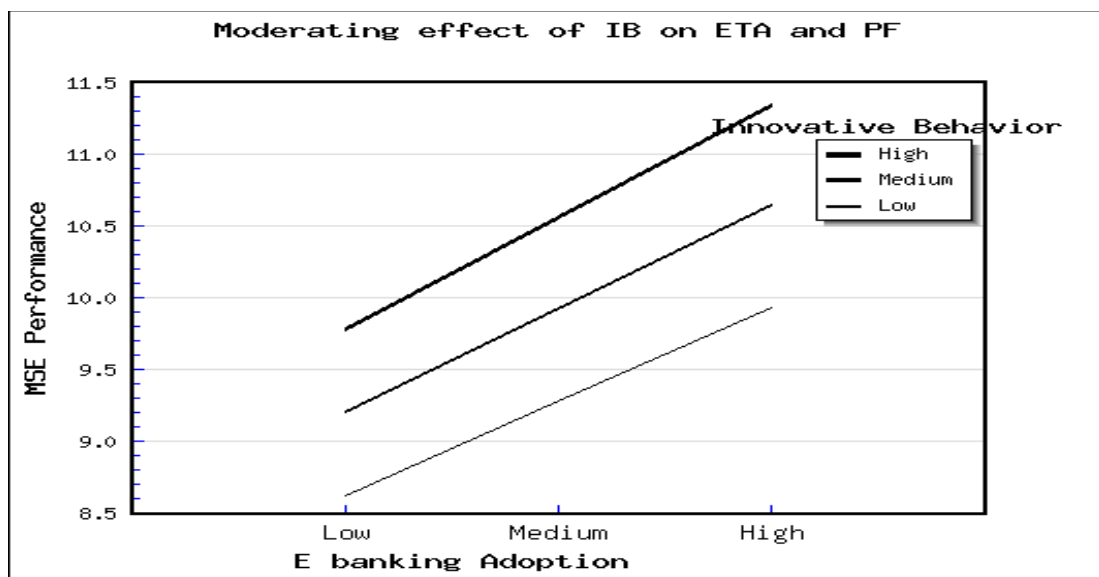
Figure 4.1: Innovative behaviour has no moderating effect on the relationship between e-banking technology adoption and MSE performance

4.13.9 Moderated Mediation of Innovative Behaviour on the Relationship between E-Banking Technology Characteristics and MSE Performance through E-Banking Technology Adoption

Hypothesis eight presumed that innovative behaviour had no moderating effect on the relationship between e-banking technology characteristics and MSE performance through e banking technology adoption. Table 4.27 reveals that the moderated

mediation took place at the lower level of the moderator (CI=.025, .334), at the mean level of the moderator (CI=.100, .387) and the upper level (CI=.137, .478). However, the moderated mediation was much stronger at the higher level of the moderator than at the lower level. Based on the results, the null hypothesis was rejected.

Table 4.17: Moderated Mediation Results of Innovative Behaviour on the Relationship between E-banking Technology Characteristics and MSE Performance through E-banking Technology Adoption

Mean Levels of IB	Effect	SE	LLCI	ULCI
Lower Level	.178	.079	.025	.334
Mean Level	.245	.074	.100	.387
Upper Level	.309	.086	.137	.478

Source: Researcher (2019)

The conditional effect of innovative behaviour on the indirect relationship between e-banking technology characteristics and MSE performance through e-banking technology adoption was analyzed. The analysis revealed that enterprises with high innovative behaviour tended to understand e-banking technology characteristics and, therefore, adopted it, which led to high performance. The slopes in the figure thus indicated that, at high levels of innovative behaviour, e-banking technology adoption was associated with stronger and significant innovative behaviour compared to when it was at the mean and lower level of innovative behaviour, which led to high performance, as shown in Figure 4.2 below.
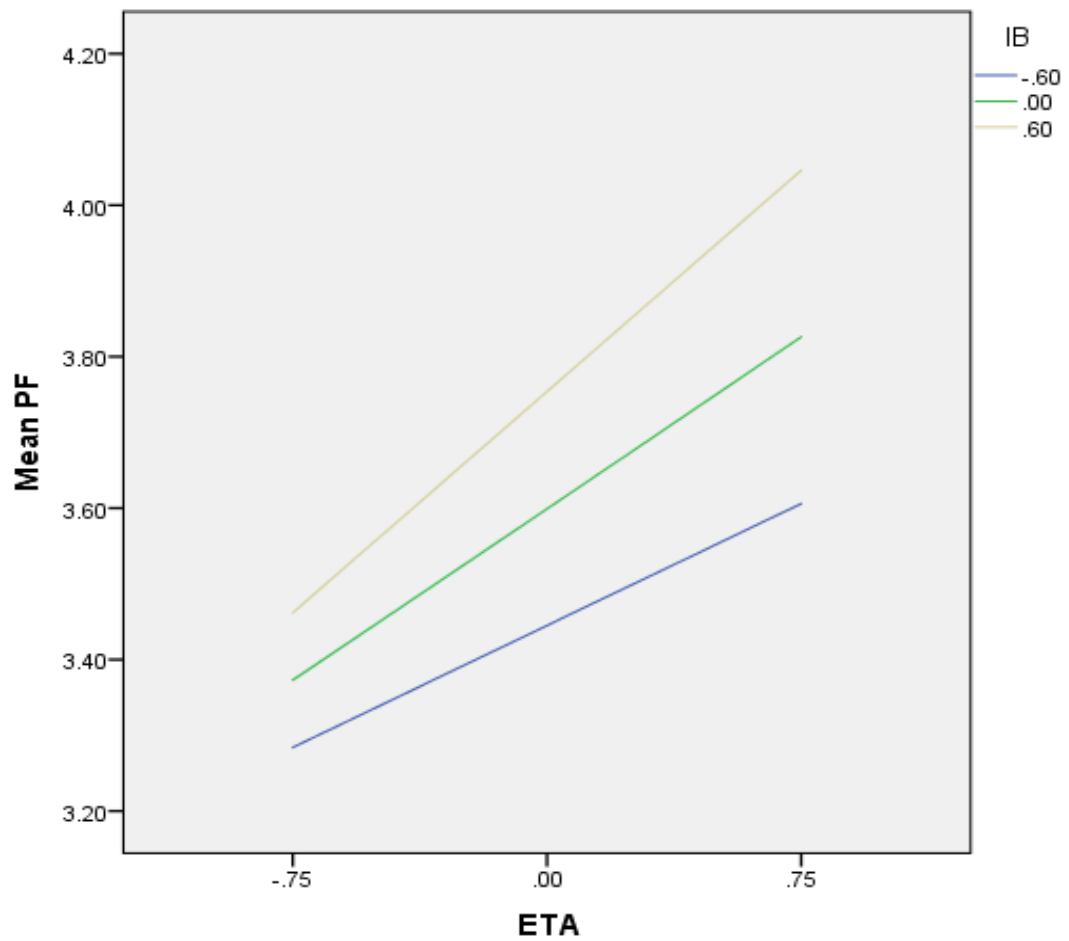
Figure 4.2: Innovative behaviour has no moderating effect on the indirect relationship between e-banking technology characteristics and MSE performance through e-banking technology adoption

Table 4.28: Summary of the Study Results

	Hypotheses	Beta	*p-v*	Decision
$H0_1$	E banking technology characteristics has no significant effect on MSE performance	.557	.000	Reject
$H0_2$	E banking technology adoption has no significant effect on MSE on performance	.225	.001	Reject
$H0_3$	Innovative behaviour has no significant effect on MSE performance.	.157	.006	Reject
$H0_4$	E banking technology characteristics has no significant effect on e banking technology adoption.	.798	.000	Reject
$H0_5$	E banking technology adoption has no mediating effect on the relationship between e banking technology characteristics and MSE performance.	.792	.088, .283	Reject
$H0_6$	Innovative behaviour has no moderating effect on e banking technology characteristics and e banking technology adoption.	-.030	.544	Fail to reject
$H0_7$	Innovative behaviour has no moderating effect on the relationship between e banking technology adoption and MSE performance.	.144	.047	Reject
$H0_8$	Innovative behaviour has no moderating effect on the relationship between e banking technology characteristics and MSE performance through e banking technology adoption.	.178, .245, .309	.025, .334 .100, .387 .137, .478	Reject

Source: Researcher (2019)

4.14 Discussion of the Research Findings

A number of hierarchical multiple regression models and process macro models were used to test the hypotheses suggested and the interactions analyzed. Study hypotheses were significant at 5%. The beta coefficients reveal the model slope that applies to the Independent and Dependent Variables (Dunn, 2001). The scale of the beta coefficient shows the degree of the dependent variables' effect where, as a t-test, Beta (β) coefficient of regression was compared with 0. Standardized coefficients have been used to describe tested hypothesis. Discussions of the findings are based on both the literature and the empirical results of the hypotheses presented in Chapter One, which gave the basis for understanding why the hypothesis was supported or not.

4.14.1 E-Banking Technology Characteristics on MSE Performance

The study sought to analyze the relationship between e-banking technology characteristics and MSE performance in Vihiga County, Kenya. The findings of H_{01} indicates that e-banking technology characteristics had a positive and statistically significant effect on MSE performance (β= .557, p= .000).

Literature has shown that e-banking technology characteristics (Perceived ease of use and perceived usefulness) is mostly related to the inherent features of technology and is a predictor of MSE performance. It is also crucial to note that e-banking technology characteristics constitute perceptions that using e-banking technology improves efficiency, organizing and accomplishing tasks, third-party transactions, among other benefits. Characteristics such as perceived ease of use and perceived usefulness of a particular system, therefore, enhances MSE performance.

This view is supported by prior study of Isaac et al. (2018) who found that perceived ease of use and perceived usefulness had a positive impact on performance. Additionally, e-bankng services contributed significantly to the MSE sector by providing the link between business owners and customers. For day-to-day transactions, majority of MSEs rely on e-banking, as opposed to formal banking (Curran & Meuter, 2005). E-banking technology characteristic is among the most important factors which affects performance and also helps in strategy formulation process (Safeena *et al.*, 2011). Herzberg, (2003) opines that with the use of e-banking technology, MSEs can easily track payments records of their customers and therefore minimize reconciliation disputes.

