ST. MARY'S UNIVERSITY

SCHOOL OF GRADUATE STUDIES

THE EFFECT OF INFORMATION TECHNOLOGY IN ENHANCING BUSINESS PERFORMANCE: THE CASE OF SELECTED ETHIOPIAN INFORMATION TECHNOLOGY FIRMS

BY
ABEL SOLOMON

JULY 2022
ADDIS ABABA

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APPROVED BY BOARD OF EXAMINERS

Dean, Graduate Studies	Date & Signature
Hailmariyam Kebede (PhD)	June 29/2022
Advisor	Date & Signature
Tassew Shedega (PhD)	June 30/2022
External Examiner	Date & Signature
Shoa Jemal (Asst. Prof.)	
Internal Examiner	Date & Signature

DECLARATION

I the undersigned, declare that this is my original work and that no other works than the indicated aids have been used for its completion. I also assure that I have carried out the research independently under the supervision of the research advisor, Hailmariyam Kebede (PhD).

Abel Solomon Teshome

Name

_____

Signature

St. Mary's University College, Addis Ababa JULY, 2022

CERTIFICATION

I, Hailmariyam Kebede (PhD), certify that the research entitled "THE EFFECT OF INFORMATION TECHNOLOGY IN ENHANCING BUSINESS PERFORMANCE THE CASE OF SELECTED ETHIOPIAN INFORMATION TECHNOLOGY FIRMS" is conducted by Abel Solomon Teshome, under my supervision.

The work is original in nature and is appropriate for submission for the award of the Master's Degree in Business Administration (MBA).

HAILMARIYAM KEBEDE (PhD)	June /29/2022
Advisor's Name	Signature & Date

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Table of Contents

List of Figures

List of Tables

ABSTRACT

This study's major purpose is to investigate the effect of information technology and its relationship with organizational performance, in ten (10) Ethiopian Information Technology firms. To fulfill the study's objectives, both qualitative and quantitative research methods were employed. The study has been conducted using both primary and secondary data sources. This study's sample comprised of 80 managers of varying levels from the selected organizations, equally distributed across sample size. A questionnaire was used to collect primary data, and it was presented electronically via Google Forms for data collection. A total of 75 respondents participated in the study, resulting in a response rate of 93.75%, which was deemed an adequate representation of the study's title. To choose respondents from the overall population, a method of non-probability sampling was utilized. Respondent survey data examined using frequency, descriptive, correlation, and regression analysis in SPSS version 28. The research included both an explanatory and a descriptive survey design. To describe what it is or how the situation seems, a descriptive research design was adopted, and correlation analysis was employed to demonstrate the relationship between dependent, independent, and mediating variables. The findings revealed a substantial association between IT use, IT adoption and business performance. Additionally, there is a significant association between IT investment and performance of firms. The study also indicates that IT investment considerably mediates the relationship between IT Usage, IT Adoption & firm performance. Due to the strong association between IT investment and firm performance, the study also suggests conducting additional research on information technology investment. The conclusion of the study is that in enhancing company performance, businesses should focus on IT usage, adoption, and investment rather than just one of these factors.

***Key words**: Information Technology (IT), IT Adoption, IT Usage, IT Investment, Firm Performance*

ABBREVIATIONS

IT	Information Technology
ICT	Information Communication Technology
AI	Artificial Intelligence
VR	Virtual Reality
ERP	Enterprise Resource Planning
CRM	Customer Relationship Management
SPSS	Statistical Package Software for Social Science
ANOVA	Analysis of Variance
St. D	Standard Deviation
ROI	Return on Investment
ROE	Return on Equity
ROA	Return on Asset
COVID-19	Coronavirus Disease 2019
TAM	Technology Acceptance Model
MOFED	Ministry of Finance and Economic Development
PPPDA	Public Procurement and Property Disposal Agency
GTP	Growth Transformation Plan
IDI	International Development Index
ITU	International Telecommunication Union
IV	Independent Variable
DV	Dependent Variable
QDA	Qualitative Data Analysis

CHAPTER ONE

INTRODUCTION

This chapter first enlightens on the background of technology in enhancing business performance. It will then look deep into the purpose and the main objectives of the study. Finally, the main question which will be answered within the scope of the study will be introduced alongside the overview of the entire thesis.

1.1. Background of the study

Technology affects nearly every area of modern life. In Dec-2021, the world had 5,251,737,363 internet users, or 66.2% of the population (2022/Q1). (Source: www.internetworldstats.com/stats.htm). Over half the world's population uses technology. Technology's good and bad effects on business are no surprise. Many technologies have changed the face of business over time, and others are still transforming the way we do business. Some of these technologies make starting and running a business easier.

IT includes hardware, software, telecommunications, database management, and other information-processing technologies. IT is a combination of hardware, software, telecommunications, and office equipment that can quickly transform raw data into meaningful information. Information technology plays a key part in today's corporate environment, yet it was once considered a supporting actor.

As faster and more reliable broadband networks are deployed, IT is becoming mobile. Technology enterprises offer tech-related products, services, and procedures. Low-, medium-, or high-tech. High-tech sectors are considered vital sources of future economic development and job creation.

Recent technological advances have enhanced company competitiveness. Companies have leveraged software, hardware, AI, VR, and the Internet to compete nationally and globally. Many organizations have automated their business processes and acquired industry-related data. Technology has also forced companies to adapt, shifting their operations to better technology (United Nations Technology & Innovation Report, 2021).

Today, technology plays a key role in many firms, especially tech-driven ones. Strong market rivalry forces companies to implement innovative technology to improve performance. Consistent and stable business performance is a sign of a company's economic progress at the industry and organization levels.

Most firms use technology and automation to improve performance and customer satisfaction. Technology is a crucial resource in any firm, altering structure and performance. Technology creates, produces, and distributes business-critical products, information, and processes. Technology is crucial to a company's performance to optimize goods and services for profit. Using technology and automation reduces manufacturing and service costs, improving corporate performance and financial goals. Studies show that technology improves corporate performance. Decades of studies reveal that leveraging technology affects business, national, and international economic growth. Albadvi and Keramati (2006) show investment in technology boosts performance and production.

As per Girma A., (2016) on his research on the impact of information and communication technology on performance of commercial banks in Ethiopia, Banks are highly advised to invest in technology to enhance their performance.

IT firms generate products and provide services for profit, like any business. Ethiopia's IT business is developing due to improved communication infrastructure, technology exposure, and urbanization. Despite having a small number of system integrators and a shy IT industry in implementing new technologies a decade ago, it has become a successful example in the region with swift introduction of information technology and is contributing to country growth and development. The Ethiopian government declared on June 15, 2020, that the country will implement a "Digital Ethiopia" initiative. The plan will emphasize technology deployment and use to increase access to international funding. A Tourist Digitalization Task Force will aim to digitalize the tourism business to increase visitor flow, stay length, and involvement. Small and medium-sized tourist operators should employ the internet, digital payments, and other digital technology. (MoIT information) IT increases productivity, improves economic competitiveness, provides timely public information, creates jobs, and generates foreign currency profits (MOFED, GTP II: 2015/16-2019/20).

Even though the market for the technology systems service is growing, IT companies in Ethiopia are still striving for maturity compared to the international and regional companies. IT Firms are expected to be key players for the success of the envisioned digital economy that the country is striving to achieve for. There are 636 locally registered IT companies (Source: PPPDA, Suppliers List, http://www.ppa.gov.et), in different firm sizes and specialized on various IT sectors specially they are engaged on import, which shows a huge number to support the country digital economy, however their growth is very limited and not as needed.

IT firms in Ethiopia may not do effectively in the market due to a lack of technology and automation to improve internal processes and business methods. Ethiopia ranks 150th out of 155 nations in the international development index (IDI) for ICT readiness, below Rwanda, Mozambique, Tanzania, and Zambia (ITU, 2012). As a nation, we face several ICT-related difficulties.

This study describes the impact of information technology on local IT enterprises through the role of IT investment as a mediator. The significance of the links between the analysis will also be highlighted to help organizations understand the findings and take relevant action.

In the context of this study, IT firms are businesses that focus on setting up and building an information technology system for clients by combining or isolating hardware, software, networking, and storage solutions from different vendors. Selected IT firms (Appendix I) are also filtered from this definition perspective and, due to the nature of their business activities, are more end-to-end technology providers (Project based) than just sales shops.

Organization now a days needs cheaper, preconfigured modules and off-the-shelf software to achieve business goals. IT companies play a crucial role in combining different subsystems into an integrated one solution or services. Without them an organization who seek to implement an IT system will need to purchase each subsystem separately from multiple vendors by its own, hence IT companies highly simplify the procurement as well as the deployment of computing systems. In this highly dynamic, time conscious and competitive market deploying a computing system within an organization without IT companies will highly impact the competitive advantage, performance & growth of the organization.

1.2. Statement of the problem

Modern civilizations are constructed on and centered on information sharing; in other words, if one wishes to stay up with today's quick changes and advances, they must adapt to the new Information Age problems.

Businesses and enterprises cannot be considered an exception to the rule because, putting aside the fact that information has become far more important for their daily operations than ever before, they not only use it as a resource to make critical decisions on their corporate strategy, but information is also viewed as a tool with which market players can achieve their business objectives.
More recently, as the world has become more globalized, information technology has become one of the most significant components in attaining success, as well as discovering new markets, enhancing quality, and delivering better and faster customer service. Many recent findings have shed light on the impact of information technology on economic progress, efficiency, workforce, workplace conditions, and competitiveness.

The amount of rivalry has an influence on corporate performance and productivity, prompting other businesses to increase their productivity development. (Dedrick, J Gurbaxani, V Kraemer, KL, 2003). Higher efficiency, on the other hand, does not always mean increased profitability. Lower pricing may arise from competition, reducing margin improvement. Consumers will benefit as a result, as they will receive greater value for their money. (Dedrick et al., 2003).

By eliminating human engagement, IT has enabled organizational rationalization. These IT features are referred to as automation. (Zuboff, 1988). In addition to pure rationalization, improved availability of information and improved means of acquiring, evaluating, storing, and transmitting information can have effects. These characteristics are classified as informative. (Zuboff, 1988) Employees are empowered by informative features, which improve the quality of their decisions and performances. The third sort of consequence is revolutionary, which includes the improvements seen in process innovation and transformation.

Information technology (IT) refers to the need for computers and every other method that aids in the production, manipulation, storage, communication, and/or dissemination of information. (Shaukat and Zafarullah,2010). Abbas (2016) studied the impact of mobile phone technology on the supply chain

management performance of Mombasa County clearing and forwarding enterprises According to the data, there is a good association between mobile phone technology and logistical performance. The study, however, made no mention of metrics of organizational effectiveness.

IT is recognized as a valuable resource for boosting economic growth, production, and consumer happiness. It plays an important role in improving the quality of communication services.
Productivity increases as a result of the creation of new work processes based on new technology and manufacturing techniques. As a result, when new IT technology was introduced into the workplace, productivity growth was anticipated.

There is fierce competition among firms that provide IT services these days. As a result, they not only leverage information technologies at all organizational levels to increase performance quality, but they also use cutting-edge technology to meet the needs of their clients.

There has been substantial debate about whether or not IT investments boost productivity and corporate efficiency. Several research like Kraemer and Dedrick (1996) mentioned in the industry and firm levels have given varying interpretations of this phenomenon. As a result, the purpose of this study is to bridge the knowledge gap by identifying, in a concise but unambiguous manner, the influence of information technology on the commercial performance of IT firms in Ethiopia.

1.3. Research questions

The questions within the scope of this research are:

- How does the use of information technology affect the business performance of local IT firms?
- How does adoption of information technology positively impact the business performance of IT companies?
- What level of significance has between Investing on Information Technology and Information Technology Adoption?
- To what extent investment on information technology could affect the organizational performance of local IT firms?
- What level of significance has between Investing on Information Technology and Information Technology Usage?

- What is the overall impact of information technology on enhancing organizational performance?

1.4. Objective of the study

General Objective

The primary objective of this research is to study the effect of technology, particularly information technology, on the organizational performance of Ethiopian IT firms.

Specific Objectives

- ✓ To determine the level of information technology usage at Ethiopian IT firms.
- ✓ To examine the relationship between information technology usage and the organizational performance in Ethiopian IT firms.
- ✓ To examine the relationship between IT Investment and IT usage and IT adoption.
- ✓ To explore which IT devices and apps are currently in use.

1.5. Significance of the research

Information technology application in different sector is driving business and growth development efforts worldwide. In Ethiopia the investment in IT have been increased in recent years and the deployment of the digital economy roadmap will be expected increase the investment in IT even more. The telecom liberalization is also expected to boost the technology sector of Ethiopia and many international technologies company are expected to enter the market alongside the telecom service providers. Technology companies are expected to drive the realization of the digital economy, hence, for local technological companies to stay in competitive edge and maintain their market share is a primary target they all share to achieve.

IT academics have proved empirically that IT investments improve a company's productivity, management capabilities, and competitive edge (Griffith, 1999). According to studies conducted in the industrialized world, if the right infrastructure is in place, IT can facilitate socioeconomic development. The United States' gross domestic product (GDP) increased by 7.8 percent, the United Kingdom's by 8.0 percent, Singapore's by 8.3 percent, and Australia's by 8.2 percent, as examples from the developed world where substantial IT investments have had a big influence (Kamel, Rateb & El- Tawil, 2009).

Therefore, the value of this study is not restricted to a single company or a small number of enterprises; rather, it may assist Ethiopia in its technological transformation and GDP growth.

From an academic standpoint, the researcher feels that this investigation will add to the existing body of knowledge. Furthermore, it will open the path for future research in the area. Different Researchers might use the findings and recommendations to do additional research on the impact of technology on performance, thereby expanding their understanding of the relationship between information technology and organizational performance.

1.6. Scope of the study

The scope is limited to ten (10) information technology firms headquartered in Addis Ababa, Ethiopia's capital city listed on appendix I. Due to time limits, the research does not include any other local companies outside Addis Ababa. In addition of the researcher's previous experience and several city trips over the course of his typical workday, it is considered that the majority of information technology enterprises are headquartered in Addis Ababa. Furthermore, the scope of this research is limited to determining the influence of information technology on the performance of ten Ethiopian information technology firms based on the variables listed in the chapter two conceptual framework section.

Due to time constraints, financial constraints, and the researcher's own judgment, ten IT companies were chosen. The researcher believes, based on his experiences, that the selected firms are the market's significant players and they are the ones who can give valuable information to the subject matter. Other organizations are less likely to be conversant with information technology applications. The research is conducted within six months.