It is also important to note that e-banking technology characteristics affects the attitude of MSEs to accept use of e-commerce services which in turn affects performance of

their enterprises (Herzallah & Mukhtar, 2016). MSEs who have had a good experience and have trust in e-banking system tend to develop a positive attitude as opposed to those with a negative experience. The findings support prior studies of (Hamid et al., 2016) who posit that e-banking technology characteristics positively relate to performance.

The prominence of e-banking technology characteristics (perceived ease of use and perceived usefulness) as having a positive influence on performance was confimed by Isaac et al. (2018). Some of the benefits associated with e-banking technology include carrying out transactions like payments for expenses such as insurance, laundry, grocery, mortgage, or loans, which can be done at the comfort of business location. Customers also have the option of transacting online and making payments without necessarily visiting the shop, as this gives the customer greater control about when a particular bill should be paid. The MSEs, on the other hand, are able to facilitate on how the products reach their customers (Morrone *et al*., 2012).

E-banking technology characteristics gives confidence to the systems use which has more security features, is reliabile with trusted service providers are some of the reasons which affects the overall performance of an enterprise. The willingness of an individual to use a particular system for transactions depends on overall performance (Hanafizadeh, Keating, & Khedmatgozar, 2014). If a system is perceived to be more beneficial than its predecessor, then a user will find it more useful. This implies that the system might be having financial and economic benefits to the user (Oliveira *et al.*, 2014). Especially with regard to financial transactions, the user expects greater benefits when it comes to online transactions as opposed to visiting banking halls. Therefore,

the system should be able to save time and minimize travel and the costs associated with travelling which therefore enhances MSE performance.

The above view is supported by (Chong & Syarifuddin, 2010) that e-banking technology characteristics are important factors that have positive impact on MSE performance. Users' beliefs about the benefits of using a technology are what leads to performance improvement (Venkatesh, Morris, Davis, & Davis, 2003). Consequently, Hamid et al. (2016) established that e-banking technology characteristics positively and significantly affect e-government performance. Similarly, e-banking technology characteristics, as indicated in the current study, have a positive and significant effect on MSE performance as most of the owners are able to make payments to their suppliers on time and therefore build trust in the business. Furthermore, most of the owners are able to accomplish most of the transactions such as bills payments, deposits and withdrawals with ease using the e-banking system.

With the use of e-banking technology, enterprises are able to capitalize on every customer who visits the shop since they do not necessarily need to have physical cash. Enterprises are instead able to conduct transactions using e-banking system, which entails support apparatus like mobile phones, ATM machines, POS, credit and debit cards, online/inertnet banking which improves the performance of the enterprises. E-banking technology, as a means of conducting transactions, is superior to the handling of physical cash as it helps to reduce risks associated with theft from employees, fraudsters issuing of fake money, collusion of robbers and employees stealing among other risks. This findings are supported by the work of Al-Sharafi et al., (2017) who indicated that Customers' trust in the technology increases if they perceive that online banking as useful tool which has an effect on MSE performance and, therefore, increasilngly accept and use the system.

A study by Yaghoubi & Bahmani (2010) shows that the intention to use e-banking services is strongly influenced by e-banking technology characteristics which affects performance (Ali *et al.*, 2010). With proper navigational attributes and contents that are easy to read and understand, there is higher level of interaction, which affects the attitude of the customers favourably to use e-banking technology; these in turn affects MSE performance. Online transactions continue to make a significant contribution to the MSE sector as majority of the traders rely on it for their day-to-day transactions. Ma and Liu (2004) opines that perceived ease of use is the most significant determinants of performance. Furthermore, E-banking technology characteristcs are important to MSE owners as they facilitate proper time management that could have otherwise been wasted in banking halls, hence improved performance.

It is important to develop a greater understanding of what customers need with regards to current trends. MSEs are mostly interested in speedy service delivery which is critical to MSE performance. MSE performance is enhanced with the increase of e-commerce and mobile payments after understanding the perceived ease of use and perceived usefulness of this technology. The findings are further supported by Baur & Nyström, (2017) who argue that a positive correlation between customers' attitude towards new technology and the implementation process is affected by benefits of the new technology.

For MSEs to enhance their performance, it is important to consider investing in information about technology support systems. Objective attainment towards e-economy can only be achieved through awareness creation, digital literacy, proper infrastructure and increasing the rate of participation of the customer's in e-banking use which is motivated by e-banking technology characteristics (Rajanna, 2018). Apart from its effect on MSE performance, e-banking technology is a concept that would

easily eliminate corruption, money laundering, reduce transmition of diseases and reduce the risk of carrying cash. Thus, the aforementioned explanations receive support from the findings of this study indicating that E-banking technology characteristics affects MSE performance.

4.14.2 E-banking Technology Adoption on MSE Performance

Objective two of the study was to analyze the relationship between e-banking technology adoption and MSE performance in Vihiga County, Kenya. The findings of H_{02} affirmed that e-banking technology adoption is a strong predictor of MSE performance (β= .225, p= .001). E-banking technology adoption affects the growth and profitability of small and medium-sized businesses. MSEs use e-banking services for business purposes such as sales transactions, stock purchasing, payment receipts, payment of goods and services, savings and money transfer. Performance of the enterprises is enhanced as there is increase in sales which is necessitated by enterpises adopting e-banking technology services.

This view concurs with that of Hoope, (2013) who points out that mobile money services uptake, use affects MSE performance. Apart from personal use, the majority of mobile money users specifically used it for business purposes to buy inventory and receive payments for goods and services (Igudia, 2017). MSE performance is influenced by the subsequent adoption of e-banking technology services.

This line of thought also agrees with that of Kallin et al., (2017) with regard to e-banking technology adoption among MSEs. E-banking has reduced costs such as customers being in a position to transact even if they lack physical cash, travelling to banking institutions to transact, need for security while carrying huge amounts of cash for business transactions while they have maintained competitiveness in the market.

The study findings is further supported by a research study done by Tumaini, (2016) whose findings indicated that the growth of MSEs was positively influenced by sales, stock purchases and service payments via adoption of mobile money. This implied that e-banking technology adoption has benefits that outweigh the common transacting practices. The study further established that MSE owners have adopted e-banking systems for business transactions use, specifically to receive payment, pay bills, salaries or suppliers, apply loans and make bank deposits. This was further supported by the findings of Kiwanuka & Machethe, (2016) who postulates that adoption of e-banking practices is motivated by innovation which affects MSE performance. Strategies on E-banking technology adoption focus on implementation mechanics towards enhancing MSE performance. This could require MSEs to assess the benefits they can gain from e-banking adoption as opposed to traditional transaction methods such as using cash.

For the current study, this finding implies that enhanced performance in an enterprise requires a system that will enable efficiency and reduce time wastages as MSE owners are looking for strategies that will improve financial accuracy, which can be achieved through adoption of an efficient e-banking system. The present study's findings did show that e-banking technology adoption has a significant effect on MSE performance.

4.14.3 Innovative Behaviour on MSE Performance

Objective three of the study was to analyze the relationship between innovative behaviour and MSE performance in Vihiga County, Kenya. Therefore, it was hypothesized that innovative behaviour had no significant effect on MSE performance. The findings indicated that innovative behaviour had a positive and statistical significant effect on MSE performance (β= .157, p= .006).

The above findings supports the work of Omri *et al.* (2015) who points out that innovative behaviour had an effect on innovation output thus had a positive and significant effect on business performance. This implied that MSEs are dedicating a great deal of their time to innovative ideas, searching for new methods of production, new techniques of conducting operations, identifying new solutions to current and emerging problems and finding new approaches to implement new ideas in their enterprises. This is further supported by Olughor, (2015) whose findings indicated that Innovative behaviour influenced business performance. There is therefore need for MSEs to enthusiastically come up with innovative ideas, they systematically incorporate these ideas into their enterprises and contribute in the implementation of these ideas.

The findings of the present study also agreed with those of Salim and Sulaiman (2011) that innovative behaviour has a positive and significant effect on performance on Malaysian small and medium sized enterprises. The author argued that organizational learning contributes to innovation capability and, in turn, innovative behaviour positively related to firm performance. Innovative behaviour plays a crucial role in increasing the customer outreach for many products, which has led to efficiency and increase in profitability due to an increase in customer base. Innovative behaviour begins with idea conception for an intended new product or service, the product then passes through stages of evaluation and, finally, it is fully implemented. Introduction of new ideas follows background preparation and partial use just to ensure that the hiccups are removed before it is fully adopted.

This is support to the work of Makee et al. (2014) who postulates that mobile phone transfer applications have an influence on the performance of micro and small enterprises. E-banking technologies such as mobile phones have an impact on MSE

performance. As technologies are used increasingly, they help to attract more clients, contributing to greater business profits.

It is worth noting that innovative behaviour is a continuous process of coming up with new terms and conditions, specifying and enhancing the quality of the products or services with regard to customer requirements, the present market dynamics and continous product improvements in a firm enhances MSE performance. Innovative behaviour enhances firm performance by strategically placing a firm in the market through production of new products, new processes as well as continuous improvement of the existing ones as indicated by Olughor (2015). The author further indicated that innovative behaviour can be observed as entrepreneurs enter unknown or enter untested markets and embracing proven e-banking technologies. As such, innovative behavior helps them to realize competitive advantage and superior performance.

Finally, it has also been noted that innovation practices affects performance of MSEs (Terziovski, 2010). The study found that innovative behaviour prompts strategies that become the key drivers of performance of MSEs. As entrepreneurs realize that innovation culture and strategy are closely aligned throughout the innovation process, the MSEs' performance is likely to improve. Learning integrated market and innovative behaviour are entrepreneurship qualities that enhance performance (Asad *et al.*, 2018). Innovative behaviour calls for intelligence in terms of strategy formulation and implementation in entrepreneurial activities which thereafter bring improvement in performance (Lechner & Gudmundsson, 2014). Furthermore, innovative behaviour gives MSEs the ability to provide consumers with higher value and individuality that eventually leads to better results (Sahut & Peris-Ortiz, 2014). Innovative behaviour was, therefore, found to have a positive and significant impact on MSE performance.

4.14.4 E-banking Technology Characteristics on E-Banking Technology Adoption

Objective four of the study was to analyze the relationship between e-banking technology characteristics and e-banking technology adoption in Vihiga County, Kenya. The findings indicated that e-banking technology characteristics had a positive and statistically significant effect on e-banking technology adoption (β= .798, p= .000).

The findings supports the work of Kiwanuka & Machethe (2016) whose fin pointed out that innovation for convenience, innovation for ease of use, innovation for safety, and innovation for reliability are fundamental in driving adoption of e-banking practices. The study indicated that e-banking technology characteristics influenced the adoption of e-banking practices. These e-banking characteristics included perceived ease of use as well as perceived usefulness. These characteristics superceded the previous practices and hence enhanced adoption e-banking services.

The study results also tallied with those of Tseng & Lo (2011) that despite any new technology, customers are not prepared to adopt recent models if they are satisfied with the usefulness of the current applications in use. For adoption of new technology to be effected, most of the customers evaluate the benefits associated with the new technology as well as the simplicity of this technology use. The benefits that consumers expect include cost reduction and efficiency, which then help enterprises to create competitive advantage in the market and retain their customer share.

The study also found that e-banking technology characteristics have a positive and significant effect on e- banking technology adoption. These findings reiterated those of Selvanathan et al. (2016) on ease of use and confidence in the adoption of online banking in Kota Damansara, Selangor, Malaysia. The results showed that consumer confidence, ease of use and experience have an important relationship with the adoption

of online banking. This implies that e-banking, as a new technology, improves service delivery at the same time increase efficiency of e-commerce transactions (Khan & Craig-Lees, 2009).

This view is supported by Safeena *et al.* (2011) who found that perceived usefulness, perceived ease of use and perceived risk are the most important factors in the adoption of online banking. These factors are important to MSE owners and customers as well. The loyality of customers' increases because of the nature of products or services offered leading to long-term and wide-reaching effects to the enterprises.

E-banking technology adoption entails services such as account balance inquiries, electronic funds transfers, e-banking statements, making deposits and withdrawals with unlimited time to access the services. These findings have been documented before, where it was shown that MSEs and customers prefer e-banking due to its speedy transaction, lower costs, self-service initiation, real-time transactions, customized services and convenience (Montazemi & Qahri-Saremi, 2015). Similarly, Rabiu *et al.* (2016) found that speed, self-efficacy, accessibility, advertisement and user-friendly features of service have a significant impact on people's propensity to adopt e-banking systems.

However, apart from perceived usefulness and perceived ease of use Karjaluoto, Koenig-Lewis, *et al.* (2010) included credibility as an additional characteristic that leads to e-banking adoption. On the contrary, the findings of Cudjoe *et al.* (2015) indicated that perceived ease of use, perceived financial costs and reputation were the key drawbacks to the adoption of mobile banking activities.

The above line of thought was also consisitent with that of Riquelme *et al.* (2010), which revealed that perceptions of usefulness, social norms and social risks are factors

influencing e-banking services adoption. With significant growth in digital platforms, enterprises and customers are embracing the use of technological services due to awareness created in a dynamic environment. Social norms include group as well as individual perceptions that influence the adoption of e-banking whereas the social risks entail security, usability and trustworthiness of this technology. The present study's findings further supported those by Kazi & Mannan, (2013), on e-banking factors, which showed that perceived usefulness and ease of use had a positive and significant impact on adoption.

In their study, Sohail & Al-Jabri (2014) found that factors such as relative advantage, complexity, compatibility, perceived risk were significant and positively influenced adoption. Furthermore, trust, performance expectation, technology features and task technology fit have been found to have a positive influence on behavioural intention to adopt e-banking technology (Oliveira *et al.*, 2014).

In relation to the above, e-banking technology characteristics have been found to have a significant positive effect on people's intentions to adopt e-banking (Bhatiasevi & Yoopetch, 2015). The current research findings, therefore, confirmed that there is a positive relationship between e-banking technology characteristics and e-banking technology adoption.

4.14.5 Mediating Effect of E-Banking Technology Adoption on the Relationship between E-banking Technology Characteristics and MSE Performance

Objective five determined the relationship between e-banking technology characteristics and MSE performance through e-banking technology adoption in Vihiga County, Kenya. Results indicated that the indirect effect standardized coefficient weight of e-banking technology characteristics on MSE performance through e-banking

technology adoption was 0.184 (95% Confidence interval: .088 ~ .283). Therefore, it was concluded that there was a complementary mediating effect, and the null hypothesis was rejected.

4.14.6 Moderating Effect of Innovative Behaviour on E-Banking Technology Characteristics, E-banking Technology Adoption and MSE performance

Objective six was to determine the moderating effect of innovative behaviour on the relationship between e-banking technology characteristics and e-banking technology adoption. The findings (β=-.030, p=.544) indicated that the objective was not attained and the hypothesis was not rejected. This then meant that innovative behaviour did not significantly moderate the relationship between e-banking technology characteristics and e-banking technology adoption. The explanation could be, as posted by Rogers (2003), that, for any technology to be adopted, there are many factors that necessitate the adoption process. Adoption is a decision of full use of an innovation as the best course of action available and rejection is a decision not to adopt an innovation, which, in this case, might be that e-banking technology characteristics might not necessitate e-banking technology adoption.

Objective seven was to assess the moderating effect of innovative behaviour on the relationship between e-banking technology adoption and MSE performance. The findings showed that the interaction was positive and statistically highly significant (β=.144, p=.047). This then revealed that innovative behaviour significantly moderated the relationship between e-banking technology adoption and MSE performance. This being an enhancing moderation, it implied that as innovative behaviour is high, there is an increase in MSE performance. Therefore, the objective was attained and the hypothesis rejected.

4.14.7 Moderated Mediation of Innovative Behaviour on the Relationship between E-banking Technology Characteristics and MSE Performance through E-Banking Technology Adoption

Objective eight was to examine the moderating effect of innovative behaviour on the relationship between e-banking technology characteristics and MSE performance through e-banking technology adoption. The findings showed that the moderated mediation took place at the lower level of the moderator (CI=025, .334), at the mean level of the moderator (CI=.100, .387) and the upper level (CI=.137, .478) of the moderator. However, the moderated mediation was much stronger at the higher level of the moderator than at the lower level.

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter covers the summary of the findings of the study in line with the research objectives and hypotheses that informed the study. It also presents the conclusions drawn from the findings and the implications and recommendations of the study.

5.2 Summary of the Study Findings

The first objective of the study was to examine the relationship between e-banking technology characteristics and MSE performance in Vihiga County, Kenya. Therefore, it was hypothesized that e-banking technology characteristics had no significant effect on MSE performance. In line with the first objective and the hypothesis postulated in the study, the findings did indeed confirm that e-banking technology characteristics had a positive and statistical significant effect on MSE performance (β= .557, p=.000; ΔR^2= 30.9%). The study findings agreed with literature reviewed on e-banking technology characteristics and MSE performance.

The second objective was to establish the relationship between e-banking technology adoption and MSE performance in Vihiga County, Kenya. Subsequently, it was hypothesized that e-banking technology adoption had no significant effect on MSE performance. However, the findings (β=.225, ρ= .001; ΔR^2= 1.9%) indicated that there was a significant effect of e-banking technology adoption on the dependent variable. Therefore, the second research objective was realized and the null hypothesis was rejected.

The third objective was to investigate the relationship between innovative behaviour and MSE performance in Vihiga County, Kenya. Hence, it was hypothesized that

innovative behaviour had no significant effect on MSE performance. However, the findings (β=.157, ρ= .006; ΔR^2=1.3 %) indicated that there was a significant effect of innovative behaviour on MSE performance. Therefore, the third research objective was realized and the null hypothesis was rejected.

Objective four assessed the influence of e-banking technology characteristics on e-banking technology adoption. It was hypothesized that e-banking technology characteristics had no significant effect on e-banking technology adoption. The findings indicated that there is a significant relationship between e-banking technology characteristics and e-banking technology adoption (β=.798, p=.000; ΔR^2= 64.5%). It was concluded that there was sufficient evidence at 0.05 level of significance to suggest that e-banking technology had a positive and statistically significant effect on e-banking technology adoption. The current research finding, therefore, confirmed that there was a positive relationship between e-banking technology characteristics and e-banking technology adoption.

Objective five sought to establish the relationship between e-banking technology characteristics and MSE performance through e-banking technology adoption in Vihiga County, Kenya. It was hypothesized that e-banking technology adoption had no mediating effect on the relationship between e-banking technology characteristics and MSE performance. The results with bootstrapping indicated that the indirect effect standardized coefficient weight of e-banking technology characteristics on MSE performance through e-banking technology adoption was .184, (95% Confidence interval: .088 ~ .283). Therefore, the null hypothesis, $H_{05,}$ was rejected. It was concluded that there was a complementary mediation effect; that e-banking technology adoption had a mediating effect on the relationship between e-banking technology characteristics and MSE performance.

Objective six was to determine the moderating effect of innovative behaviour on the relationship between e-banking technology characteristics and e-banking technology adoption. Similarly, hypothesis six stated that innovative behaviour had no moderating effect on e-banking technology characteristics and e-banking technology adoption. The findings (β=-.030, p=.544) demonstrated that the objective was not realized and the hypothesis was not rejected as well. This then showed that innovative behaviour did not moderate the relationship between e-banking technology characteristics and e-banking technology adoption.

Objective seven was to determine the moderating effect of innovative behaviour on the relationship between e-banking technology adoption and MSE performance. The findings showed that the interaction was positive and statistically significant (β=.144, p=.047). This then revealed that innovative behaviour significantly moderated the relationship between e-banking technology adoption and MSE performance. Therefore, the research objective was realized and the hypothesis was rejected.

Objective eight was to establish the moderating effect of innovative behaviour on the indirect relationship between e-banking technology characteristics and MSE performance through e-banking technology adoption. The findings showed that the moderated mediation took place at the lower level of the moderator (CI=.025, .334), at the mean level of the moderator (CI=.100, .387) and the upper level (CI=.137, .478). However, the moderated mediation was much stronger at the higher level of the moderator than at the lower level.

5.3 Conclusions of the Study

This study sought to establish the effect of e-banking technology characteristics, e-banking technology adoption, and innovative behaviour on MSE performance. Eight

specific objectives were derived from the main objective. To achieve the specific objectives, eight hypotheses were formulated based on literature review. The hypotheses were subjected to correlation and regression analyses and the following conclusions can be drawn from the study:

Empirical findings of this study confirmed that there is significant relationship between e-banking technology characteristics and MSE performance. This implies that the more MSE perceive e-banking technology to be useful and easy to use, the more they will increase the performance of their enterprises. It is, therefore, concluded that e-banking technology characteristics have significant effect on MSE performance.