1.7. Limitation of the study

Some of the managers were so busy that it was hard to get them to take part in this study. Some departmental managers were also not willing to fill out the questionnaire, so extra work had to be done to get them to either fill out the questionnaire or find replacements for themselves. Since the people who took part in this study were from the same ten companies, the results may have been different for other companies. This could limit the generalizability of the results.

1.8. Operational definition of terms

In this research Information Technology (IT) and Information Communication Technology (ICT) used with similar meanings even though they have a little bit difference but for this research the researcher uses as synonyms. Firm and organization or company is also used in the same context.

1.9. Organization of this paper

The paper is broken into five significant parts. The first chapter contains background information, a description of the issue, the study's objective, research questions, the study's significance, and the study's scope. The second chapter conducts a critical evaluation of the literature on the subject of the research. The review contains conceptual and thematic in nature, providing a framework for the research. The third chapter address the research design and methods. This chapter discusses the research design, approaches, the study's population, and sample methodologies. The fourth chapter, which is a very significant portion of the study, includes the analysis and interpretation of the data acquired. The conclusion, recommendation and further areas of research discussed in the last fifth chapter. Apart from the major parts, the paper also includes annexations and references.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

This chapter presents literature review in line with the research objectives. The first section discusses about information technology role, organizational performance and how these two broad factors are related and the second section presented the empirical evidences, summary of the first section, hypothesis and conceptual frame work of the study.

According to a wide range of writers and academics, the usage of information technology in the workplace has a direct impact on organizational performance. Here you'll find literature describing the study's variables and the construction of a theoretical framework to show how it progressed.

Gagnon and Toulouse (1996) emphasize that using ICT in organization is just no longer a choice, but rather a need, with a greater grasp of the process of implementing new technologies as both necessary and crucial. Similarly, Lawson et al. (2003) argue that firms who do not adopt emerging innovations will be left behind in the long run. A study carried out by Caldeira and Ward (2002) in Portugal showed that technology companies that were doing well locally were unable to compete with firms which used more aggressive business methods and tactics and, as a result, found their market share eroded.

Whilst ICT adoption studies constitute a significant area of research within the developed world, there continues to be a need for better understanding of the adoption and use of ICTs within the specific context of technology companies in emerging economies like Ethiopia.

2.1. Theoretical literature

The research involved the construction of a conceptual framework for the technological acceptance model from the perspective of measuring the technological device's utilization. Thus, not all of the Technology Acceptance Model's concepts have been embraced, but some have been used based on the variables identified in the conceptual section.

2.1.1 The technology acceptance model (TAM)

Emerging information technology is incapable of enhancing organizational effectiveness if it is not adopted and utilized by potential users. Among practitioners and academics, the Technology

Acceptance Model (TAM) is one of the most successful evaluations of computer utilization efficiency (Davis, 1989). TAM is congruent with Rogers's (1983) thesis on the diffusion of innovation, which states that technological adoption is dependent on a range of factors, including relative advantage and usability.

TAM addresses two specific beliefs: perceived usefulness and perceived ease of use. Perceived usefulness is the extent to which an individual believes that using a system will enhance his performance. Perceived ease of use is the degree to which an individual believes that using a system will be simple. TAM not only seeks prediction, but also explanation, in order to assist academics and practitioners in determining why a specific system may be unsatisfactory and in taking relevant action.

2.2. Organizational performance

Organizational performance is a concept that describes a company's success. It essentially describes how a company has done throughout time. There has been a lot of work put into establishing metrics for this topic because it conveys a very essential concept. Finding a measure for firm performance allows a firm to compare its performance over time, and as a result, the performance of other firms may be compared to each other. However, no single metric can capture all aspects of performance. (Snow and Hrebiniak 1980).

Among the various measurements of corporate success, two broad categories can be distinguished: financial and non-financial. Financial metrics are based on the economic component of efficiency. They explain how effective the firm has been. Efficiency has been identified as one of the firm's goals. Firms strive for efficiency, which is strongly linked to cost reduction.

Efficiency is not the primary goal for which businesses strive. As a result, not only is efficiency essential, but the focus on effectiveness has grown. Firms in the third millennium are referred to as effective. -seeking businesses as opposed to efficiency-seeking businesses (Hunt and Duhan 2002). While efficiency-seeking businesses are concerned with cutting costs, effective-seeking businesses are concerned with enhancing customer value. In other words, they prioritize generating more dependable and high-quality products. (Hunt and Duhan 2002). As a result, non-financial indicators of corporate performance in terms of effectiveness would be more relevant. Effectiveness is also a key factor in

determining corporate performance. Better quality and more value for customers are prerequisites for effectiveness.

Studies have evaluated the impact of IT on firms' services and performance (Beckey, Elliot, & Procket, 1996; McNutt, & Boland, 1999). Although most of this research imply that IT can improve information quality and quantity, its acceptance and innovation potential is often questionable (Mano, 2009). Firms that spend more on IT outperform those that spend less on IT (McAfee & Brynjolfsson, 2008). High performance demands solid IT infrastructure and good IT management (Mwania & Muganda, 2012).

According to Toyota Company Profile in 2021, Toyota, a Japanese automaker that has thrived in a highly competitive climate by developing business processes and information systems that enhance agility, efficiency, and quality. It can rapidly respond to clients and market developments, while closely collaborating with suppliers and merchants. Toyota management identified an opportunity to employ information technologies to improve business performance. Toyota redesigned its business procedures to enable a build-to-order production approach that relied on real customer orders rather than “best guesses” of demand. Once that was done, Oracle e-business software helped coordinate information flow between diverse internal manufacturing, ordering, and billing systems, as well as retailers and suppliers.

Toyota's vehicle order management system minimizes inventory costs because the firm and its dealers do not have to make and store vehicles that consumers do not want. Customer satisfaction is increased by making it easy to buy the exact model, make and choice desired. The system's data lets management track trends and estimate demand and production needs. The approach benefits Toyota by streamlining its ordering and production processes. Its supplier and dealer network have changed, making this organization more responsive to changing client expectations.

2.3. The role and use of IT in organizations

Within the global community, the technological infrastructure of hardware, software, and telecommunications is frequently referred to as information and communications technology (ICT), which may be viewed as a synonym for IT. Numerous organizations view IT as an essential instrument for optimizing operations and conducting information exchanges.

Information technology may give businesses with potent strategic and tactical tools, which, if used and used effectively, might deliver enormous benefits in enhancing and strengthening their competitiveness (Porter, 2001). IT can be used to facilitate communication, the exchange of information, and/or the transfer of knowledge between various organizational divisions and roles. IT may serve as a networking and collaboration tool among workers, customers, and partners since it eliminates obstacles to real-time communication and efficient information exchange (Scott, 2001).

IT assists organizations in innovating by fusing new technology with society and business, hence facilitating the generation of new information and discoveries (Diem, 2007). Organizations are utilizing IT to enhance performance, communication, employee motivation, competitiveness, market dynamics, and repositioning against rivals to facilitate entrance into new markets (Hagen, 2010).

2.4. Information technology and firm performance

In the 1960s and 1970s, many organizations used information technology for regular clerical and administrative tasks like bookkeeping and accounting (Bird & Lehrman, 1993). It monitored the firm's internal and external surroundings and supported other organizational system components (Blili & Raymond, 1993). Cost, distribution, and the fact that it was mostly used for simple tasks in its early stages discouraged its use for strategic purposes such as enhancing the organization's position against competitors, entering new markets, and providing managers with better information for effective decision making. Technological advances have boosted the IT economy and increased its uses (Bird & Lehrman, 1993).

IT has become a competitive weapon that may affect an industry's structure. Galliers (1994) indicated that due to the quick speed of technical advancements and the influence of information technology on the changing competitive environment, organizations must assess their management of information and technology resources to meet their strategic objectives.

The firm-level analysis in industrialized nations is one of the greatest pieces of evidence of IT's influence (OECD, 2003). Most of these studies study sectors and enterprises using growth accounting and econometric models. (Gretton, 2002) revealed favorable and substantial correlations between IT use and growth in manufacturing and services. IT has a strong influence on productivity (Brynjolfsson & Hitt, 2003). (Pilat & Wolfl, 2004) examined the role of ICT-producer and key ICT-consumer sectors

in explaining overall productivity growth in OECD countries. They found that ICT-producer sectors have the most impact in Finland, Ireland, and Korea, while ICT-consumer sectors in the US and Australia had impressive growth in the second half of the 1990s. (Hempell, 2004) evaluated Dutch and German service industry panel data and concluded ICT capital deepening and innovation boost productivity.

In 1991, MIT researchers found that information technology provides the platform for success, but organizational variables are key to achieving the benefits of automation and "informatizing" process (Morton, 1991; Zuboff, 1988). Information technology is innovative. Even while innovations provide organizations with new approaches to solve issues and improve performance, there is still a lot of study and discussion on how innovations should be adopted and managed and how they affect organizations on different levels.

Writers and scholars in the organizational sector agree that information technology affects organization performance (Bhattacherjee & Hirschheim, 1997; Morris & Westbrook, 1996; Porter & Millar, 1985). IT applications can increase administrative and management efficiency, for example. These apps can also help organize duties and educate management. Zuboff (1988) noted that information technology applications are changing the way manufacturing is done in a range of sectors, creating a competitive advantage.

2.5. IT investment

IT investment includes computers, telecom, hardware, software, and services, according to some researchers (Dedrick et al., 2003). Dedrick et al. (2003) said economic performance can be understood differently at the country, industry, and business levels. It refers to economic growth, labor productivity, and consumer welfare at the country level. Economic growth is the change in a country's actual output or GDP. Labour productivity increase measures the efficient use of resources to create value. When the economy provides cheaper goods and services relative to consumer income, consumer welfare increases. At the industry level, financial measurements highlight output. Also, business productivity growth and profitability are economic performance metrics.

Assessing the business value and organizational impact of IT investment was a long-standing topic for researchers, who used two main research techniques. First, Bakos and Treacy (1986) evaluated the direct link between IT investment and organizational performance at the economy, industry, and

business levels. Second, empirical research aimed to establish an indirect link between IT investment and organizational success.

Kraemer and Dedrick (1996) found a favorable correlation between IT investment and productivity development in 12 Asian-Pacific states from 1984 to 1990. Kraemer and Dedrick (2001) studied 43 states and concluded that IT investment as a proportion of GDP did not affect productivity growth. Internet and e-commerce increase productivity, according to Litan and Rivlin (2001). They examined internet productivity in eight industries that make up 70% of the nation's GDP. Over five years, the internet might enhance productivity growth by 0.2% to 0.4%. Navarrette and Pick studied the Mexican banking industry in 1982-1992. (2002). Eleven years were used to investigate the association between IT spending and net profits, ROA, and ROE. IT spending positively affected net profit and ROA. Their investigation rejected the productivity paradox.

Some studies haven't found a link between IT investment and corporate profitability. Markus and Soh (1993) correlated business profitability with IT-related variables such IT spending, computerization, and outsourced IT services. They considered bank size and variety. Smaller banks have higher IT returns than larger institutions. When they looked at lagged IT spending across four years, they discovered that in larger banks, higher computerization was connected with greater business profitability. IT expenditures affected productivity and consumer welfare through better services and cheaper pricing, but not profitability, according to Hitt and Brynjolfsson (1996). Productivity improvements conveyed to customers through lower pricing, not improved profitability. Hitt and Brynjolfsson (1996) explained that customers reduce costs for searching for low-cost items and services and picking new providers. Therefore, purchasers' lower prices could limit profits. Diversification and product differentiation can help organizations maintain profitability.

Some studies evaluated IT investments and corporate performance through intermediary variables. Barua et al. (1995) studied the influence of IT investments on inventory turnover, relative quality, relative pricing, and new goods. IT investment affected inventory turnover, which affected firm performance as measured by ROA and market share.

2.6. Enterprise resource planning (ERP) system

Whence (2006) Enterprise resource planning (ERP) is a comprehensive corporate IT package that allows the real-time sharing of common data and procedures. An ERP system uses a single database to ensure data quality, so inputted data is available to every employee in real time.

Shanks, Seddon, Willcox (2003) ERP systems are packaged software that automates and integrates corporate operations and shares data across the firm. ERP systems are integrated enterprise computing systems that cover production, logistics, distribution, accounting, marketing, finance, and HRM. (2008). Ranjan, Jha, and Pal (2016) reviewed ERP implementation literature. According to the study, an ERP system connects a company's primary business processes to boost efficiency and maintain competitive edge.

An ERP system helps a company integrate its processes to improve efficiency and remain competitive, according to Addo and Helo (2011). ERP helps organizations improve productivity, processes, communication, tracking, forecasting, and customer service and satisfaction. PWC found (2012), ERP organizations increase service delivery, generate innovation, save expenses, and connect with customers, making them more competitive. Munyiri (2014) studied ERP implementation and performance in Kenyan energy parastatals. ERP usage impacted organizational performance, according to the study. ERP's effects on firm performance were examined by Njihia and Mwirigi (2014). Effective ERP adoption impacts firm performance. Wanyoike (2017) studied ERP's impact on organizational performance. ERP systems improved the firm's financial performance, according to the study. Shannak (2016) Used a balanced scorecard to study ERP's impact on organization performance. ERP systems boost organizational performance. Shuhaimi, Nawawi, and Salin (2016) studied ERP's impact on management control systems and accountants' roles. ERP systems improve financial performance, according to the study.

2.7. Empirical literature review

2.7.1 Relationship between IT and firm performance

According to recent IT research, one essential duty of IT is to produce business value through the development of innovative products and services (Barczak, Sultan et al. 2007). IT is also regarded as a source of other capabilities, such as innovation capability, which can lead to potential competitive advantages for a company. (Barczak, Sultan et al. 2007).

IT applications consist of a broad range of application.

- For projects requiring a high level of creativity, IT provides apps that aid in workflow automation and group cooperation (Bardhan, Krishnan et al.2007).
- ICT increases workflow through automation. Buhler and Vidal, 2005 in (Tarafdar and Gordon 2007).
- It also improves the company's ability to adapt to client requests. (Tarafdar and Gordon 2007) and (Brynjolfsson 1993). CRM takes the major share here to handle client's relationship.
- Enhance communication between a business and its consumers and suppliers (Tarafdar and Gordon 2007).
- Innovative (increasing innovators' ability to collaborate and seek relevant information and expertise) (Tarafdar and Gordon 2007).
- Speed boosts successful innovations Kessler and Chakrabarti (1996).
- Improve the effectiveness and success of innovation implementation (Johannessen, Olaisen et al. 1999).
- More readily available and rapidly retrieved information. Huber (1990 in Johannessen 1994)
- Knowledge integration inside organizations is critical for building long-term competitive advantages. Grant (1996a; 1996b)
- Enables collaboration and activity coordination via knowledge management and communication processes.
- Enables collaboration and activity coordination via knowledge management and communication processes. (Johannessen, Olaisen et al. 1999).
- It will enhance workflow automation (Barczak, Sultan et al. 2007). ERP is the major application to automate business workflows for different departments.