The study also sought to determine whether e-banking technology adoption had an effect on MSE performance. From the findings, it is concluded that e-banking technology adoption has a positive and significant effect on MSE performance. This means that e-banking technology adoption predicts outcome on MSE performance.

Objective three sought to determine whether innovative behaviour influences MSE performance. The results obtained arrived at the conclusion that innovative behaviour has a positive and significant influence on MSE performance. This implies that the more innovative behaviour is encouraged in business, the more the business will tend to understand and accept better emerging technologies such as e-banking technology, and hence MSE performance will be enhanced. As such, innovative behaviour is a key driver towards enhanced performance of MSEs.

In the fourth objective, the study sought to assess whether e-banking technology characteristics had an effect on e-banking technology adoption. The results led the study to conclude that e-banking technology characteristics have a positive and significant effect on e-banking technology adoption in the MSE sector in Kenya. E-banking

technology characteristics, which include perceived ease of use and perceived usefulness, determine whether this kind of technology will be adopted or not.

MSE performance requires strategies that encourage adoption of e-banking technology and innovative behaviour, which will ultimately transform their operations and increase profitability in their enterprises. It is, therefore, be concluded that e-banking technology characteristics, e-banking technology adoption and innovative behaviour have a positive and significant effect on MSE performance.

Additionally, this study sought to investigate indirect effects of e-banking technology adoption on the relationship between e-banking technology characteristics and MSE performance. From the findings of the study, it became evident that e-banking technology adoption has a mediating effect on the relationship between e-banking technology characteristics and MSE performance. Based on the above study summary, the role of e-banking technology adoption as a mediator stood out prominently. The relationship between e-banking technology characteristics and MSE performance mediated by e-banking technology adoption returned a complementary mediation verdict. From literature review, studies that looked at the relationship between e-banking technology characteristics and e-banking technology adoption among MSEs from a direct relationship perspective were scanty. Therefore, this study has extended literature by incorporating e-banking technology adoption as one intermediate variable to literature on the relationship between e-banking technology characteristics and MSE performance. Drawing from the findings, it is concluded that e-banking technology adoption has a mediating effect on the relationship between e-banking technology characteristics and MSE performance.

The sixth objective also revealed that innovative behaviour has an insignficant moderating effect on the relationship between e-banking technology characteristics and e-banking technology adoption. The explanation could be that MSEs might be viewing technology adoption as complex since it involves execution of a given task that requires application of knowledge, processes and skills. E-banking technology characteristics can affect adoption negatively if the system is found to be complex, which, in turn, can inhibit adoption especially when enterprises do not have necessary expertise who are innovative. Indeed, these findings found support in the reviewed literature which indicated that lack of top management support, insufficient innovation and management structure inhibits e-banking technology adoption. Therefore, innovative behaviour is insignificant on the relationship between e-banking technology characteristics and e-banking technology adoption.

The seventh objective sought to determine the moderating effect of innovative behaviour on the relationship between e-banking technology adoption and MSE performance. This study established that innovative behaviour has an enhancing moderating effect on the relationship between e-banking technology adoption and MSE performance. Therefore, from the foregoing explanation, the conclusion is that innovative behaviour moderates the relationship between e-banking technology adoption and MSE performance.

Finally, the study sought to establish the indirect relationship of innovative behaviour on e-banking technology characteristics and MSE performance through e-banking technology adoption. Findings were significant at the lower level, mean and upper level but highly significant at the upper level. As such, it became evident that innovative behaviour has a strong effect on e-banking technology characteristics and MSE performance through e-banking technology adoption and this effect is much stronger

with a higher level of innovative behaviour. This presents a contribution on e-banking technology characteristics-outcomes literature since many other studies have investigated the direct relationship between e-banking technology characteristics and adoption as well as MSE performance outcomes, with few having studied the intermediate processes of these relationships. This study, therefore, has expanded exisiting literature by incorporating innovative behaviour and e-banking technology adoption as intermediate variables to literature on the relationship between e-banking technology characteristics and with MSE performance.

5.4 Implications of the Study

The study findings contributed significantly to the body of literature in MSE sector. The study findings also helped draw theoretical and empirical implications to enrich the theory and practice of entrepreneurship in Kenya. The study bridged some of the conceptual, methodological and contextual gaps that had been identified during literature review.

5.4.1 Theoretical Contribution

This study was founded on four theories, namely the theory of constraints, technology acceptance model (also known as the TAM), diffusion of innovations theory, and the entrepreneur innovation theory.

First, the research findings advanced the theoretical argument for the use of theory of constraints. The study showed that there is a relationship between e-banking technology characteristics, e-banking technology adoption, innovative behaviour and MSE performance. Theory of constraints (TOC) is one of the most widely accepted theories of MSE performance. MSE performance is compromised by lack of appropriate technology, which is its weakest factor. Maximizing profitability can be made possible

through e-banking technology adoption. The Constraints theory helps prioritize improvement of an enterprise's activities. The top priority is always the existing constraint in the environment, where there is an immediate need for change and therefore offers a highly oriented approach for rapid enhancement. The importance of this theory is to increase profits by focusing on one critical area, improve capacity, reduce time wastages and reduce unnecessary stock in business. It focuses on relationships between an organizations' internal characteristics and competitive advantage). In the case of the current study, it advances the use of the theory by linking e-banking technology characteristics, e-banking technology adoption, innovative behaviour and overall performance. Therefore, the findings of this study support and advance the notions that are upheld by the theory of constraints.

Secondly, the study findings advanced the technology acceptance model (Davis, 1989). The model was built out of the reasoned action principle (Fishbein & Ajzen, 1977) and theory of planned behaviour (Ajzen, 1991). Attitudes determine whether an individual has conduct assessment that is favourable or unfavourable. Planned behaviour theory suggests that people act according to their intentions and are influenced by behavioral attitudes, subjective norms and behavioral control (Ajzen, 1991). According to Technology Acceptance Model (TAM), perceived ease of use and perceived usefulness evaluates the users' acceptance. In the current study, MSEs owners/managers are the users of e-banking technology and acceptance of these is, therefore, determined by perceived ease of use and perceived usefulness. As such, the findings of this study are in line with the paradigm of technology acceptance model. The greater the system's value and the understanding of its ease of use, the more likely the customer would take advantage of the innovation (Davis, 1989; Ma & Liu, 2004). The current study responds to the stream of research utilizing TAM focusing on its effects on MSE performance.

The findings of this study are thus supportive of this theory through the significant relationship of e-banking technology characteristics (perceived usefulness and perceived ease of use) and MSE performance.

Thirdly, the current study findings advance the diffusion of innovation theory. This theory explains the process of adoption (Rogers & Singhal, 2003), as a decision to make full use of innovation as the best available course of action and to reject it as a decision not to adopt innovation. The transmission of an innovation happens through a process; first an individual is exposed to knowledge of an innovation but lacks information about it (Rogers, 2002). Secondly, the individual is persuaded, therefore, develops interest and actively seeks information about the innovation by finding out its costs and benefits. After identifying the benefits, an individual thus employs innovation, which varies depending on the situation and ultimately on the full use of innovation. The nature of the current research subscribes to these requirements of diffusion of innovation theory as each respondent gave their individual responses, indicating their usage and satisfaction, which implied that they had gone through the process of diffusion before adopting e-banking technology. MSEs adopt e-banking technology because of the attributes of the theory of innovation diffusion, which include relative advantage, usability, complexibility, triability and communicability. Past studies identified e-banking technology adoption as having an effect on the MSE performance (Jaganathan, Mahmood, Ahmad, & Ahmad, 2014; Makau *et al*., 2013; Wanjau *et al.*, 2015). This study significantly contributed to the diffusion of innovations theory.

Finally, the current study findings advanced the Entrepreneur Theory of Innovation, which suggested that entrepreneurship is about combining resources in new ways, such as introducing new products, new production methods, discovering new markets, identifying new sources of raw materials/inputs and setting a new market or industry

standard that alters the economic system's market equilibrium. The findings of this study were consistent with the postulations of this theory. This was because the introduction of new products, processes among MSEs indicated a significant relationship between the adoption of e-banking technology and MSE performance. Therefore, this study provides a better understanding and reference point for MSEs on how to link e-banking technology characteristics, e-banking technology adoption and innovative behaviour to MSE performance. As such, MSEs may need to invest in e-banking technology so that they can enhance their performance.

The study also contributes to the realm of MSE performance as a critical sub-sector of the economy. The mediating effect of e-banking technology adoption and the moderating effect of innovative behaviour on the relationships between e-banking technology characteristics and MSE performance were the key contributions of this sudy to the existing literature on the theme of MSE performance. Therefore, these findings constituted an extension of theory of constraints, TAM, DOI and entrepreneur innovation theories. Introduction of other variables, namely "e-banking technology adoption and innovative behaviour", resulted in indirect effects on e-banking technology characteristics and MSE performance, hence they helped to enrich the relationship factors that many studies have not focused on.

The findings further indicated that e-banking technology characteristics accounted for the highest significant variance on MSE performance compared to other variables. This constituted a major contribution of this study as it extends the theory of constraints, Technology Acceptance Model, diffusion of innovation and entrepreneur innovation theory.

The research findings provides insight into E-banking technology characteristics, E-banking technology adoption, Innovative behaviour and MSE performance. This illustrates that there is a complementary mediation, enhancing moderation and a moderated mediated relationships.

The study also contributed new knowledge by being the first known to investigate E-banking technology characteristics, E-banking technology adopyion, Innovative behaviour and MSE performance. Through the lens of this study, it emerged that E-bankig technology adoption is a complementary mediator while Innovative behaviour is an enhancing moderator.

5.4.2 Methodological Implications

This study also took a unique approach in assessing the interactions of various e-banking technology characteristics and their links to the MSE performance through the mediation of e-banking technology adoption and moderation of innovative behaviour in Vihiga County, Kenya. Similarly, the study integrated a combination of data analysis techniques and procedures that provided a methodological contribution in the field of entrepreneurship studies through an investigation of the effect of e-banking technology characteristics, e-banking technology adoption, innovative behaviour and MSE performance. Furthermore, the inclusion of both hierarchical and process macro model of Andrew Hayes to investigate the moderating influence of innovative behaviour on the relationship between e-banking technology characteristics and MSE performance through e-banking technology adoption provided a key contribution and generation of new knowledge for enhancing MSE performance.

5.4.3 Implications for Practice

It is of importance for MSEs to adopt the best possible business practices in order to realize their most desired results. As such, the findings of this study provide insight for MSEs to embrace e-banking technology in their enterprises. This study makes recommendations based on the findings.

The findings of this study showed that e-banking technology characteristics (perceived ease of use and perceived usefulness) was positively and significantly related to MSE performance. Therefore, it is recommended that MSEs should adopt e-banking technology as part of their strategic move towards obtaining sustainable competitive advantage and enable them to achieve their objective of profit maximization. Enterprises can easily lose their customers to competitors if they do not implement e-banking technology the right way. It is well established that e-banking system is a useful tool that can be used to carry out financial transactions with minimal time wastage, greater convenience as well as less cost compared to traditional banking practices.

In the same breadth, the study further found e-banking technology characteristics as a reason e-banking technology would be adopted. E-banking service providers need to consider encouraging and developing training programmes to enlighten MSEs to use e-banking technology. Such training will motivate MSEs to reciprocate by adopting e-banking technology, which will eventually improve the overall performance of their enterprises. The study recommends that e-banking technology service providers should provide improved technology software programs on training and motivation to enhance MSE performance and ensure that they carry out their duties and responsibilities with ease. Training and motivation imparts systematic procedures for transferring technical know-how to MSEs so as to increase their skills base thereby enabling them to increase profits and in turn increase their performance.

The study found that e-banking technology adoption has a positive and significant effect on e-banking technology characteristics and MSE performance. Empirical evidence has also shown that proper adoption of technology helps small-scale enterprises to achieve competitiveness and remain profitable (Lip-Sam & Hock-Eam, 2011). Therefore, to improve MSE performance, it is recommended that MSEs should adopt e-banking technology as a way of achieving competiveness and profitability. Adoption of e-banking technology in an enterprise assists to boost sales and increase profitability.

It is also recommended that MSEs need to identify gray areas in their enterprises that contributes towards performance. For instance, MSEs might be unfamiliar with the benefits of e-banking technology services and how this services can affect performance of their enterprises. E-banking technology adoption is perceived to be utilized by large firms as opposed to MSEs. Many service providers focus their attention on larger organizations thereby disadvantaging the MSEs who are in dire need of their services (Ismail & Yunan, 2016). Furthermore, MSEs, compared to large firms, lack in-house expertise, which negatively influences the process of adoption. Therefore, there is need for MSEs to understand the role e-banking technology plays in performance of enterprises and therefore consider engaging experts in IT to help in the adoption of these technologies. Providing sound financial services to MSEs is of great importance to enable them achieve competitive advantage and sustainability. In addition, e-banking service providers need to provide affordable and accessible services. MSEs will also facilitate efficient and enhanced relations with customers while attracting large number of customers. This calls on MSEs to consider benchmarking with other institutions that have adopted e-banking services and experienced the benefits associated with it.

There is need for MSEs to embrace innovative behaviour by proactively initiating e-banking technology adoption in their enterprises. Study findings showed that MSEs who reported high levels of innovative behaviour also reported high levels of performance. Therefore, MSE sector should come up with strategies to create enabling environment for innovation in their enterprises. This can be achieved by negotiating with the e-banking service providers so that they carry out network installations at affordable prices (Tan, Chong, Lin, & Eze, 2009).

MSEs further need to purchase gadgets that will initiate e-banking in their enterprises. These gadgets include mobile phones, POS machines, computers, laptops among others. However, there is need to guarantee security of data when undertaking transactions using these gadgets. Therefore, e-banking technology service providers should put in place measures to ensure that they safeguard, enhance and introduce friendly online financial support systems that are appropriate in the market to support MSE performance.

The government and policy makers should develop policies that guide on the adoption of e-banking technology services. These policies should be clear, simple and consistent and they should offer MSEs value in terms of efficiency and cost effectiveness. Such features will encourage entrepreneurs to switch from cash to e-banking technology systems. Regulation should not be complex, but conducive to the creation of a favourable environment for private investors as innovation stems mainly from the private sector (Odior & Banus, 2012). This does not imply that regulation has to be relaxed, but that regulators need to move with market evolution agents to create a more enabling economic environment for MSEs to thrive.

For instance, the costs associated with acquisitions of hardware and software, costs of network installations, costs incurred while carrying out transactions like money transfers, etc., tend to discourage e-banking. Cutting down or subsidising these costs will make the entrepreneurs to see e-banking technology adoption as a positive move towards enterprise performance. The government should further play a significant role in supporting the adoption of e-banking system. For example, the government should provide infrastructural support to make e-banking technology systems affordable and easily accessible.

The government also needs to appreciate the importance of e-banking technology systems. As much as adoption of e-banking enhances MSE performance, the government can use the findings to employ strategies towards curbing diseases such as covid 19 pandemic since most people are able to transact using electronic means and avoid cash as a medium of exchange for goods and services.

Innovative behaviour is a key factor in the association between e-banking technology characteristics and MSE performance. The steepness of the slope indicates how strongly e-banking technology characteristics are associated with MSE performance under the conditional effect of innovative behaviour. Innovative behaviour, which entails taking risks and pro-active decisions, is a major step towards MSE performance. Therefore, it is imperative that MSEs initiate activities that encourage innovation in their enterprises. Activities that are educative easily trigger generation of new ideas that improves the performance of an enterprise.

MSEs need to generally embrace new technologies that offer more effective and efficient channels of delivering banking services and hence improve performance. From the study findings, as shown in the moderation graph, MSEs with high innovative

behaviour are likely to adopt e-banking technology as compared to MSEs with low innovative behaviour. Therefore, MSEs should take advantage of e-banking technology innovations to provide improved services in the face of competition and offer faster services that enhance performance. It is important for MSEs to encourage creativity and innovation in their enterprises because such gestures will lead to new innovations that once adopted will improve MSE performance.

Other stakeholders, like financial institutions, are in position to develop new directions guided by good strategies to help improve the adoption of e-banking technology services they offer to MSEs, hence enhance performance in the enterprises. Specifically, banks need to consider increasingly investing in programmes that encourage MSEs to adopt e-banking technology in their enterprises. To this end, the study recommends that financial institutions should come up with e-banking technology support systems both hardware (mobile phones, POS) and software (applications) that are user friendly, easy to use, cut across different banks and networks, are portable and the benefits associated with it should supersede the ones currently in use. Through such support, MSEs' performance will in turn be enhanced. Banks may find such findings very useful since provision of e-banking technology system is the key component that enhance MSE performance as well as reduce congestion in banking halls.

Finally, this study contributes to the body of knowledge in several ways. MSE sector is validated in the Kenyan context. Focusing on e-banking technology characteristics and MSE performance in Vihiga County, Kenya, brought out the highest variance in the model. Moreover, it fills the knowledge gap by using e-banking technology adoption as a mediator and innovative behaviour as a moderator on the relationship between the independent and dependent variables.

5.5 Recommendations for Further Research

The findings of this study formed the basis for further research. The study found strong relationships between e-banking technology characteristics and MSE performance, which have been tested exhaustively in the context of MSE sector in Kenya. Therefore, the replication of this study in other sectors could demonstrate the universality and significance of these constructs and underscore how they relate to performance in general. However, the moderating effect of innovative behaviour on the relationship between e-banking technology characteristics and e-banking technology adoption needs to be investigated further as they did not give significant results. In addition, future researchers may also examine the moderating effect of innovative behaviour on the relationship between perceived ease of use, perceived usefulness separately and MSE performance, as the study tested moderation using the composite variable; e-banking technology characteristics.

Similarly, future researchers should examine the same constructs of e-banking technology characteristics as the independent variable, e-banking technology adoption as the mediator, innovative behaviour as the moderating variable and the dependent variable, MSE performance, using another methodological approach like mixed methods approach or other analysis approaches like Structural Equation Modeling and other software apart from SPSS. The combination of qualitative and quantitative analysis should help to make the interpretation of the results easier. For example, the addition, along with quantitative methods, of a short-answer, critical event, or interview component will enable researchers to examine issues in greater depth and increase quantitative findings.

Data collection in this study was cross-sectional, which could not clearly identify effects attributed to time lags and their causal relationships. Therefore, future research

should consider longitudinal design to check on these effects of time lags. For instance, adoption is a process, meaning that longitudinal studies could be appropriate in analyzing adoption over a time. Moreover, future researchers should consider combining multiple respondents such as customers, together with other stakeholders in the MSE sector so as to generate dependable conclusions of the study variables.

This study may not have exhaustively included all the constructs of e-banking technology characteristics. It only focused on two among many constructs; perceived ease of use and perceived usefulnss. A further review of e-banking technology characteristics may identify additional variables and other possible mediators and intervening variables, which may broaden the range of influence between these characteristics and MSE performance.

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APPENDICES

Appendix I: Research Introductory Letter

Dear respondent,

RE: REQUEST TO PARTICIPATE IN RESEARCH

I am a student at Moi University undertaking Doctor of Philosophy Degree in Entrepreneurship. In order to fulfill my course requirements, I am supposed to conduct a research related to my field of study. Therefore, the purpose of this questionnaire is to seek your opinion on "E-banking technology adoption, innovative behaviour and Micro and Small Enterprises Performance in Vihiga County, Kenya." I am therefore requesting you to answer all questions presented in this paper. For close-ended questions, you are supposed to tick (√) in the options provided to you.

Please do not write your name or name of your business in this questionnaire booklet. I guarantee that the responses you will give will be treated with utmost confidentiality considering that this is an academic work.

Thanks in advance for your co-operation.

Beatrice Kitigin
PhD Student
Moi University

Appendix II: Questionnaire for MSE Owner-Manager

INTRODUCTORY LETTER

Questionnaire No.…………………

Dear Respondent,

I am a postgraduate student at Moi University pursuing a PhD in entrepreneurship studies. I'm carrying out a research on **"E-banking Technology Characteristics, Adoption, Innovative Behaviour and Micro and Small Enterprises Performance in Vihiga County, Kenya**." You have been identified as one of the respondents in this study. I kindly request for your assistance towards making this study a success by completing the attached questionnaire. The information you provide will be treated with utmost confidentiality, privacy and will be used strictly for academic purposes. In order to ensure that all information remain confidential, please do not include your name and kindly answer all questions as honestly as possible. Copies of the thesis will be provided to my University for public consumption.