- IT promotes group collaboration. (Barczak, Sultan et al. 2007). Like virtual meetings specially during the COVID-19 period information technology plays a significant role in collaboration and virtual meetings.

Some researchers have demonstrated both the potential and the challenges that information technology has posed to the global economy. For instance, Hitt and Brynjolfsson (1996) have investigated the effects of IT on performance while studies by Stiroh (2001), Pohjola (2001) have looked at growth and development (Satti and Nour, 2002).

Information system (IS) research has focused on demonstrating the business value of IT on organizational productivity. The question of whether or not investing in IT improves performance and company efficiency has sparked heated debate. Despite the fact that a number of recent firm-level empirical research have indicated a favorable association between IT investments and organizational performance, data from older IT productivity studies have been inconclusive. Kamil (2001) Declared that appropriate use of IT in the companies increase the performance by three ways:

- When companies engage in IT, they increase the amount of capital utilized per worker (capital deepening).
- Technological development has accelerated the increase of total factor productivity in information technology-producing sectors.
- Technological advancement has accelerated the growth of total factor productivity in information technology-using enterprises.

For successful measurement in IT and performance studies, capital must be disaggregated into the component categories of investment—IT and traditional forms of capital, termed non-IT. Computer and telecommunications investments, as well as related hardware, software, and services, are all included in IT investment. (Dedrick et al., 2003).

According to Kamel, Rateb and El-Tawil (2009) Based on research conducted in the industrialized world, it has been discovered that the utilization of appropriate infrastructure and ICT can influence socioeconomic development. The United States' gross domestic product (GDP) increased by 7.8%, the United Kingdom's by 8.0 percent, Singapore's by 8.3 percent, and Australia's by 8.4 percent as a result

of ICT investment. Chieh-Yu and Yi-Hui (2007) completed a technical innovation study for China's IT industry A total of 1500 people were polled for the study. Questionnaires were used to collect primary data. It was discovered that technological, organizational, and environmental factors all have a substantial impact on the adoption of technological advances, and that adopting new technologies will improve supply chain performance for the Chinese technology industry.

Gacuru and Kabare (2015) assert that as ICT innovations have increased, the efficiency and effectiveness of company operations have improved. Because of better coordination between the many activities across the supply chain, the transportation of information via ICT systems has also helped reduce the cost of logistical operations. Atieno (2014) assert that firms adopt the use of ICT in supply chain to increase performance and efficiency. Shaukat, Zafarullah and Wajid (2008) Over the period 1994-2005, the researchers looked into the impact of information technology on organizational performance in Pakistan's banking and manufacturing sectors. In-depth interviews, official papers, and field surveys were used to collect primary data from 48 companies, 24 of which were in the industrial sector. According to the findings, information technology has a positive impact on the organizational performance of Pakistan's banking and manufacturing sectors. Balogun (2016) say that Nigerian banks have profited from global technological innovation Furthermore, the utilization of information and communication technologies has improved employee performance and client reactions in banks (ICT).

Balogun (2016) in his research on the influence of information technology on organizational performance in the Nigerian banking industry the study focused on 15 banks. 450 employees were chosen at random. Questionnaires were used to collect primary data. The findings demonstrated that technology innovation influenced bank personnel performance, customer satisfaction, and profitability improvement. It was advised that banks manage technology innovation effectively in order to improve employee performance, customer happiness, long-term profit, increased return on investment, returns on equity, and achieve a competitive advantage in the banking market.

2.8. Summary of literature review

Researchers generally agree that determining the exact influence of IT on an organization's performance is extremely challenging. Because, of the complexity of many issues related to the use of information technology in organizations, many studies suggested that more research is needed in this area (see, for example, Kettinger, Grover, Guha, & Segars, 1994; Raymond, Pare, & Bergeron, 1995; Roach, 1989).

Managerial productivity has no established standard among academics and researchers. Another metric that can be used to compare the manufacturing performance of different technological and organizational systems is the direct measurement of outputs and inputs (Mitchell & Stone, 1992).

The time-based measures of important manufacturing procedures are another method for measuring productivity. In batch manufacturing processes like machining, industrial engineers and production managers utilize them to plan schedules, estimate costs, and monitor machine utilization rates (Kelley, 1994). According to Panko (1991), "output per hour" is an indicator of office productivity. It is possible to compute the output per hour worked by dividing output units by output units.
Porter and Millar have developed a valuable framework for examining the strategic significance of information technology (1985). Value chain describes how and why technology is altering the internal workings of organizations, as well as the relationships between organizations, their suppliers, and their customers.

There is still a lack of understanding of how IT affects performance in the workplace, despite its widespread adoption. As a result of this, the study aims to determine how IT firms in Ethiopia are using, adopting and investing in information technology in connection to their organizational performance.

2.9. Research gap

The researcher identifies the following gaps from the above literatures and personal observations.

- ✓ The selected research topic was conducted in various countries and neighboring countries like Kenya, but so far, it's not conducted in Ethiopian IT Firms even though it's done in banking sectors.

- ✓ There are some arguments between researchers on the impact of information technology usage significance like the following researchers came up with two different results.
  When Pulley and Braunstein (1984) researched the information services supplied by enterprises in relation to IT usage, they found a linkage between IT use and higher economies of scope, which is an example of this principle in action. Researchers Diewert and Smith (1994) examined the extent to which large Canadian retail enterprises used information technology in the accounting department. There is a strong correlation between their current accounting framework and their success in producing a large volume of goods, which is attributed to the

technological revolution that allowed them to keep track of their purchases and sales quickly and easily using the latest computer software that proved to reduce inventory holding costs. The findings of Loveman (2001) contradicted prior findings and the results of Weill's (1990) study, which found that transactional IT had a favorable influence on organizational performance, but information and strategic technology had no effect. Therefore, this paper will try to investigate the impact of IT on Organizational Performance and come up with its significance correlation of the variables mentioned on the conceptual framework and on research finding section this paper will strengthen any of the results either in support or in contradiction.

- ✓ There is a paradox between the significant relationship between information technology investment and firm performance. Some research found no association between IT investments and organizational performance and productivity (Cron and Sobol, 1983; Strassmann, 1990, 1997; Harris and Katz, 1991; Weill, 1992; Brynjolfsson, 1993; Loverman, 1994; Berndt and Morrison, 1995; Landauer, 1995). The productivity puzzle shows a positive association between IT investment and firm performance (Lichtenberg, 1995; Brynjolfsson and Hitt, 1996; Rai, Patnayakuni and Patnayakuni, 1997; Brynjolfsson and Hitt, 1998). Therefore, this study will try to see the relationship and significance level between IT investment and firm performance then findings will either in support or contradictions of the prior findings.

2.10. Conceptual framework

This section describes the framework which contributes to the research in identifying research variables and clarifies relationships among the variables. The research has dependent variables Performance of the IT Firms measured by (Achievement of objectives, Financial Performance, Accountability & Quality of Service) and independent variable of IT Adoption measured by (Office Automation, ERP) and IT Usage measured by (Internet, Hardware Devices & Software's) & Mediating Variable IT Investment measured by cost of adoption. (H- Hypothesis logically relate variables indicated by the lines relationship).

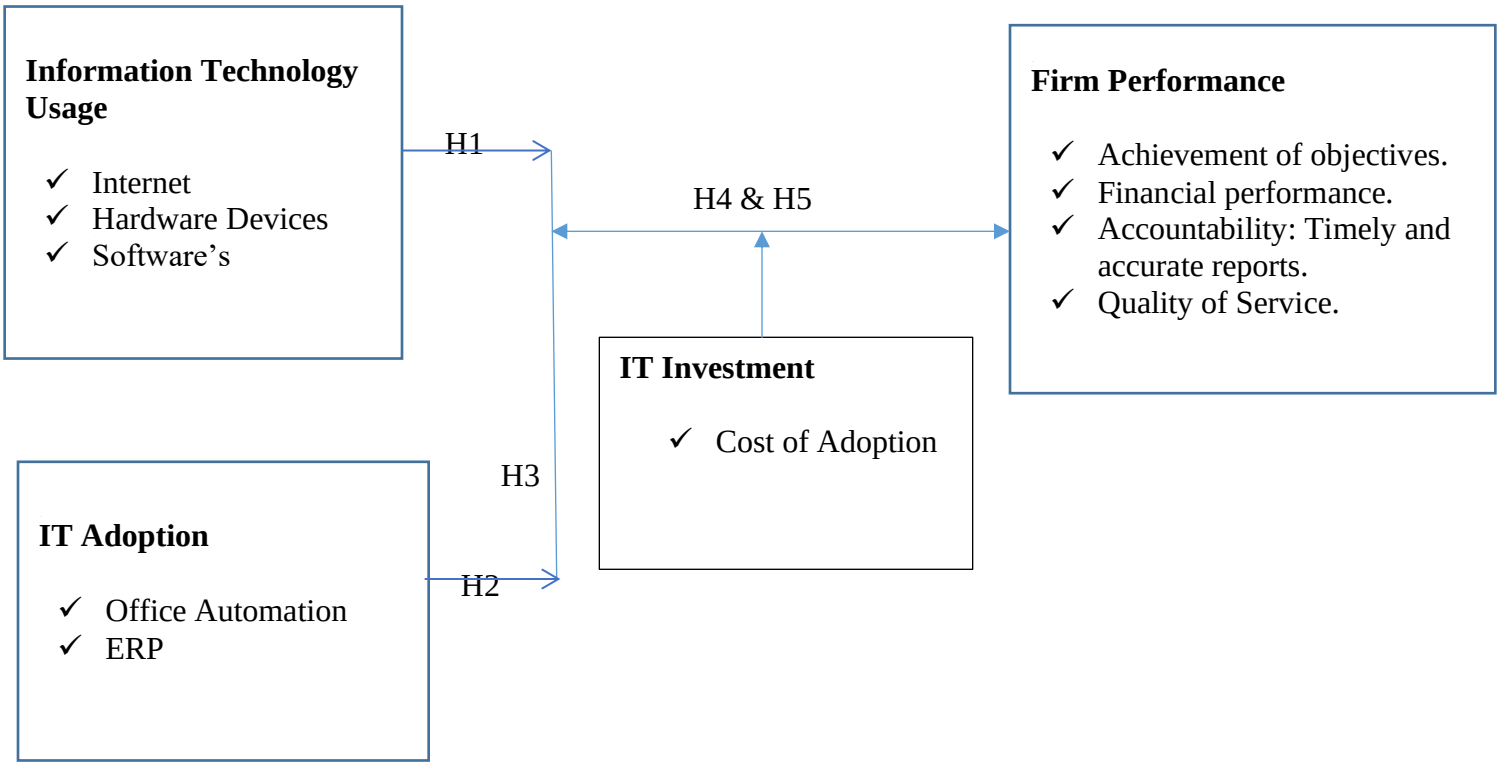

Figure 1: Conceptual framework

Figure 1 is Modified from the work of Kimani (2015). Impact of Information Technology on Organizational Performance: Case of Population Services in Kenya.

2.11. Hypothesis

From the above different literatures and personal assessment, I have formulated the following four hypothesis which could be tested each of them on Chapter 04 during the analysis. The following alternative hypothesis is also reflecting my research question and objectives of the research from chapter one.

H1: There is a significant relationship between information technology usage and firm performance.

H2: There is a significant relationship between information technology Adoption and firm performance.

H3. There is a significant relationship between Information Technology Investment and firm performance.

H4. IT Investment significantly mediates between IT Usage and Firm Performance.

H5. IT Investment significantly mediates between IT Adoption and Firm Performance.

CHAPTER THREE

RESEARCH METHODOLOGY

This chapter provides an in-depth examination of the research technique employed in the study. It also covers the following topics: research design, population, sampling strategy, sample size, data gathering methods, research procedures, and data analysis.

3.1. Description of the study area

This research will be undertaken in Addis Ababa because the researcher believes that the majority of information technology companies are based in the capital city, and because of financial and time limitations, the researcher has decided to conduct the research exclusively in the capital city.

3.2. Research approach

Any kind of study may be conducted in one of three ways: qualitative, quantitative, or mixed methods. This study employed both qualitative and quantitative research methods which is the Mixed method approach is designated. According to Saunders et al. (2009), a mixed method approach refers to a study strategy that incorporates both qualitative and quantitative data gathering and analysis methodologies. In inductive approach the conclusion came from the particular fact (Zikmund, 2000). Because the final conclusion has been concluded based on the results, which were found during the research.

Quantitative research answers questions through a controlled logical process, allowing for the collection of numerical data, the prediction, and the measurement of variables; qualitative approach is used to analyze open-ended questions and triangulate in explaining and interpreting quantitative study's findings. According to Creswell (2013), the mixed method approach is a relatively recent strategy that utilizes various forms of data to enable researchers to generate comprehensible designs from complex data and analysis.

3.3. Research design

According to Cooper and Schindler (2014), A research design is a framework and structure used by researchers to conduct an investigation and obtain answers to research topics under consideration. A research design is a framework that researchers use to gather and analyze data. (Saunders, Lewis and Thornhill, 2016). This research employed a descriptive and explanatory design. In order to define and

be able to explain the features of the study's variables of interest, a descriptive study was conducted (Kohtari, 2004). On the other hand, explanatory research was utilized to explain, comprehend, and forecast the cause-and-effect relationship between the variables (Neuman, 2014), namely IT Usage (independent variables), IT Adoption (independent Variable), IT Investment (mediating variable), and firm performance (dependent variable).

3.4. Population

A population is a collection of people, events, or things of interest that a researcher uses sample statistics to investigate and form conclusions about (Sekaran and Bougie, 2013). Population refers to the total collection of elements about which we wish to make some inferences (Cooper & Emory, 1995). The purpose of this study, on the part of the researcher, is to gain an understanding of the effect that information technology has on the performance of organizations. On the basis of that purpose, ten organizations from the private sector of IT in Ethiopia are being considered for inclusion in this study as the population which are listed on (Appendix I). These organizations have been selected based on the way of their doing busines and assuming they can provide adequate and reliable information on the subject matter and due to time and budget constraint to cover more than ten was difficult. The population of these ten businesses consists of one hundred (100) in total top, middle, entry-level managers and subordinates which are equivalent in knowledge about the subject matter. Since, they were the ones conversant with the impacts of IT on firm performance of their companies. This entailed respondents currently employed at these firms.