Thank you for taking the time to assist me in my educational endeavours. The data collected will provide useful information regarding policies on IT adoption in the MSE sector.

If you require additional information or have questions, please contact me at the number listed below.

Sincerely,

Beatrice Kitigin
SHRD/DE/03/16
+254-721866751 or
E-mail to: beatricekitigin@gmail.com

Date :_____

Sub county: _____

Stamp/sign:_____

	SECTION A: Performance of MSEs in Vihiga County.					
	A. Please rate the influence of the factors listed below on performance of your enterprise using the scale provided.(Strongly Agree (SA); Agree (A); Not sure (N); Disagree (D); Strongly Disagree (SD))					
Code	**MSE performance**	**SA**	**A**	**N**	**D**	**SD**
PF1	Over the last one year, my enterprise has generated high sales	5	4	3	2	1
PF2	Over the last one year, my enterprise has reduced operational costs	5	4	3	2	1
PF3	Over the last one year, my enterprise has increased the number of employees	5	4	3	2	1
PF4	Over last year, my enterprise has fully met my financial expectations	5	4	3	2	1
PF5	Over the last one year, I have acquired more assets	5	4	3	2	1
PF6	Over the last one year, I have an increase in my net revenue	5	4	3	2	1
PF7	Over the last one year, the performance of my enterprise has been satisfactory	5	4	3	2	1

	Section B: Perceived Ease of Use of e-banking Technology by MSEs in Vihiga County					
	B. Please Indicate the extent to which you agree or disagree with the following statements using the scale provided.(Strongly Agree (SA); Agree (A); Not sure (N); Disagree (D); Strongly Disagree (SD))					
Code	**Perceived Ease of Use of e-banking Technology**	**SA**	**A**	**N**	**D**	**SD**
PEU1	E banking is easy to use and saves time.	5	4	3	2	1
PEU2	Using e banking requires little mental effort.	5	4	3	2	1
PEU3	I understand most of the operations I perform during any transaction	5	4	3	2	1
PEU4	Learning to operate e banking is easy for me	5	4	3	2	1
PEU5	E-banking is an easy way to conduct a banking transaction.	5	4	3	2	1
PEU6	Information displayed on the screen during electronic banking is clear, well organized and easy to read.	5	4	3	2	1
PEU7	The e-banking platform offers information in more than one language.	5	4	3	2	1
PEU8	I find e banking system flexible to interact with	5	4	3	2	1
PEU9	I am willing to use e banking frequently	5	4	3	2	1
PEU10	I understand the terms and conditions of e-banking since they are simple and clear	5	4	3	2	1

Section B: Perceived Ease of Use of e-banking Technology by MSEs in Vihiga County						
B. Please Indicate the extent to which you agree or disagree with the following statements using the scale provided.(Strongly Agree (SA); Agree (A); Not sure (N); Disagree (D); Strongly Disagree (SD))						
PEU11	I rarely refer to user manual when using the e banking system	5	4	3	2	1

SECTION C: Perceived Usefulness of e banking Technology

C. Please Indicate the extent to which you agree or disagree with the following statements using the scale provided.(Strongly Agree (SA); Agree (A); Not sure (N); Disagree (D); Strongly Disagree(SD))

Code	Perceived Usefulness	SA	A	N	D	SD
PU1	Using e banking improve my efficiency in bank transaction	5	4	3	2	1
PU2	Using e banking enables me to do my work conveniently	5	4	3	2	1
PU3	Am aware of the benefits of e banking systems use	5	4	3	2	1
PU4	Using e banking services enables me to accomplish banking activities more quickly.	5	4	3	2	1
PU5	Using e banking services gives me greater control over financial banking activities.	5	4	3	2	1
PU6	Using e banking enables me to organize banking tasks.	5	4	3	2	1
PU7	Using e banking makes it easier to pay my bills.	5	4	3	2	1
PU8	I prefer using e- banking to pay my suppliers	5	4	3	2	1
PU9	I highly recommend my customers to use e banking	5	4	3	2	1

SECTION D: E-banking Technology Adoption

D. Please Indicate the extent to which you agree or disagree with the following statements on the adoption of e-banking technology (Mobile payment applications e.g. MPESA, airtel money and equitel, Cheques, Internet banking, Point of sale, Credit Card, Debit card etc,) in your enterprise using the scale provided.(Strongly Agree (SA); Agree (A); Not sure (N); Disagree (D); Strongly Disagree (SD))

Code	E-banking Technology Adoption	SA	A	N	D	SD
ETA1	I use e banking to pay my utility bills	5	4	3	2	1
ETA2	I use e banking to check account balance	5	4	3	2	1
ETA3	I use e banking to Transfer funds	5	4	3	2	1
ETA4	I use e banking to receive funds	5	4	3	2	1

SECTION D: E-banking Technology Adoption

D.   Please Indicate the extent to which you agree or disagree with the following statements on the adoption of e-banking technology (Mobile payment applications e.g. MPESA, airtel money and equitel, Cheques, Internet banking, Point of sale, Credit Card, Debit card etc,) in your enterprise using the   scale provided.(Strongly Agree (SA); Agree (A); Not sure (N); Disagree (D); Strongly Disagree   (SD))

ETA5	I use e banking to Deposit money to the bank	5	4	3	2	1
ETA6	I use e banking for record keeping	5	4	3	2	1
ETA7	I use e banking to pay my suppliers.	5	4	3	2	1
ETA 8	I enjoy using e banking technology	5	4	3	2	1
ETA9	I am satisfied with e banking services	5	4	3	2	1

SECTION E: Innovative Behaviour

E.   Please Indicate the extent to which you agree or disagree with the following statements on the moderating effect ofentrepreneurial orientation on the relationship between cashless payment systems and performance using the   scale provided.(Strongly Agree (SA); Agree (A); Not sure (N); Disagree (D); Strongly Disagree(SD))

Code	Innovative Behaviour	SA	A	N	D	SD
IB1	New business methods and services are always worth trying even if they may prove risky.	5	4	3	2	1
IB2	I involve current and potential customers to identify areas that need improvement	5	4	3	2	1
IB3	I pioneer products, services or business models that add value to the enterprise	5	4	3	2	1
IB4	New technologies are often perceived as very unique by customers.	5	4	3	2	1
IB5	Employees have a clear understanding of the company's unique value proposition	5	4	3	2	1
IB6	I actively observe and adopt the best technologies in the market	5	4	3	2	1
IB7	I introduce new productive processes	5	4	3	2	1
IB8	The desire for innovation is strong in my enterprise	5	4	3	2	1
IB9	I'm Open to new information	5	4	3	2	1
IB10	I systematically search for new ideas	5	4	3	2	1
IB11	Employees are involved in suggesting ideas for	5	4	3	2	1

SECTION E: Innovative Behaviour

E.   Please Indicate the extent to which you agree or disagree with the following statements on the moderating effect ofentrepreneurial orientation on the relationship between cashless payment systems and performance using the
       scale provided.(Strongly Agree (SA); Agree (A); Not sure (N); Disagree (D); Strongly Disagree(SD))

	improvements to products/processes					
IB12	I regularly evaluate the needs of our customers /end users	5	4	3	2	1
IB13	I integrate business and technology to best develop innovative ideas	5	4	3	2	1

Section F: Demographic Questions

Please indicate with a tick   "√"   for each of the following

1. Gender: Male (   )   Female (   )

2. Age: Below 25 (   ) 26-30 years (   ) 31-35 years (   ) 36-40(   ) above 40 years
   (   )

3. Education: None (   ) Primary(   )   Secondary (   ) Certificate (   )Diploma (   )
   Bachelors (   ) post-graduate (   )

4. Type of business: Sole proprietorship (   )   Partnership (   ) Company (   )

5. Designation: Owner   (   )   Manager(   )

I sincerely appreciate your time and cooperation.
Please check to make sure that you have not skipped any questions accidentally.
Thank you

Appendix III: Regression Results

Direct effects results

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	49.654	2.195		22.622	.000
	Gender	-1.163	1.269	-.046	-.916	.360
	Age	-.346	.457	-.038	-.758	.449
	Education	-.268	.449	-.030	-.596	.551
2	(Constant)	3.924	3.876		1.012	.312
	Gender	-.528	1.056	-.021	-.500	.617
	Age	-.384	.380	-.043	-1.012	.312
	Education	-.370	.373	-.042	-.991	.322
	EBT1	.552	.041	.557	13.372	.000
3	(Constant)	2.200	3.863		.569	.569
	Gender	-.401	1.043	-.016	-.384	.701
	Age	-.277	.376	-.031	-.737	.461
	Education	-.271	.370	-.031	-.733	.464
	EBT1	.376	.067	.379	5.611	.000
	ETA	3.757	1.133	.225	3.317	.001
4	(Constant)	-3.088	4.279		-.722	.471
	Gender	.018	1.046	.001	.017	.987
	Age	-.284	.373	-.032	-.762	.447
	Education	-.178	.368	-.020	-.484	.629
	EBT1	.299	.072	.301	4.149	.000
	ETA	3.184	1.142	.190	2.788	.006
	IB	3.283	1.184	.157	2.774	.006

a. Dependent Variable: MSEPF

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.065[a]	.004	-.003	12.59810	.004	.567	3	398	.637
2	.560[b]	.313	.307	10.47382	.309	178.815	1	397	.000
3	.576[c]	.332	.324	10.34432	.019	11.002	1	396	.001
4	.587[d]	.345	.335	10.25796	.013	7.695	1	395	.006