3.5. Sampling design

According to Kothari and Garg (2014), sample design is a technique or a procedure used to select items for the sample. Sampling design includes; sample frame, sampling technique and sample size.

3.5.1. Sample frame

Sampling is the process of gathering information about a population. It is used to select a sample from a defined population as a representative of the total population (Orodho, 2009). Serakan and Bougie (2013), defined a sample as a group of people, objects, or items obtained from a bigger population for measurement purposes. The sample frame for this study comprised of all directors, senior and middles managers, and subordinates from the selected ten (10) firms.

3.5.2. Sampling technique

According to Saunders et al, (2016), sampling technique is the process used to select respondents under study. The study will employ the Non-Probability Sampling Method, which indicates that sample selection will be non-random, subjective, and based on personal opinion. Because the subject is directly tied to a company's strategic plan.

From the Non-Probability sampling method categories, the researcher used purposive (Judgement) sampling method this is a non-probability sampling method in which it selects a specific group of units from the population for a specific reason/purpose (Ahmed, 1998). In this type of sampling, the researcher selects sampling units subjectively in an attempt to obtain a sample that appears to be representative of the population (Frankfort-Nachmias & Nachmias, 1996). This method involves the choice of subjects who are in the best position to provide the information required (Sekaran, 1992). This sampling method was selected due to the following reasons

- As the researcher's knowledge and experience is instrumental in creating a sample in this sampling technique, there are chances that the results obtained will be highly accurate with a minimum margin of error.
- Employed in situations where the knowledge of an authority can selects a more representative sample that can yield better results than utilizing other probability sampling methods.
- The selected organizations' managers are well-educated and experienced, have professional expertise, and can supply needed information.
- It is more likely that the selected companies have a better understanding of how information technology affects businesses than other companies.
- This study's respondents are primarily top managers who possess the requisite knowledge regarding IT and corporate performance.

Involvement of top management in the adoption of information technology is critical to achieving the organization's goals. Top management engagement is required during the strategy development and planning stages as well as implementation. Studies like McCosh (1985) pointed out that top management commitment is a must in order to achieve successful introduction of information technology. Therefore, it is the researcher's belief that all business organizations in Ethiopia's IT private sector are represented by the sample of companies chosen for this study.

3.5.3. Sample size

Orodho (2009) state that a sample is a subset of the total population. According to Saunders, Lewis and Thornhill (2009), sample is used to make inferences about objects or individuals in a population to be studied. In order to come up with the sample size the researcher uses **Slovin's Formula**. Slovin's Formula provides the sample size (n) using the known population size (N) and the acceptable error value (e). Fill the N and e values into the formula n = N ÷ (1 + Ne2). The resulting value of n equals the sample size to be used.

N is the population size; e is the level of precision or sampling error = (0.05).

The population size will be assumed 100 in total from 10 different companies.

n = 100/ (1+100(0.05)2)

= 100 / 1.25 = 80 which means 80 peoples should be sampled equally distributed from each company which means 8 samples from each companies a total 80 samples are considered.

Thus, sample size of 80 peoples is selected from the population of 100. The distribution of each company is represented asper below table.

Table 1: Population and sample size

Respondents	**Population Size**		**Sample Size**	
Company List	**Total No.**	**%**	**Total No.**	**%**
Alta Computec Plc	10	10%	8	12.5%
IE Networks Solution PlC	10	10%	8	12.5%
IRack IT Solution plc	10	10%	8	12.5%
IPCom Technologies	10	10%	8	12.5%
Newave HI Tech Solution	10	10%	8	12.5%
Kenera International	10	10%	8	12.5%
Symbol Technologies	10	10%	8	12.5%
Ethotech plc	10	10%	8	12.5%
Malam Engineering plc	10	10%	8	12.5%
Vascom Engineering	10	10%	8	12.5%
Total	**100**	**100%**	**80**	**100%**

3.6. Data type and sources

The study depends on primary and secondary sources of data. Primary data were collected by using questionnaires & interviews from the direct stakeholders of IT firms & In order to strength the result and findings of the study the researcher examined different articles, academic journals, useful academic books and the companies reports as secondary data.

3.7. Methods of data collection

The process of gathering data or information to answer research objectives is referred to as data collection method. (Duits, 2011). Primary and secondary data are used. Primary data is information gathered in the field in relation to a specific research goal. (Cooper and Schindler, 2014) Secondary data is information gathered from already existing sources. Primary data was gathered via structured questionnaires. Structured questionnaires are those that offer both open-ended and direct questions. The questionnaire was broken down into four sections. The first section dealt with demographics. The second section discussed the impact of IT adoption on firm performance. The third section discussed information technology investment, and the fourth section addressed the relationship between IT and technology company performance.

Due to the current pandemic COVID-19 and since I collected the data from IT firms which they are using technology features, I undertake the questionnaires via internet by using online platform GOOGLE FORMS & for interview I have used in person meetings & virtual via GOOGLE MEET Application. The questioners were developed in softcopy and shared the link to the owners, general managers and department managers via their email address and telegram by using free GOOGLE FORMS online platform.

The data collection method divided in to two ways based on the type of information needed to the result of the research. So accordingly, Survey method is applied for the quantitative research. Surveys are mainly applied to collect all type of primary data and help to generate data which can be possible to test various types of hypo research that shows relationships among different variable in the respondent groups. It also helps to gather opinion of the respondents, descriptions of opinion using the cause-and-effect approach (Wrenn et al, 2007).

Once the responses had been collected within the specified time limit, the data are analyzed using the Statistical Package for the Social Sciences (SPSS) software, and Excel illustrative graphs and charts will be created to aid understanding of the research findings. Finally, the research findings presented, along with a perspective on the findings, including ideas and recommendations, as well as future research directions.

An interview, which is a common way of obtaining detailed information, is applied in this research. The application of the interview method on research gives a variety of advantages. An interview is considered as a relatively straight forward to arrange, and the process can be understood by the respondents. The interview processes also help to produce a great deal of data. Of course, data management should be considered properly in order to have sufficiently valuable data (Oliver, 1997). The application of qualitative research by conducting an interview through the internet and in person was the second component of the research process. The purpose of the interview is to learn about the actual challenges that companies face when they need to use information technology systems and other related information which might not be addressed on the questioner. The focuses of the questions were previously designed so that the researcher gave guidelines and facilitation for the respondents to come to the main points of the research problems.

The qualitative research aids in the quantitative result's discovery. By combining the results of quantitative and qualitative analysis, provides in-depth insight into the research problem and aids in reaching a conclusion.

3.8. Data collection instrument

This study primarily employed the survey method and questionnaires as its primary data collection instrument. The questionnaire created by Kimani (2015) was reviewed and revised by the current researcher with the aid of a supervisor. The final questionnaire consisted of three sections: Parts A, B, and last one question for interview. The first section consists of the general information and profile of the respondents, including their designation, level of qualification, years of service in their companies, and age, while the second section describes the "Use and Impact of Information Technology" in detail, including questions about the use of IT, the IT equipment utilized in their company, the extent of IT usage, IT usage in automation, performance and targets achievement, financial performance, and accountancy. Last part qualitative data was used to collect missing information from Parts A and B via interview.

Some part of questioners involves a Likert Scale ranking (5-point Likert scale) while some questioners involve open and closed ended explanation about the overall IT and Performance relatedness. Likert Scale is a psychometric scale commonly involved in research that employs questionnaires. It is the most widely used approach to scaling responses in survey research. A Likert scale is the sum of responses on several Likert items. In Likert scale, 5 stand for strongly agree/ very large extent, 4 agree/ large extent, 3 neutral, 2 disagree/ little extent and 1 strongly disagrees/ very little extent. In case of ordinal, questioner, respondents will invite to level on the given alternatives (Wuensch, Karl L., 2005).

3.9. Data analysis methods

The study includes both quantitative and qualitative data analysis methods. The findings are analyzed and interpreted using descriptive (used to summarize or describe observations) and inferential (use observations to allow to form predictions (inferences) about a scenario that has not yet occurred) statistics. Descriptive statistics was used to interpret demographic variables of respondents and mean scores of IT utilization dimensions, whereas inferential statistics was used to determine the relationship between information technology usage and its enhancing firm's performance using correlation and regression analysis via Statistical Package for the Social Sciences (SPSS) version 28.0.1.1.

To further assess the study hypothesis, ANOVA and a multiple regression model was utilized. The ANOVA is used to investigate the link between the dependent, mediating and independent variables in the study, whilst the multiple regression model is used to determine the independent variables' degree of significance on the dependent variable and also the mediating significance. Quantitative data was analyzed using descriptive and inferential statistics. Mean, standard deviation, frequencies and percentages are used to present descriptive statistics. Results presented in tables and figures. Qualitative Data was analyzed by using Thematic Analysis method and its result presented in table by summarizing in to the study variable's theme.

3.10. Validity

Validity refers to the degree to which a measurement instrument measures precisely what it is designed to measure. It is the quality of our judgments, inferences, or assertions. It refers to the degree to which

you measure what you're supposed to measure, or, more simply, the precision of your measurement (Adams, 2007).

The researcher believes this study's tools are valid. Several methods were used to achieve this.

- The surveys and interviews covered the entire research issue. Based on the preceding literature review, the questionnaire and interview cover the main areas of the study.
- As stated in the section on data collection instruments, the questionnaire was adapted from previous research and evaluated and refined for the current study.
- Pilot test was conducted, and this validation was conducted to determine whether the content of the items is helpful in answering the research questions, as well as to examine the clarity of the questions through consultation with subject matter experts and an advisor.
- Four companies' top executives were interviewed in person. With those managers, issues about the impact of information technology were explored. This technique was utilized as a secondary data collection tool, which contributed to the study's validity.
- The responses of the questionnaires were quite similar to the results of the interviews, indicating a high degree of validity.

3.11. Reliability

Reliability refers "the measure that consistently generates the same result over re-peated measures."(Wrenn, Stevens & Loudon, 2007). The main underlining point of the reliability focuses on the repeatability of the result and reaching to similar result. The consistency of the answers for a specific question can be measured through the reliability. The reliable results provide similar output over different research period. As a result, the research tested the reliability by using Cronbach's Coefficient Alpha method. To ensure the content validity of this research instrument, 15 employees from 3 companies who are not the actual respondents of this study were subjected to pre-testing in order to verify the content's structure, layout, grammar, and spelling, as well as the absence of bias in the information and questions contained within. **Cronbach Alpha** was used to determine the reliability of the questions Thus, the instruments utilized are guaranteed to be valid and trustworthy and this tool is an internal consistency estimate. The formula is: alpha = N*P/(1+P(N-1))

Alpha value ranges b/b 0-1, a value near to 1 shows greater reliability

Reliability Statistics	
	Cronbach's Alpha Value Firm performance
Cronbach’s Alpha of IT usage	0.822
Cronbach’s Alpha of IT adoption	0.894
Cronbach’s Alpha of IT investment	0.793
Cronbach’s Alpha Average	**0.836**

Cronbach’s alpha reliability result of this study is 0.836. Using rule of thumb of Kothari C. R (2004), the Cronbach’s alpha value of the study is within acceptable level and since it’s close to 1 its more reliable.

3.12. Ethical consideration

The ethical aspect was considered throughout the data collection process. Each respondent was informed that participation in the study was voluntary, and only those who supplied verbal and written consent were included in the study. Before each respondent was engaged in the fieldwork, he or she was provided with a clear explanation and elaboration of the aims of the study. Thirdly, all research instruments were introduced in order to protect the anonymity of participants and prevent harm to responders. In addition, the study adhered to the ethics of social research, including both professional and researcher-respondent relationships. In addition, everyone who supported the researcher in any way was accorded respect. Throughout the study process, citations of other researchers' contributions were maintained.

CHAPTER FOUR

RESULT AND DISCUSSION

This chapter includes a discussion of the final outcomes as well as the procedure by which the results were gathered in order to arrive at them. In addition, the interviewees' backgrounds are discussed in greater detail. Last but not least, statistical methods of analysis were explained, which included a descriptive analysis, a correlation analysis, and a regression analysis, all of which were conducted using the SPSS version 24 computer software program.

4.1. Response rate

There was a total of 80 questionnaires sent to the purposefully selected samples of managers from director, senior, middle and lower levels from the various information technology companies in Addis Ababa, Ethiopia. A total of 75 questionnaires were properly completed and collected from the participants. As a result, the overall response rate was 93.75 percent, which is considered more than adequate for data analysis and discussion of study findings.

4.1.1 Demographic characteristics of respondents

The demographic information of respondent gathered for this study were gender, age range, level of qualification (educational level), designation (position) & years of service.

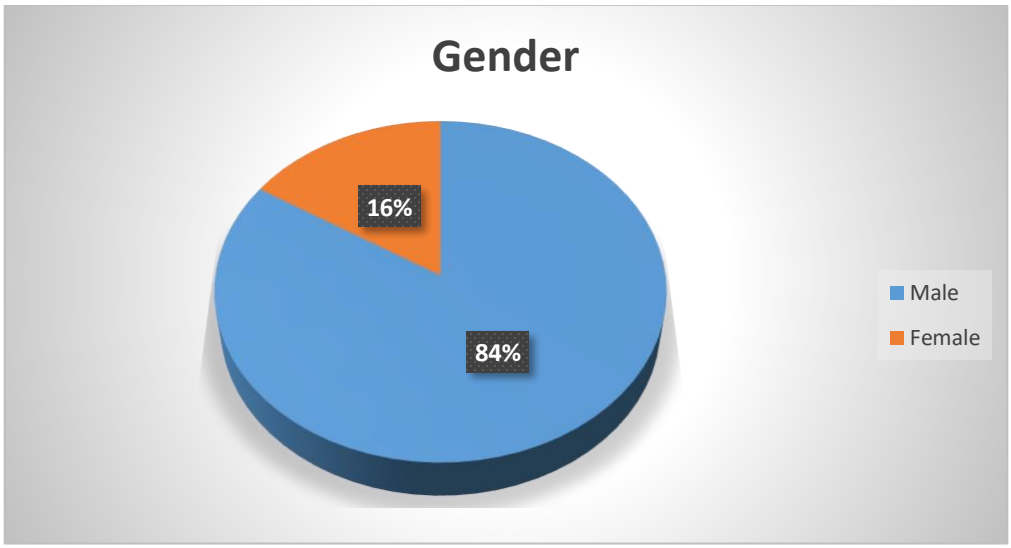

Figure 2: Gender of respondents

Source own survey 2022

Figure 2 presents the gender distribution of the respondents. Out of 75 respondents 63 (84%) were male while 12 (16%) were females. This indicates that majority of the selected it Firms management is dominated by males. This implies that the male samples have the chance to be represented in every matter.

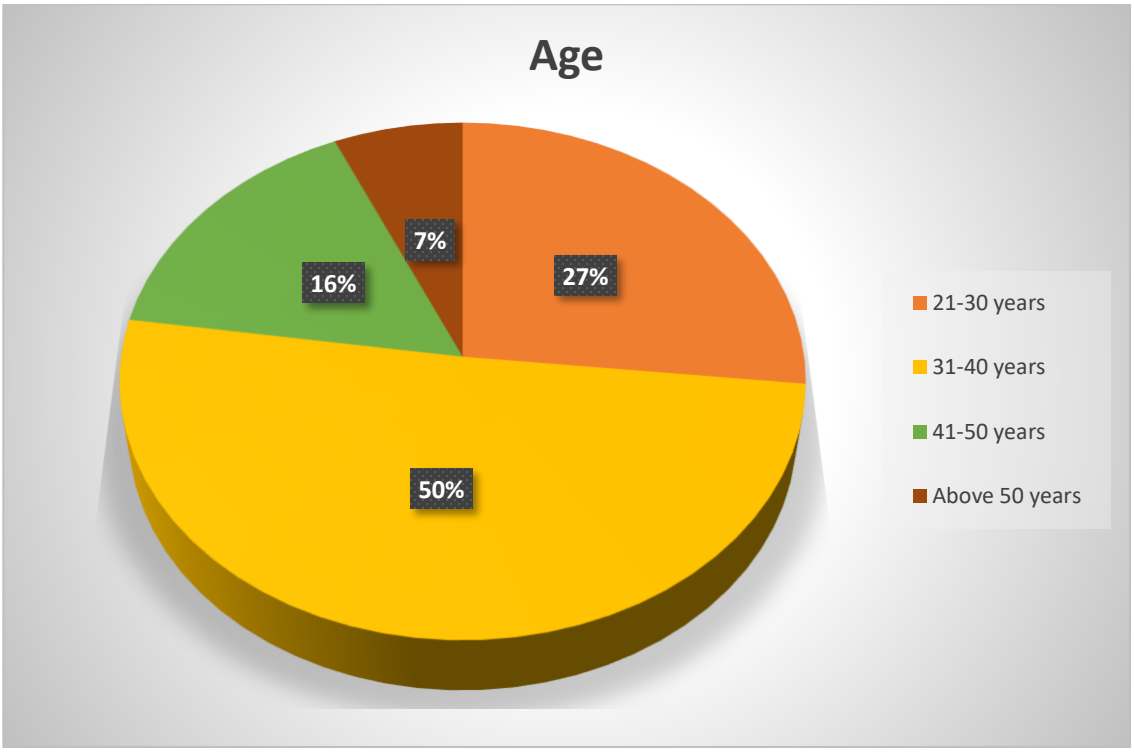

Figure 3: Age of respondents

Source own survey 2022

As shown in the above figure 3 when we look at the age group of respondents, the larger no of employees is between the ages of 31-40 which adds to 38 respondents representing to 50.7% of the total respondents followed by 21-30 years age categories which accounts 26.7.% of the respondents, those between 41-50 years accounted for 16%. The rest age category over 50 covers 6.7% of the sample. The data shows most managers are on the middle age which might benefit the firms to accept technology updates and to use various technologies which might be adopted in their organizations. Czaja & Sharit, 1998; Ellis & Allaire, 1999; Tacken, Marcellini, Mollenkopf, Ruoppila, & Szeman, 2005 have found that older adults expressed less comfort in using technology and less confidence in their ability to successfully use these systems.

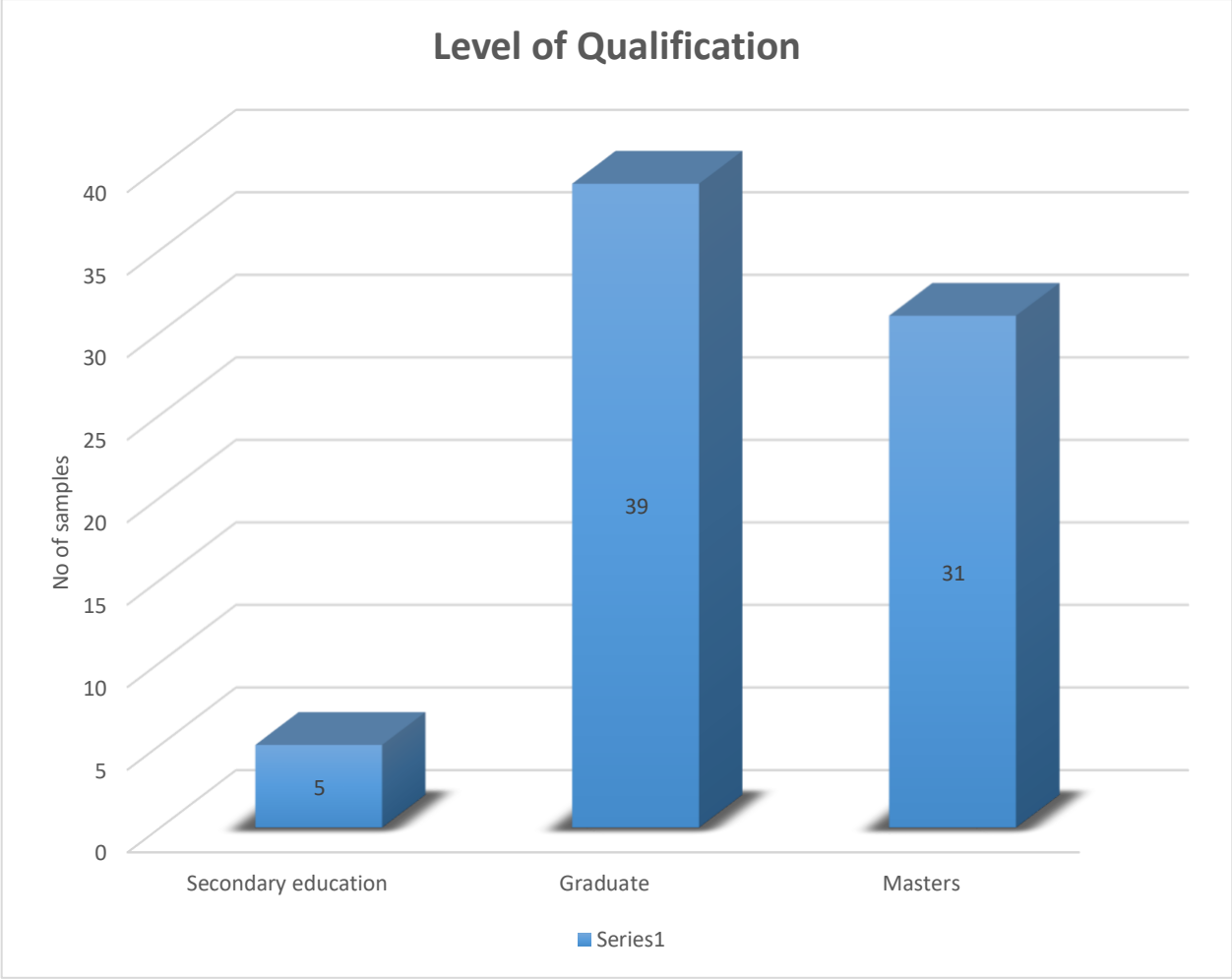

Figure 4: Level of qualification

Source own survey 2022

As the preceding graph demonstrates, secondary education had the smallest proportion of responses at 6.7% which means (5 persons) out of all samples, followed by masters' holders at 41.3% (31 persons) and Graduate degree holders at 52% (39 persons). This indicates that the majority of the sampled IT firms have graduate and above qualified managers. Since the majority of respondents possess a college degree, they are able to complete the questionnaire with knowledge of the requested questions.

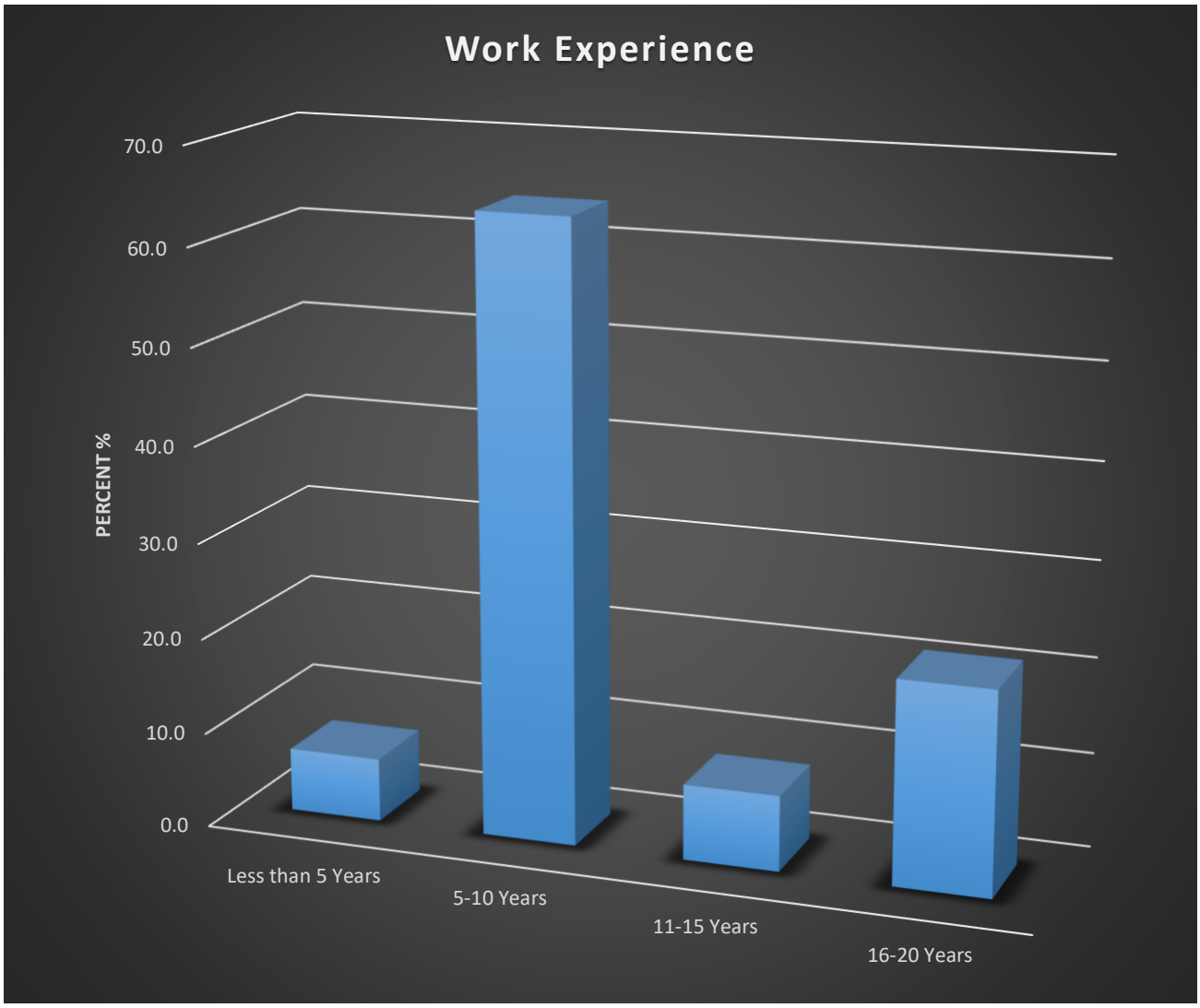

Figure 5: Working experience of respondents

Source own survey 2022

In terms of service years, the bulk of respondents had 5-10 years of experience (64 percent), followed by respondents with 16-20 years of experience (21.3 percent) and 11-15 years of experience with (8 percent). The final groupings of respondents are those with less than 5 years of experience (6.7 percent). Given that the majority of respondents have worked for more than five years, the information gathered from them may be relied upon for conducting significant analysis. The presence of numerous senior personnel suggests that the questioner respondents could significantly address the research title.

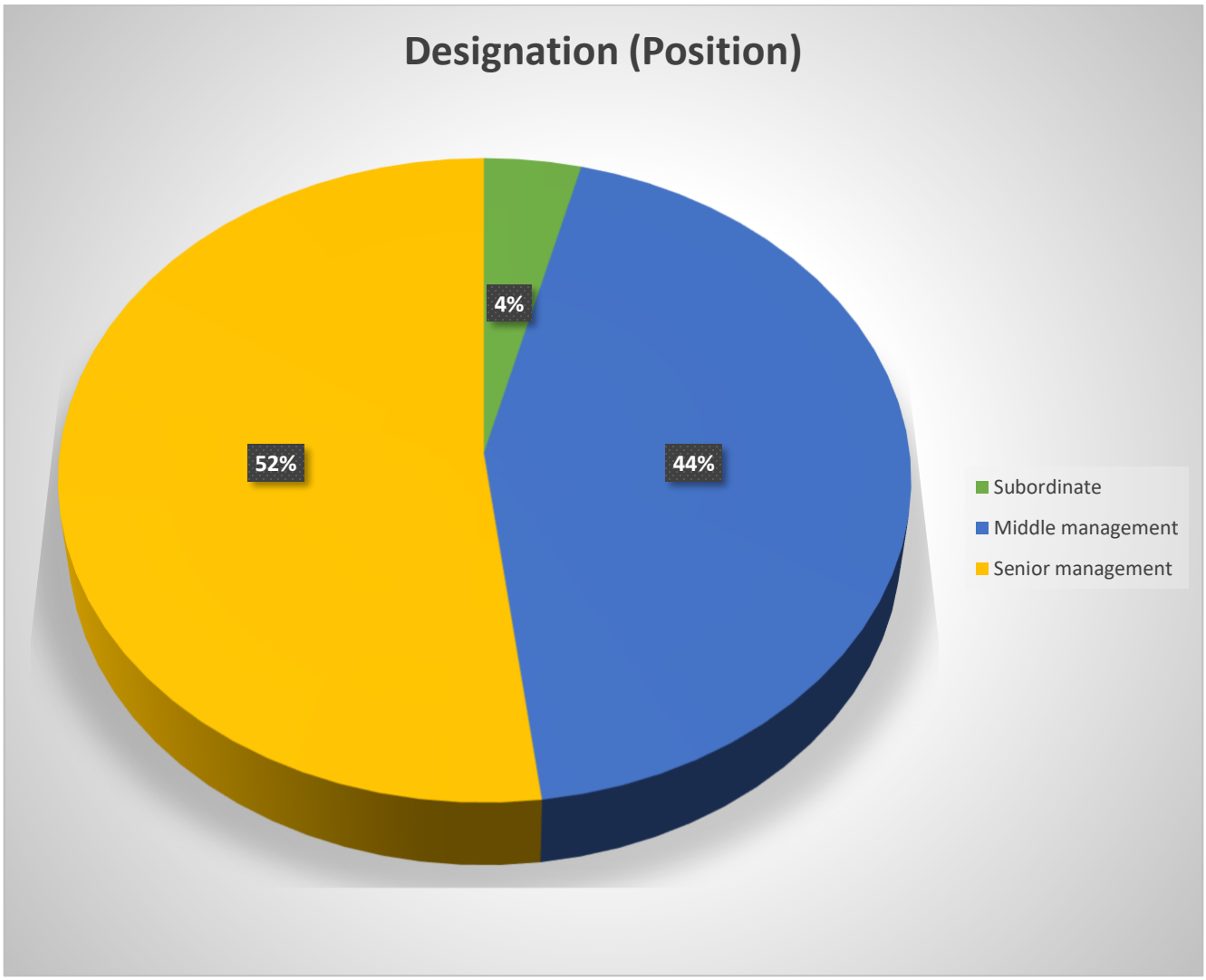

Figure 6: Designation of respondents

Source own survey 2022

The graph that just came up shows that the proportion of responses held by senior managers is the highest, at 52 percent, followed by those held by middle managers, at 44 percent, and then by those held by subordinates, at 4 percent. This indicates that the majority of the respondents are senior managers and middle managers, which could help to get the relatedness of IT with performance from the major information source. In fact, the sampling technique discussed in chapter three plays a role on sampling target respondents all by itself.