a. Predictors: (Constant), Education, Gender, Age

b. Predictors: (Constant), Education, Gender, Age, EBT1

c. Predictors: (Constant), Education, Gender, Age, EBT1, ETA

d. Predictors: (Constant), Education, Gender, Age, EBT1, ETA, IB

```
Run MATRIX procedure:

*************** PROCESS Procedure for SPSS Version 3.3 *******************

          Written by Andrew F. Hayes, Ph.D.        www.afhayes.com
       Documentation available in Hayes (2018). www.guilford.com/p/hayes3
*************************************************************************
Model  : 4
    Y  : ZPF
    X  : ZEBT
    M  : ZETA

Covariates:
 Gender   Age      Educatio

Sample
Size:  402
*************************************************************************
OUTCOME VARIABLE:
 ZETA

Model Summary
          R        R-sq        MSE         F        df1        df2          p
       .795        .632        .372    170.297      4.000    397.000       .000

Model
              coeff        se          t          p        LLCI       ULCI
constant       .237       .106      2.231       .026        .028       .446
ZEBT           .792       .030     25.967       .000        .732       .852
Gender        -.045       .061      -.732       .465       -.166       .076
Age           -.038       .022     -1.713       .087       -.081       .006
Educatio      -.035       .022     -1.609       .108       -.078       .008
*************************************************************************
OUTCOME VARIABLE:
 ZPF
Model Summary
          R        R-sq        MSE         F        df1        df2          p
       .581        .338        .670     40.426      5.000    396.000       .000

Model
              coeff        se          t          p        LLCI       ULCI
constant       .122       .144       .849       .396       -.160       .404
ZEBT           .377       .067      5.598       .000        .244       .509
ZETA           .233       .067      3.462       .001        .101       .366
Gender        -.029       .083      -.347       .728       -.191       .134
Age           -.020       .030      -.657       .511       -.078       .039
Educatio      -.017       .029      -.578       .564       -.074       .041
************************* TOTAL EFFECT MODEL **************************
OUTCOME VARIABLE:
 ZPF
Model Summary
          R        R-sq        MSE         F        df1        df2          p
       .564        .318        .689     46.255      4.000    397.000       .000

Model
              coeff        se          t          p        LLCI       ULCI
constant       .177       .145      1.225       .221       -.107       .461
ZEBT           .561       .042     13.523       .000        .480       .643
Gender        -.039       .084      -.468       .640       -.204       .125
Age           -.028       .030      -.944       .346       -.088       .031
Educatio      -.025       .030      -.848       .397       -.083       .033
************** TOTAL, DIRECT, AND INDIRECT EFFECTS OF X ON Y **************


Total effect of X on Y
     Effect        se          t          p        LLCI       ULCI
       .561       .042     13.523       .000        .480       .643
Direct effect of X on Y
     Effect        se          t          p        LLCI       ULCI
       .377       .067      5.598       .000        .244       .509


Indirect effect(s) of X on Y:
          Effect     BootSE    BootLLCI    BootULCI
ZETA        .185       .049        .088        .283


********************** ANALYSIS NOTES AND ERRORS **********************
```

```
Run MATRIX procedure:

*************** PROCESS Procedure for SPSS Version 3.3 *******************

          Written by Andrew F. Hayes, Ph.D.       www.afhayes.com
    Documentation available in Hayes (2018). www.guilford.com/p/hayes3

*************************************************************************
Model : 58
    Y  : PF
    X  : EBT
    M  : ETA
    W  : IB

Covariates:
 Gender   Age     Educatio

Sample
Size:  402

*************************************************************************
OUTCOME VARIABLE:
 ETA

Model Summary
        R        R-sq       MSE         F       df1        df2         p
     .803       .644       .204    119.174     6.000    395.000      .000

Model
            coeff        se         t         p       LLCI       ULCI
constant     .154      .080     1.921      .055      -.004       .311
EBT          .812      .050    16.320      .000       .715       .910
IB           .183      .052     3.535      .000       .081       .285
Int_1       -.030      .049     -.607      .544      -.127       .067
Gender      -.014      .047     -.297      .766      -.106       .078
Age         -.026      .017    -1.599      .111      -.059       .006
Educatio    -.021      .016    -1.271      .204      -.052       .011

Product terms key:
 Int_1   :       EBT       x       IB

Test(s) of highest order unconditional interaction(s):
      R2-chng         F       df1        df2          p
X*W      .000       .369     1.000    395.000       .544
----------
   Focal predict: EBT      (X)
         Mod var: IB       (W)

Data for visualizing the conditional effect of the focal predictor:
Paste text below into a SPSS syntax window and execute to produce plot.

DATA LIST FREE/
       EBT         IB         ETA    .
BEGIN DATA.
     -.634      -.602      -.629
      .000      -.602      -.103
      .634      -.602       .424
     -.634       .000      -.507
      .000       .000       .008
      .634       .000       .523
     -.634       .602      -.386
      .000       .602       .118
      .634       .602       .621
END DATA.
GRAPH/SCATTERPLOT=
 EBT       WITH      ETA       BY        IB        .

*************************************************************************
```

```
OUTCOME VARIABLE:
 PF
Model Summary
         R        R-sq       MSE         F        df1        df2          p
      .598        .358       .588     31.329      7.000    394.000       .000
Model
             coeff        se         t          p       LLCI       ULCI
constant     3.681      .136     26.980       .000      3.413      3.950
EBT           .446      .108      4.136       .000       .234       .657
ETA           .302      .089      3.383       .001       .126       .477
IB            .256      .089      2.895       .004       .082       .430
Int_1         .144      .072      1.993       .047       .002       .287
Gender        .028      .079       .355       .723      -.127       .183
Age          -.025      .028      -.892       .373      -.080       .030
Educatio     -.007      .028      -.251       .802      -.061       .047
Product terms key:
 Int_1    :       ETA        x        IB
Test(s) of highest order unconditional interaction(s):
       R2-chng          F        df1        df2          p
M*W       .006      3.972      1.000    394.000       .047
----------
    Focal predict: ETA      (M)
          Mod var: IB       (W)
Conditional effects of the focal predictor at values of the moderator(s):

        IB     Effect        se         t          p       LLCI       ULCI
      -.602       .215      .087      2.458       .014       .043       .386
       .000       .302      .089      3.383       .001       .126       .477
       .602       .389      .110      3.534       .000       .172       .605
Moderator value(s) defining Johnson-Neyman significance region(s):
      Value    % below    % above
      -.833      8.458     91.542
Conditional effect of focal predictor at values of the moderator:
        IB     Effect        se         t          p       LLCI       ULCI
     -2.689      -.087      .190      -.458       .647      -.460       .286
     -2.512      -.061      .178      -.344       .731      -.412       .289
     -2.335      -.036      .167      -.214       .830      -.364       .293
     -2.158      -.010      .156      -.066       .948      -.317       .297
     -1.982       .015      .146       .105       .916      -.271       .302
     -1.805       .041      .136       .302       .763      -.226       .307
     -1.628       .066      .126       .528       .598      -.181       .314
     -1.451       .092      .117       .788       .431      -.138       .321
     -1.274       .118      .108      1.084       .279      -.096       .331
     -1.097       .143      .101      1.417       .157      -.055       .342
      -.920       .169      .095      1.779       .076      -.018       .355
      -.833       .181      .092      1.966       .050       .000       .363
      -.743       .194      .090      2.159       .031       .017       .371
      -.566       .220      .087      2.532       .012       .049       .390
      -.389       .245      .085      2.871       .004       .077       .413
      -.212       .271      .086      3.150       .002       .102       .440
      -.035       .296      .088      3.352       .001       .123       .470
       .142       .322      .093      3.477       .001       .140       .504
       .318       .348      .098      3.536       .000       .154       .541
       .495       .373      .105      3.546       .000       .166       .580
       .672       .399      .113      3.522       .000       .176       .621
       .849       .424      .122      3.477       .001       .184       .664
Data for visualizing the conditional effect of the focal predictor:
Paste text below into a SPSS syntax window and execute to produce plot.

DATA LIST FREE/
   ETA       IB          PF           .
BEGIN DATA.
      -.752      -.602      3.284
       .000      -.602      3.445
       .752      -.602      3.606
      -.752       .000      3.373
       .000       .000      3.599
       .752       .000      3.826
      -.752       .602      3.462
       .000       .602      3.754
       .752       .602      4.046
END DATA.
GRAPH/SCATTERPLOT=
 ETA      WITH     PF      BY      IB         .

****************** DIRECT AND INDIRECT EFFECTS OF X ON Y ******************
```

```
Direct effect of X on Y
     Effect         se          t          p       LLCI       ULCI
      .446       .108      4.136       .000       .234       .657


Conditional indirect effects of X on Y:
INDIRECT EFFECT:
 EBT        ->    ETA        ->    PF

          IB     Effect     BootSE   BootLLCI   BootULCI
      -.602       .178       .079       .025       .334
       .000       .245       .074       .100       .391
       .602       .309       .086       .137       .478


 Pairwise contrasts between conditional indirect effects (Effect1 minus Effect2)
    Effect1    Effect2   Contrast     BootSE   BootLLCI   BootULCI
       .245       .178       .067       .037      -.010       .138
       .309       .178       .130       .074      -.020       .275
       .309       .245       .064       .037      -.010       .138
---

*********************** ANALYSIS NOTES AND ERRORS ************************

Level of confidence for all confidence intervals in output:
  95.0000

Number of bootstrap samples for percentile bootstrap confidence intervals:
  5000
W values in conditional tables are the mean and +/- SD from the mean.
NOTE: The following variables were mean centered prior to analysis:
       IB         EBT        ETA
NOTE: Variables names longer than eight characters can produce incorrect output.
      Shorter variable names are recommended.
                      ------ END MATRIX -----
```
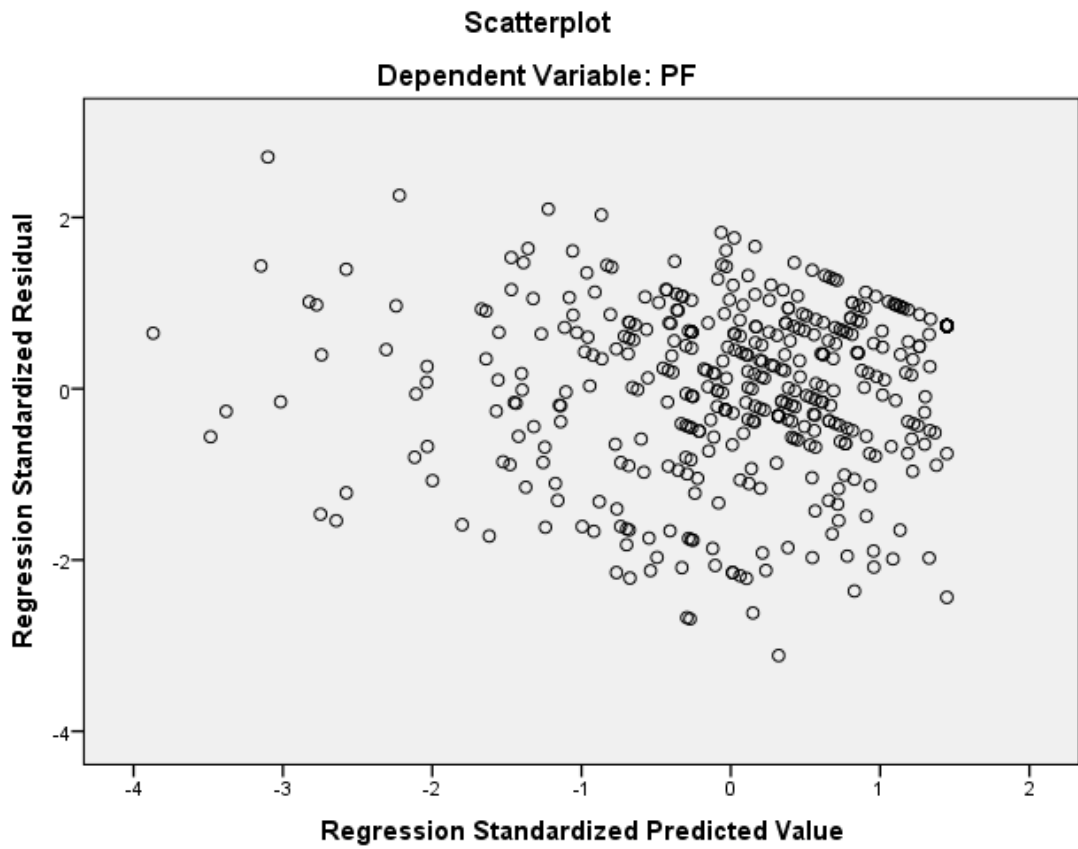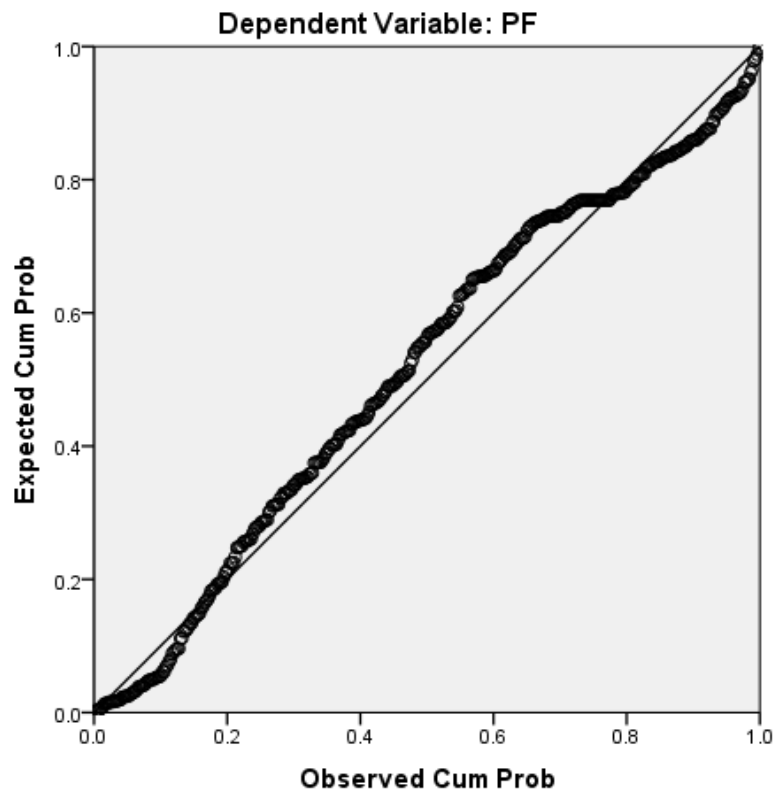
Appendix IV: Graphs