4.1.2 Use and impact of information technology

Table 2: Company IT device(s) at disposal to enable performance of duties

What information technology (IT) devices do you have at your disposal to fulfill your duties?		
Devices	**Frequency**	**Percent**
Mobile phone	31	41.3
Desktop Computer	16	21.3
Laptop	28	37.3
Total	75	100.0

According to the data in Table 1, the vast majority of the respondents (41.3 percent) were able to carry out their responsibilities with Mobile Phones thanks to the availability of mobile phones which could perform equivalent or better performance than today's personal computers. The second devices in majority of usage to perform their tasks were Laptop computers at 37.3 percent. The table also gives further information, which shows that 21.3 percent of the respondents had access to desktop computers which helps them carry out their responsibilities at their companies.

4.2. Descriptive analysis

This section of the paper will present the findings of the survey respondents' perceptions on the current impact that information technology is having on the performance of their organizations. The results of the descriptive statistics analysis are shown in the following tables and are organized as follows: frequency, percentage, mean, and standard deviation for each of the five dimensions. Respondents answered whether they were "SA- strongly agree," "A- agree," "N- neutral," "D- disagree," and "SD- strongly disagree" with the presented statements and the same value given to. Very large extent, Large extent, Neutral, Little Extent & Very Little Extent. The Score value starts from 5 the highest to 1 the lowest. The **Mean** value of a variable indicates the center tendency of its values. The **Standard Deviation (St.D)** illustrates the dispersion of a variable's value from its mean. According to Zaidatol and Bagheri (2009), a mean score below 3.39 was deemed low, a mean score between 3.40 and 3.79 was deemed moderate, and a mean score beyond 3.8 was deemed high, as depicted by Comparison bases of mean of score of five-point Likert scale instrument.

Table 3: Level of IT usage at the selected firms

IT Usage	Very Large Extent (%)	Large Extent (%)	Neutral (%)	Little Extent (%)	Very Little Extent (%)	Mean	St.D
Mobile devices and tablets	45.3	48.0	6.7	0	0	4.3867	0.61278
Personal Computers (Laptop or Desktop)	74.7	13.3	12.0	0	0	4.6267	0.69308
Internet	92	0	8	0	0	4.84	0.54624
Customer Relationship Management (CRM)	0	21.3	57.3	21.3	0	2.7867	1.01733
Enterprise Resource Planning (ERP)	1.3	30.7	42.7	0	25.3	2.8267	1.16681
Office365 (email/OneDrive etc)	29.3	29.3	22.7	13.3	5.3	3.64	1.19277

The purpose of Table 3 was to show the degree of IT device and system utilization at the selected IT firms. The table reveals that the majority of respondents agreed to a very great extent (92 percent) on the amount of use of the Internet, (74.7 percent) on the amount of use of laptops and desktop computers at there duties, while the level of use of mobile phones and tablets was closely followed at (45.3 percent). In addition, the respondents mostly agreed on the large extent of use of various IT software's/ systems: CRM usage was 21.3 percent, ERP system usage was 30.7 percent and Office365 usage was 29.3 percent.

The mean score of each devices/ systems shows that Mobile Devices, Personal Computers & Internet are at **high** Usage in the selected firms. Office 365 or office applications at a **moderate** usage and both CRM & ERP applications are at a "**low**" usage.

Table 4: Level of information technology adoption

Information Technology Adoption		SA	A	N	D	SD	Total	Mean	St.D
1.The Company uses modern IT Applications & infrastructure.	**No**	30	45	0	0	0	75	4.4	0.493
	%	40	60	0	0	0	100%		
2. The company automate most of its business operations.	**No**	12	40	18	0	5	75	3.72	0.966
	%	16	53.3	24	0	6.7	100%		
3. The company uses enterprise resource planning (ERP) system.	**No**	16	23	22	9	5	75	3.48	1.155
	%	21.3	30.7	29.3	12	6.7	100%		
4. Use of ERP has increased performance in the company.	**No**	21	31	19	4	0	75	3.92	0.866
	%	28	41.3	25.3	5.3	0	100%		
5. Adopted IT Application of the company facilitate easy user-friendly interfaces for employees.	**No**	35	25	5	10	0	75	4.133	1.031
	%	46.7	33.3	6.7	13.3	0	100%		

The purpose of Table 4 was to show the level of IT adoption at the selected IT firms. The table reveals that the majority of respondents agreed that the company's level of adoption and use of modern IT applications at (60 percent) with 45 respondents, even 40% of the respondents are strongly agreed on the adoption of IT. The implication of the mean at 4.4 indicates that most of the respondents are leaning towards agree.

Majority of respondents agreed that the company's automation of its business operations at (53.3 percent) with 40 respondents, even 12% of the respondents are strongly agreed and 18% respondents are neutral with only 5% are on the strongly agree level. The implication of the mean at 3.72 indicates that most of the respondents are leaning towards moderate or fifty-fifty.

Majority of respondents agreed that the company's adopted ERP at (30.7 percent) with 23

respondents, even 21.3% of the respondents are strongly agreed and 29.3% respondents are neutral with only 9% & 5% disagreement. The implication of the mean at 3.48 indicates that most of the respondents are leaning towards moderate agreement level.

A great number of the respondents agrees towards that the company's adopted ERP increased performance at (41.3 percent) with 31 respondents & 28% of the respondents are strongly agreed and 25.3% respondents are neutral with only 5.3% disagreement. The implication of the mean at 3.92 indicates that most of the respondents are leaning towards agree.

Further, A great number of the respondents strongly agrees towards that the company's adopted IT applications has easy user-friendly interfaces at (46.7 percent) with 35 respondents & 25% of the respondents are agreed and 5% of the respondents are neutral with only 10% disagreement. The implication of the mean at 4.11 indicates that most of the respondents are leaning towards agree.

Table 5: Information technology investment

Information Technology Investment		**SA**	**A**	**N**	**D**	**SD**	**Total**	**Mean**	**St.D**
The company invests on IT significantly.	**No**	32	17	11	10	5	75	3.8133	1.30
	%	42.7	22.7	14.7	13.3	6.7	100%		
IT Investment significantly supporting the company business operation.	**No**	42	18	15	0	0	75	4.36	1.16
	%	56	24	20	0	0	100%		
The company allocate a significant amount for IT growth & adoption improvement.	**No**	22	28	14	6	5	75	3.746	1.163
	%	29.3	37.3	18.7	8	6.7	100%		
Cost of Adopting IT applications is feasible for our company.	**No**	22	29	19	5	0	75	3.90	0.903
	%	29.3	38.7	25.3	6.7	0	100%		

Results in Table 5 show that majority of the respondents agreed that information technology investment had a significant impact on the performance of their organization and the cost of adopting or implementing information technology is manageable when they compared its significance with the benefit. Overall, the mean score of IT investment showed from the table is 3.81 which tells most of them tends to agree, IT investment significancy towards support of their day-to-day business operation are at 4.36 which shows very strong agreement of the respondents. 3.746 mean score of allocation of IT investment shows still the selected firm managers are not that much convinced to invest on IT that's why the mean score shows it's on moderate agreement level of the respondents. Finally, the cost of adoption reasonability majorly agreed by the majority of the respondents at 3.9 mean score.

Table 6: Impact of IT on the selected IT firms performance in target achievements

Target Achievement		**SA**	**A**	**N**	**D**	**SD**	**Total**	**Mean**	**St.D**
Use of IT has improved target monitoring and reporting significantly at the company.	**No**	31	38	6	0	0	75	4.33	0.6224
	%	41.3	50.7	8	0	0	100%		
Use of IT has helped the company to increase a profit.	**No**	23	52	0	0	0	75	4.306	0.464
	%	30.7	69.3	0	0	0	100%		
Use of IT has helped the company implement target schedules on time.	**No**	23	40	12	0	0	75	4.146	0.671
	%	30.7	53.3	16	0	0	100%		
Use of IT has helped the company improve employee's productivity and increased flexibility	**No**	35	40	0	0	0	75	4.466	0.502
	%	46.7	53.3	0	0	0	100%		
Adopted IT Applications has improved the company overall performance.	**No**	27	28	9	6	5	75	3.88	1.185
	%	36	37.3	12	8	6.7	100%		

Results in Table 6 show that majority of the respondents agreed that information technology had a

significant impact on the performance in target achievement of their organization and financial improvement from the profit maximization measurement. Generally, the mean score of IT impact towards target monitoring and reporting showed from the table is 4.33 which tells most of them tends to a strong agreement, IT significancy towards increasing profitability of the organization are at 4.146 which shows very strong agreement of the respondents. 4.466 mean score of IT impact towards the improvement of employee's productivity and flexibility shows how much IT could impact the employee's efficiency that's the reason the mean score shows it's on high agreement level of the respondents. Finally, the adopted IT applications relatedness with the overall performance of the organization shows at 3.88 mean score which tends to a good level of agreement by the respondents.

Table 7: Impact of IT on the selected IT firms performance in accountability

Accountability		**SA**	**A**	**N**	**D**	**SD**	**Total**	**Mean**	**St.D**
Use of IT has helped the company monitor variances (budget versus actual) in real time basis.	**No**	34	25	11	5	0	75	4.173	0.9208
	%	45.3	33.3	14.7	6.7	0	100%		
Use of IT has facilitated better management of the company Products and services offered to Its customers.	**No**	30	36	9	0	0	75	4.28	0.669
	%	40	48	12	0	0	100%		
The use of IT has led to more formalization of communication and procedures	**No**	45	20	10	0	0	75	4.466	0.7228
	%	60	26.7	13.3	0	0	100%		
Whistle blowers have used the company IT services in reporting malpractice and malfeasance.	**No**	22	20	28	0	5	75	3.720	1.097
	%	29.3	26.7	37.3	0	6.7	100%		

Results in Table 7 show that greater number of the respondents agreed that information technology

had a significant impact on the performance in accountability of their organization and four different measurements technically implied on the four questioners. Therefore, the mean score of IT impact towards monitoring variances between budget and actual showed from the table is 4.173 which tells most of them tends to a strong agreement, IT impact towards better management of the company product and service offered to its customers are at 4.28 which shows very strong agreement of the respondents. 4.466 mean score of IT impact towards the formalization of communication and procedures shows how much IT could impact accountability to organizational disciplines. Finally, respondents moderately agreed at 3.72 mean score whist blowers' usage of IT service for reporting shows somehow peoples might prefer other means better than IT to report some mischiefs in their organizations.

Table 8: Impact of IT on the selected IT firms performance in quality of service

Quality of Service		SA	A	N	D	SD	Total	Mean	St.D
Use of IT has facilitated quality service delivery to the company customers.	**No**	32	43	0	0	0	75	4.426	0.4979
	%	42.7	57.3	0	0	0	100%		
Use of IT has facilitated better communication with its beneficiaries and partners in service delivery.	**No**	34	41	0	0	0	75	4.453	0.5011
	%	45.3	54.7	0	0	0	100%		
Use of IT has improved planning and execution activities of projects in reaching its customers.	**No**	34	41	0	0	0	75	4.453	0.5011
	%	45.3	54.7	0	0	0	100%		
Use of social media has helped your company reach its beneficiaries and also collaborate with our partners.	**No**	16	32	24	0	3	75	3.773	0.9237
	%	21.3	42.7	32	0	4	100%		

SPSS descriptive analysis results in Table 8 show that majority of the respondents agreed that information technology had a significant impact on the quality of service they have delivered to their customers towards for the overall performance enhancement. Generally, the mean score of IT impact towards quality service delivery to their clients showed from the table at 4.426 which tells

most of them tends to a strong agreement, IT significancy towards a facilitation of better communication with their beneficiaries and partners in service delivery are at 4.453 which shows very strong agreement of the respondents the same mean score 4.453 measured on IT impact towards the improvement of planning and execution activities of projects in reaching their customers. Finally, the use of social media moderately agreed by the respondents towards helping the companies reach their beneficiaries and collaborate with their partners with a mean score of 3.773.

4.3. Correlation analysis

The Pearson's Product Movement Correlation Coefficient was computed to determine the relationships between Firm_Performance (Dependent Variable), IT_Investment (Mediating Variable), IT_Adoption (Independent Variable) & IT_Usage (Independent Variable). Correlation analysis is a useful way of exploiting relation (association) among variables. The value of the coefficient (r) ranges from -1 to +1. The value of coefficient of correlation (r) indicates both the strength and direction of the relationship. If r = -1 there is perfectly negative correlation between the variables. If r = 0 there is no relationship between the variables and if r = +1 there is perfectly positive relationship between the variables. For values of r between +1 and 0 or between 0 and -1, the different scholars have proposed different interpretations with slight difference. In the course of this research, the diction rule presented by Basic Statistics in the Human Services: An Applied Approach (1982) was utilized. Higher positive values (to a maximum of +1) and lower negative values (to a minimum of –1) indicate stronger relationships. The following table provides a framework for describing the strength of the measure of association. This research takes the default level of significance $\alpha = 0.05$.