Scatterplot
Dependent Variable: PF

Normal P-P Plot of Regression Standardized Residual
Dependent Variable: PF

Appendix V: Registered MSEs in Vihiga County

BUSINESS REGISTRATION STATUS-Ward Level

Registration Status	Banja	Busali	Central Bunyore	Central Maragoli	Chavakali	Emabungo	Gisambai	Jepkoyai	Luanda South	Luanda Township	Lugaga Wamulum	Lyaduywa	Muhudi	Mungoma	Mwibona	North East Bunyore	North Maragoli	Shamakhokho	Shiru	South Maragoli	Tambaa	Wemilabi	West Bunyore	West Sabatia	Wodanga	Grand Total
No	63	94	120	454	159	30	178	135	234	800	743	279	236	74	78	291	371	101	427	94	421	34	168	151	180	5915
Not Provided	112	23	140	355	39	36	173	23	120	115	491	123	22	56	73	80	105	44	112	61	82	80	67	44	64	2640
Pending Reg	58	5	18	107	34	31	38	1	87	498	98	47	5	64	52	227	70	18	17	55	15	43	67	57	38	1750
Yes	158	105	40	134	70	111	72	18	75	112	278	145	47	85	77	156	131	171	88	71	32	59	95	102	102	2534
Grand Total	391	227	318	1050	302	208	461	177	516	1525	1610	594	310	279	280	754	677	334	644	281	550	216	397	354	384	

VIHIGA County Business Survey-2018 Data Presentation

Wednesday, 5 February, 2020

Appendix VI: University Research Authorization

MOI UNIVERSITY
SCHOOL OF BUSINESS AND ECONOMICS

Tel: (0321) 43620
Fax No: (0321) 43360
Telex No.35047 MOI VARSITY
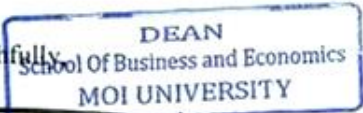
Box 3900
Eldoret
KENYA

RE: SHRD/Ph.DE/03/16

DATE: 17th May, 2019

TO WHOM IT MAY CONCERN

RE: BEATRICE K. KITIGIN– SHRD/Ph.DE/03/16

The above named is a bonafide student of Moi University School of Business and Economics, undertaking a Doctor of Philosophy in Entrepreneurship Studies,

She has completed coursework, defended her proposal, and is proceeding to the field to collect data for her research titled: *"E-banking Technology Characteristics, Adoption, Innovative behavior and Performance of Micro and Small enterprise in Vihiga County, Kenya".*

Any assistance accorded to her will be highly appreciated.

Yours Faithfully

DEAN
School Of Business and Economics
MOI UNIVERSITY

DR. JOEL K. TENAI

Ag. DEAN, SCHOOL OF BUSINESS AND ECONOMICS

Appendix VII: NACOSTI Research Authorization

NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY AND INNOVATION

Telephone:+254-20-2213471,
2241349,3310571,2219420
Fax:+254-20-318245,318249
Email: dg@nacosti.go.ke
Website : www.nacosti.go.ke
When replying please quote

NACOSTI, Upper Kabete
Off Waiyaki Way
P.O. Box 30623-00100
NAIROBI-KENYA

Ref. No. **NACOSTI/P/19/13181/30648**   Date: **7ᵗʰ June, 2019.**

Beatrice Khavere Kitigin
Moi University
P.O Box 3900-30100
ELDORET.

RE: RESEARCH AUTHORIZATION

Following your application for authority to carry out research on *"E-banking technology characteristics, adoption, innovative behavior and performance of Micro and Small Enterprises in Vihiga County, Kenya."* I am pleased to inform you that you have been authorized to undertake research in **Vihiga County** for the period ending **7ᵗʰ June, 2020.**

You are advised to report to **the County Commissioner and the County Director of Education, Vihiga County** before embarking on the research project.

Kindly note that, as an applicant who has been licensed under the Science, Technology and Innovation Act, 2013 to conduct research in Kenya, you shall deposit **a copy** of the final research report to the Commission within **one year** of completion. The soft copy of the same should be submitted through the Online Research Information System.

BONFACE WANYAMA
FOR: DIRECTOR-GENERAL/CEO

Copy to:

The County Commissioner
Vihiga County.

The County Director of Education
Vihiga County.

Appendix VIII: NACOSTI Research Permit

THE SCIENCE, TECHNOLOGY AND
INNOVATION ACT, 2013

The Grant of Research Licenses is guided by the Science,
Technology and Innovation (Research Licensing) Regulations, 2014.

CONDITIONS

1. The License is valid for the proposed research, location and specified period.
2. The License and any rights thereunder are non-transferable.
3. The Licensee shall inform the County Governor before commencement of the research.
4. Excavation, filming and collection of specimens are subject to further necessary clearance from relevant Government Agencies.
5. The License does not give authority to transfer research materials.
6. NACOSTI may monitor and evaluate the licensed research project.
7. The Licensee shall submit one hard copy and upload a soft copy of their final report within one year of completion of the research.
8. NACOSTI reserves the right to modify the conditions of the License including cancellation without prior notice.

National Commission for Science, Technology and innovation
P.O. Box 30623 - 00100, Nairobi, Kenya
TEL: 020 400 7000, 0713 788787, 0735 404245
Email: dg@nacosti.go.ke, registry@nacosti.go.ke
Website: www.nacosti.go.ke

REPUBLIC OF KENYA

National Commission for Science, Technology and Innovation

RESEARCH LICENSE

Serial No.A 25171

CONDITIONS: see back page

THIS IS TO CERTIFY THAT:
MS. BEATRICE KHAVERE KITIGIN
of MOI UNIVERSITY, 0-30100
ELDORET, has been permitted to conduct
research in *Vihiga County*

on the topic: *E-BANKING TECHNOLOGY CHARACTERISTICS, ADOPTION, INNOVATIVE BEHAVIOUR AND PERFORMANCE OF MICRO AND SMALL ENTERPRISES IN VIHIGA COUNTY, KENYA*

for the period ending:
7th June, 2020

Permit No : NACOSTI/P/19/13181/30648
Date Of Issue : 7th June, 2019
Fee Recieved : Ksh 2000

....
Applicant's
Signature

....
Director General
National Commission for Science,
Technology & Innovation

Appendix IX: Map of Vihiga County