Table 9: Interpretation of r value

Measure of Association	**Descriptive Adjective**
> 0.00 to 0.20 ; < -0.00 to –0.20	Very weak or very low
> 0.20 to 0.40; < -0.20 to –0.40	Weak or low
> 0.40 to 0.60; < -0.40 to –0.60	Moderate
> 0.60 to 0.80; < -0.60 to –0.80	Strong or high

> 0.80 to 1.0; < -0.80 to –1.0	Very high or very strong

The above table is from MacEachron, Basic Statistics in the Human Services: An Applied Approach, page 132.

Table 10: Correlation of the relationships between variables

Correlations					
		IT_Investment	Firm_Performance	IT_Adoption	IT_Usage
IT_Investment	Pearson Correlation	1			
	Sig. (2-tailed)				
	N	75			
Firm_Performance	Pearson Correlation	.900**	1		
	Sig. (2-tailed)	<.001			
	N	75	75		
IT_Adoption	Pearson Correlation	.794**	.729**	1	
	Sig. (2-tailed)	<.001	<.001		
	N	75	75	75	
IT_Usage	Pearson Correlation	.258*	.268*	.263*	1
	Sig. (2-tailed)	.025	.020	.022	
	N	75	75	75	75
**. Correlation is significant at the 0.01 level (2-tailed).					
*. Correlation is significant at the 0.05 level (2-tailed).					

This correlation analysis is important to note because it focuses primarily on the relationship that exists between the dependent variable and the independent variables and the mediating variables. Table 9 displays the correlation coefficients for the associations between all of the variables, which include the independent variables, the mediating variables, and the dependent variables.

When we see from the above Table 9, all the variables Firm_Performance (Dependent Variable)

has significant correlation with IT_Investment (Mediating Variable), IT_Adoption (Independent Variable) & IT_Usage (Independent Variable) and vice versa.

- Firm_Performance, has a positive correlation with the mediating variable IT Investment. This implies that as one variable increase, the other variable also increases and vice-versa. When we measure their association ($r=0.900$, $p<0.05$) which is **very stronger and positive** correlation they have.
- Furthermore, the correlation between Firm_Performance and IT_Usage is **low** ($r = 0.268$, $p <0.05$) and **positive**, which means the increase in IT_Usage will positively increase the firm performance in a low rate.
- Firm_Performance and IT_Adoption ($r = 0.729$, $p<0.05$) were **strong** correlation. This correlation is **positive** the increase of IT Adoption strongly increases the firm performance in a direct relationship.
- The table also indicates that the correlation among independent and mediating variables. The first correlation was between IT_Investment and IT_Adoption ($r=0.794$, $p<0.05$) which they have a **strong** and **positive** correlation, IT_Investment and IT_Usage was **low and positive** correlation ($r=0.258$, $p<0.05$). Both results showing one variable increase the other will also increase which means they have a direct relationship.

4.4. Test for assumptions of multiple regression model

Regression analysis is a widely used and very flexible computer analysis technique. Using two or more IV to predict a dependent variable is called Multiple Regression. Since, this research has 2 independent variable and 1 intermediate variable to predict the dependent variable it's a must to use Multiple Regression model. A preliminary analysis was performed to validate the assumptions of regressions such as Homoscedasticity (equal variance), linearity, and normality of the distribution before beginning the regression analysis to test the research hypotheses. Because we are using two or more independent variables in multiple regression, there are two additional assumptions we must assess Independent of residuals & Multicollinearity. This analysis was done before beginning the regression analysis to test the research hypotheses.

4.4.1 Independence of residuals

Multiple regression assumes that the residual is independent. Residuals are the prediction errors or differences between the actual score for a case and the score estimated by the regression equation. The **Durbin-Watson statistic** is used to test for the presence of serial correlation among the residuals. The value of the Durbin-Watson statistic ranges from 0 to 4. As a general rule, the residuals are not correlated if the Durbin-Watson statistic is approximately 2, and an acceptable range is 1.50 - 2.50.

Table 11: Durbin-Watson assumption test

Model Summary[b]					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.733[a]	.538	.525	4.02305	2.319
a. Predictors: (Constant), IT_Usage, IT_Adoption					
b. Dependent Variable: Firm_Performance					

Since the Durbin-Watson below 2.5 I can assume independence of residuals.

4.4.2 Multicollinearity

In regression it occurs when Iindependent variable in the regression model are more highly correlated with each other than with the dependent variable, when two variables are highly correlated, they both convey essentially the same information.

If they are larger than .90, we would be concerned about multicollinearity, none of the coefficients are greater than .90 so we assume multicollinearity is not a problem.

Table 12: Multicollinearity test

Correlations[c]					
		IT_Investment	Firm_Performance	IT_Adoption	IT_Usage
IT_Investment	Pearson Correlation	1			
	Sig. (2-tailed)				
Firm_Performance	Pearson Correlation	.900**	1		
	Sig. (2-tailed)	<.001			

IT_Adoption	Pearson Correlation	.794**	.729**	1	
	Sig. (2-tailed)	<.001	<.001		
IT_Usage	Pearson Correlation	.258*	.268*	.263*	1
	Sig. (2-tailed)	.025	.020	.022	
**. Correlation is significant at the 0.01 level (2-tailed).					
*. Correlation is significant at the 0.05 level (2-tailed).					
c. Listwise N=75					

Table 13: Multicollinearity test by coefficients

Coefficients[a]								
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	25.117	4.282		5.865	<.001		
	IT_Adoption	1.124	.132	.707	8.516	<.001	.931	1.074
	IT_Usage	.210	.213	.082	.984	.328	.931	1.074
a. Dependent Variable: Firm_Performance								

Multicollinearity exists when Tolerance is below .10 and VIF is less than 2.5. In this case, all of the tolerance values are greater than .10 and the VIF is less than 2.5.

We will assume multicollinearity is not a problem

4.4.3 Normality assumption test

Normality test was used to determine whether the error term is normally distributed. The Skewness and Kurtosis value will show us the normality of the variables.

From below Table 10 the skewness statistics for all variables are within the acceptable range for normality (-1.0 to +1.0). However, the kurtosis statistic of -1.252, -1.434 & 1.154 for the variable of firm_performance, IT_investment & IT_Usage) is outside the acceptable range, However, since the sample size for each of the groups in the comparison is more than 30, we can apply the **central limit theorem** which states that: the sampling distribution of statistics will follow a normal distribution, and the use of the statistical test with this variable is appropriate.

Table 14: Normality assumption test

Descriptive Statistics					
	N	Skewness		Kurtosis	
	Statistic	Statistic	Std. Error	Statistic	Std. Error
Firm_Performance	75	.230	.277	-1.252	.548
IT_Investment	75	-.153	.277	-1.434	.548
IT_Adoption	75	-.376	.277	-.679	.548
IT_Usage	75	-.317	.277	1.154	.548
Valid N (listwise)	75				

Cation Note: the kurtosis value is outside the acceptable range, however the skewness for all variables and the kurtosis for one variable is in the accepted range.

4.4.4 Linearity assumption test

To test the linearity between the IV and DV scatterplot was used as like below figure.

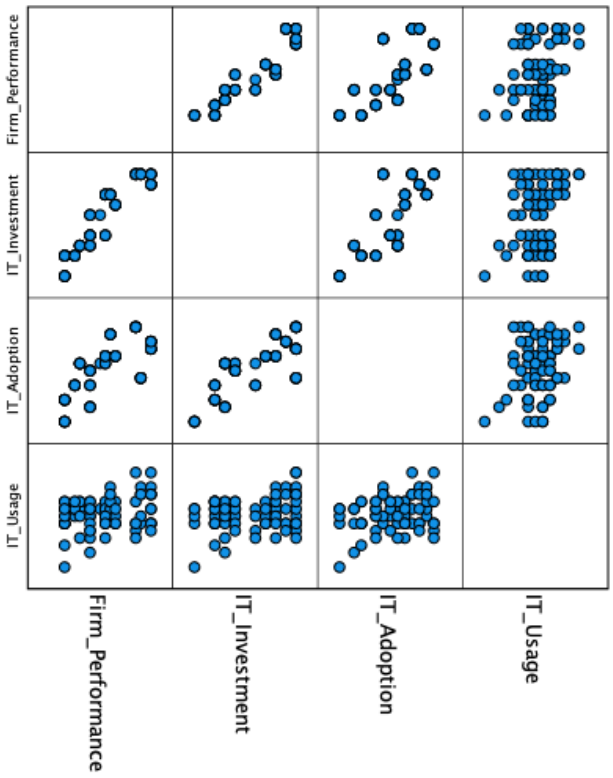

Figure 7: Linearity assumption test

A visual inspection suggests that the relationship is linear. We can assume the relationship is **linear**.

4.4.5 Homoscedasticity (equal variance) test

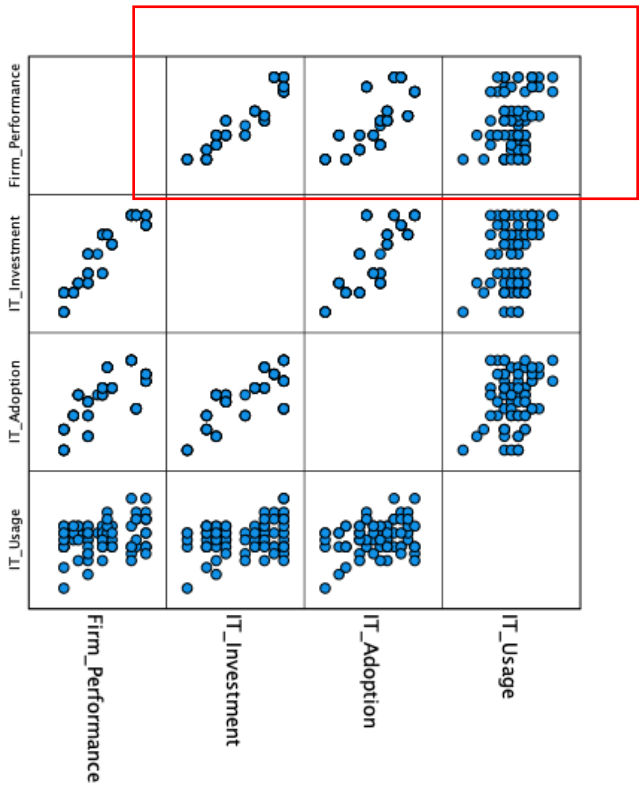

Figure 8: Homoscedasticity assumption test

Multiple regression assumes the range of variance for the DV is uniform for all values of the IV, the red line could show inspection of the plots shows good variability in the plots and I will proceed with the analysis assuming homoscedasticity is not a major problem.

4.4.6 Overall model fit test

Table 15: Overall model fit test

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2210.494	3	736.831	169.028	<.001[b]
	Residual	309.506	71	4.359		
	Total	2520.000	74			
a. Dependent Variable: Firm_Performance						
b. Predictors: (Constant), IT_Investment, IT_Usage, IT_Adoption						

When doing regression analysis, we determine whether or not there is a relationship between the IV and the DV by examining the **ANOVA** table.

This can be thought of as the overall fit of the regression model. If the F statistic is significant, we can assume the IV, taken together, have a r/p with the DV In this case, the probability of the F statistic for the regression analysis is 0.001, less than the level of significance of 0.05.

We reject the null hypothesis that there is no relationship between the DVs and the DV.

4.5. Multiple regression analyses and interpretation

After testing all the relevant assumptions of multiple regression model for the data used, the researcher deployed multiple regression to examine the effect of relationship between IT_Usage & IT_Adoption over the dependent variable of Firm_Performance: with the mediation role of IT_Investment over the dependent variable.

When we use multiple independent variables, we are predicting the dependent variable with a linear combination of independent variables. So, the equation for our least square's regression line looks like this: The first-order general multiple linear regression model, when all predictor variables are linear, for the response, can be expressed as (Demaris, 2004; Gujarati, 2004).

$$\gamma_i = \beta_0 + \beta_1 X_{i1} + \beta_2 X_{i2} + \beta_3 X_{i3} + \cdots \beta_k X_{ik} + \varepsilon_i$$

$$\in (\gamma_i) = \sum_{k=1}^{n} \beta_k X_{ik}$$

Where: Yi = the dependent variable;

βo = the constant term/intercept;

X1, X2 … = the independent variables;

β1, β2 …. = the slope coefficient of continuous variable; and

ε = Random error/ residual term (0.05)

Contextualizing the Equation

Firm_Performance= βo + β1 IT_Usage + β2 IT_Adoption + β3 IT_Investment

4.5.1 Regression analysis of IT_Usage & IT_Adoption on Firm_Performance

Table 16: Model Summary of IT_Adoption & IT_Usage on Firm_Performance

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.733[a]	.538	.525	4.02305
a. Predictors: (Constant), IT_Adoption, IT_Usage				

In the above table revealed that there is a relationship at R = .733 between Firm Performance and the independent variables IT_Adoption & IT_Usage. An examination of the table shows that R square = .538 which implies that IT_Adoption & IT_Usage accounts for 53.8% of variations having a significant effect on the level of firm performance.

Table 17: ANOVA of IT_Adoption & IT_Usage on Firm_Performance

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1354.684	2	677.342	41.850	<.001[b]
	Residual	1165.316	72	16.185		
	Total	2520.000	74			
a. Dependent Variable: Firm_Performance						
b. Predictors: (Constant), IT_Adoption, IT_Usage						

The above table shows that the F-value is the Mean Square Regression (677.342) divided by the Mean Square Residual (16.185), yielding F=41.850. From the results, the model in this table is statistically significant (Sig =.001). Therefore, IT_Adoption & IT_Usage is a significant predictor of Firm performance at F = 41.850.

Table 18: Coefficient of IT_Usage & IT_Adoption on Firm_Performance

Coefficients[a]								
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	25.117	4.282		5.865	<.001		
	IT_Usage	.210	.213	.474	9.279	<.001	.931	1.074
	IT_Adoption	1.124	.132	.707	8.516	<.001	.931	1.074
a. Dependent Variable: Firm_Performance								

The table above revealed the degree of influence of IT_Usage & IT_Adoption with Firm Performance and its level of significance. The statistical results is given as; (IT_Usage; β=.474, t=9.279, p<0.001) & (IT_Adoption; β=.707, t=8.516, p<0.001).

The statistical result implies that IT_Usage & IT_Adoption is a statistically significant predictor of Firm Performance.

Multiple Regression Model is given as $Y = a + \beta X1 + \beta X2$

Where Y = Firm Performance

a = constant

βx = Coefficient of X

Therefore, Firm Performance = 25.117+2.291 + 1.124

Based on the results in the Anova table above, the significance level for all items is less than 0.01.

- **Therefore, we accept the alternative hypothesis and reject the null hypothesis. That is, IT_Usage & IT_Adoption has positive effect on Firm Performance.**

4.5.2 Regression analysis of IT_Investment on Firm_Performance

Table 19: Model Summary of IT_Investment on Firm_Performance

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.936[a]	.876	.874	2.07123
a. Predictors: (Constant), IT_Investment				

The above table shows that there is a relationship at R = .936 between Firm Performance and the mediating variables IT_Investment. An examination of the table shows that R square = .876 which implies that IT_Investment accounts for 87.6% of variations having a significant effect on the level of firm performance.

Table 20: ANOVA of IT_Investment on Firm_Performance

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2206.829	1	2206.829	514.411	<.001[b]
	Residual	313.171	73	4.290		
	Total	2520.000	74			
a. Dependent Variable: Firm_Performance						
b. Predictors: (Constant), IT_Investment						

The above table shows that the F-value is the Mean Square Regression (2206.829) divided by the Mean Square Residual (4.290), yielding F=514.411. From the results, the model in this table is statistically significant (Sig =.001). Therefore, IT_Investment is a significant predictor of Firm performance at F = 514.411.

Table 21: Coefficient of IT_Investment on Firm_Performance

Coefficients[a]								
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	25.205	1.162		21.687	<.001		
	IT_Investment	1.630	.072	.936	22.681	<.001	1.000	1.000
a. Dependent Variable: Firm_Performance								

The table above revealed the degree of influence of IT_Investment with Firm Performance and its level of significance. The statistical results are given as; (IT_Investment;

β=.936, t=22.681, p<0.001).

The statistical result implies that IT_Investment is a statistically significant predictor of Firm Performance.

Linear Regression Model is given as $Y = a + \beta X1$

Where Y = Firm Performance

a = constant

βx = Coefficient of X

Therefore, Firm Performance = 25.205 + 1.162

Based on the results in the Anova table above, the significance level for all items is less than 0.001.

- **Therefore, we accept the alternative hypothesis and reject the null hypothesis. That is, IT_Investment has positive effect on Firm Performance.**

4.5.3 Regression analysis of IT_Adoption & IT_Usage on IT_Investment

Table 22: Model Summary of IT_Usage & IT_Adoption on IT_Investment

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.796[a]	.633	.623	2.05665
a. Predictors: (Constant), IT_Adoption, IT_Usage				

The above table shows that there is a relationship at R = .936 between the mediating variable IT_Investment and the independent variables IT_Usage & IT_Adoption An examination of the table shows that R square = .633 which implies that IT_Usage & IT_Adoption accounts for 63.3% of variations having a significant effect on the level of IT Investment.

Table 23: ANOVA of IT_Usage & IT_Adoption on IT_Investment

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	526.200	2	263.100	62.201	<.001[b]
	Residual	304.547	72	4.230		
	Total	830.747	74			
a. Dependent Variable: IT_Investment						
b. Predictors: (Constant), IT_Adoption, IT_Usage						

The above table shows that the F-value is the Mean Square Regression (263.100) divided by the Mean Square Residual (4.230), yielding F=62.201. From the results, the model in this table is statistically significant (Sig =.001). Therefore, IT_Investment is a significant predictor of Firm performance at F = 62.201.

Table 24: Coefficient of IT_Usage & IT_Adoption on IT_Investment

Coefficients[a]								
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	.510	2.189		.233	.817		
	IT_Usage	.770	.109	.530	7.10	<.001	.931	1.074
	IT_Adoption	.712	.067	.780	10.551	<.001	.931	1.074
a. Dependent Variable: IT_Investment								

The table above revealed the degree of influence of IT_Usage & IT_Adoption with the mediating variable IT_Investment and its level of significance. The statistical results are given as; (IT_Usage; β=.530, t=7.10, p<0.001) & (IT_Adoption; β=.780, t=10.551, p<0.001).

The statistical result implies that IT_Usage & IT_Adoption is a statistically significant predictor of IT_Investment.

Multiple Regression Model is given as $Y = a + \beta X1 + \beta X2$

Where Y = IT_Investment

a = constant

βx = Coefficient of X

Therefore, IT_Investment = .510+.770 + .712

Based on the results in the Anova table above, the significance level for all items is less than 0.01.

- **Therefore, we accept the alternative hypothesis and reject the null hypothesis. That is, IT_Usage & IT_Adoption has positive effect on IT Investment.**

4.6. Qualitative data analysis (QDA)

Before defining the QDA let's define what is qualitative data means. Qualitative data refers to non-numeric information such as interview transcripts, notes, video and audio recordings, images and text documents. So, in short to analyze qualitative data qualitative data analysis method is used. For QDA the paper used thematic analysis.

Thematic analysis is a method for analyzing qualitative data that entails searching across a data set to identify, analyze, and report repeated patterns or themes (Braun and Clarke 2012). It is a method for describing data, but it also involves interpretation in the processes of selecting codes and constructing themes.

The study included qualitative data by using secondary data source and interview question from four organization general managers and owners out of the selected 10 firms. The interview data and secondary sources from different articles, journals and books analyzed by the QDA method thematic analysis. Because, thematic analysis is an appropriate and powerful method to use when seeking to understand a set of experiences, thoughts, or behaviors across a data set (Braun and Clarke 2012). Asper this evidence since I have interviewed the general managers of the following companies a certain them or understanding presented as below with accordance to the objective of the study.

Table 25: Qualitative data summary

Name	Company & Designation	Thematic Analysis
Mr. Meried Bekele	IE Network Solution/ Owner and General Manager	**IT Adoption Them**: They have adopted Application lifecycle management (ALM) software to manage their software development services, which increases their project delivery efficiency and follow up.
Mr. Tagel Molla	IP Com Technologies/ Owner and General Manager	**IT Usage Them**: Use of IT helped them to control company operational expenses which ultimately impact profitability.
Mr. Cherinet G/Giorgise	Alta Computec/ General Manager	**IT Investment Them**: They are making major investments in technology, particularly in the areas of staff and customer enablement training, with the goal of increasing profitability and market dominance.

Mr. Nebyou Nassir	IRACK IT Solution/ Owner and General Manager	**IT Usage Them**: Since implementing ERP and CRM-related developing technology, the company's efficiency and customer satisfaction with project delivery have risen dramatically.

4.7. Hypothesis testing

H1: There is a significant relationship between information technology use and firm performance.

As we see from result of the regression analysis, the relationship between Information Technology and organizational performance is positive and significant (β=.474, $p<0.05$). This showed that for every single unit increase in information technology use, there would be .474% increases on firm performance in the organization keeping other variables constant. Thus, based on the result the ρ value is less than 0.05 **H1 is accepted**.

H2: There is a significant relationship between information technology Adoption and firm performance.

As we see from result of the regression analysis, the relationship between Information Technology Adoption and organizational performance is positive and significant (β=.707, $p<0.05$). This showed that for every single unit increase in information technology adoption, there would be .707% increases on firm performance in the organization keeping other variables constant. Thus, based on the result the ρ value is less than 0.05 **H2 is accepted**.

H3. There is a significant relationship between Information Technology Investment and firm performance.

As we see from result of the regression analysis, the relationship between Information Technology Investment and organizational performance is positive and significant (β=.936, $p<0.05$). This showed that for every single unit increase in information technology investment, there would be .936% increases on firm performance in the organization keeping other variables constant. Thus, based on the result the ρ value is less than 0.05 **H3 is accepted**.

H4. IT Investment significantly mediates between IT Usage and Firm Performance

As we see from result of the regression analysis, Information Technology Investment positively significantly mediates between IT Usage & Firm Performance (β=.530, p<0.05). Thus, based on the result the ρ value is less than 0.05 **H4 is accepted**.

H5. IT Investment significantly mediates between IT Adoption and Firm Performance.

As we see from result of the regression analysis, Information Technology Investment positively significantly mediates between IT Adoption & Firm Performance (β=.780, p<0.05). Thus, based on the result the ρ value is less than 0.05 **H5 is accepted**.

4.8. Summary of hypothesis testing

Through linear regression and hierarchical multiple regression analysis, the study's analysis and hypothesis testing are carried out. This involves determining the study's direct primary effect, mediating impact, and the statistically significant relation between these three factors. The following is a summary of the findings:

Table 26: Summary of hypothesis testing

Ser No	Hypothesis Statement	Test Result	Decision Rule
H1	There is a significant relationship between information technology use and firm performance.	β=.474, p<0.05	Accepted
H2	There is a significant relationship between information technology Adoption and firm performance.	β=.707, p<0.05	Accepted
H3	There is a significant relationship between Information Technology Investment and firm performance	β=.936, p<0.05	Accepted
H4	IT Investment significantly mediates between IT Usage and Firm Performance	β=.530, p<0.05	Accepted
H5	IT Investment significantly mediates between IT Adoption and Firm Performance.	β=.780, p<0.05	Accepted

Therefore, the linear regression model obtained in this study is:

Firm_Performance = 25.117 + 0.474 IT_Usage + 0.707 IT_Adoption + 0.936 IT_Investment + ε

CHAPTER FIVE

FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

This chapter's overarching objective was to provide a summary, a conclusion, some recommendations based on the research and finally direction for future studies. The findings of the study were based on the objectives of the study, which were to determine the level of IT use and adoption at the selected 10 Ethiopian IT firms and to determine the impact of information technology on organization performance at the selected IT firms. Both of these objectives were met, and the findings of the study are presented below.

5.1 Summary of the findings

The objective of this study was to assess the impact of information technology on enhancing organizational performance in the case of ten selected information technology firms which are located in Addis Ababa. The six core research questions mentioned on chapter one guided this study and the questions were logically related with each hypothesis.

Based on the objective of the study, research questions and hypotheses, the questionnaire (survey instruments) for measuring the research variables were selected and organized. Out of 80 questionnaires distributed, 75 (93.75%) valid questionnaires were collected and used for the analysis. Data was collected using online administered questionnaires by using a free application called Google Forms. The collected data was analyzed using statistical package for social science software (SPSS) version 28 owned by IBM company for descriptive and inferential statistics. Regression analyses were employed for testing the hypotheses linear regression and hierarchical multiple regression analysis was applied.

Prior to applying regression analysis, five assumptions namely homoscedasticity (equal variance), linearity, normality, Independent of residuals & Multicollinearity were performed. With regard to the reliability, the results showed that all measures used in this study had an acceptable level of reliability. Descriptive statistics like frequency, percentage mean and standard deviation were employed to analyze background information of respondent.

Based on the descriptive statistical analysis of the respondents' information the result of the study indicates that the gender distribution majority of the respondents were male that is 84% of the total respondents, out of the total respondents 50% of respondents are between 31-40 years which are the biggest number, according to educational background 52% of the respondents were having BA/BSC, majority of the respondents 64% have 5-10 years' work experience at their companies and regarding to Designation or position at their company majority of the respondents about 52% are senior managers.

According to the findings, respondents were somewhat in agreement that their organizations had adopted IT to some extent and had made substantial use of IT services to increase performance. The majority of those polled agreed that the usage of IT devices had improved productivity.

Before the regression analysis Results from Pearson's Product Moment Correlation Coefficient and as per MacEachron, Basic Statistics in the Human Services: An Applied Approach interpretation of r value were used to discuss the relationship between the independent, mediating and dependent variables.

The relationship between dependent variable (firm performance) and an independent variables base IT usage, IT adoption shows that there is statistically significant relationship exist between all variables of firm performance.

The other correlation was between dependent variable of firm performance and mediating variable of IT investment and it showed that there is a strong and positive correlation between organizational performance and information technology investment which means if there is an increment on IT investment there is also an increase in firm performance and vice versa.

This study arranged the various findings according to the hypothesis that was derived in the second chapter's section in order to provide detail findings.

Findings based on hypothesis one: There is a positive and significant relationship between information technology use and firm performance. The standardized regression coefficient for this hypothesis is equal to 0.474 that shows the relatedness'. It can be concluded that this hypothesis is accepted with 95% confidence. In other words, information technology usage has a positive and significant effect on firm performance with 95% confidence, which answers the first research question.

Therefore, this study strengthens the result findings of Pulley and Braunstein (1984) & Diewert and Smith (1994) which was stated on chapter two at research gap section.

Findings based on hypothesis two: There is a positive and significant relationship between information technology adoption and firm performance. The standardized regression coefficient for this hypothesis is equal to 0.707 that shows the relatedness. It can be concluded that this hypothesis is accepted with 95% confidence. In other words, information technology adoption has a positive and significant effect on firm performance with 95% confidence, which answers 2nd research question. This result supports the findings of Atieno (2014).

Findings based on hypothesis three: There is a significant relationship between Information Technology Investment and organizational performance. The standardized regression coefficient for this hypothesis is equal to 0.936 that is more than related and positive. It can be concluded that this hypothesis is accepted with 95% confidence. In other words, IT investment has a positive and significant effect on firm performance with 95% confidence. This result agrees with the findings of (Griffith, 1999) & (Hitt and Brynjolfsson (1996)).

Findings based on hypothesis four: IT Investment significantly mediates between IT Usage and Firm Performance. The standardized regression coefficient for this hypothesis is equal to 0.530 that is more than related and positive. It can be concluded that this hypothesis is accepted with 95% confidence. In other words, IT investment has a positive and significant mediating effect between IT usage and firm performance with 95% confidence.

Findings based on hypothesis five: IT Investment significantly mediates between IT Adoption and Firm Performance. The standardized regression coefficient for this hypothesis is equal to 0.780 that is more than related. It can be concluded that this hypothesis is accepted with 95% confidence. In other words, IT investment has a positive and significant mediating effect between IT Adoption and firm performance with 95% confidence.

Findings based on QDA: The usage of information technology as well as its adoption considerably increases the business performance of the companies that were chosen, and the investment that these

companies have made in information technology is also assisting them in reaching their aim of maximizing their profits.

As a result, based on both the qualitative and quantitative information's the research demonstrates and confirms that the overall impact of information technology, as measured by a variety of metrics including use, adoption, and investment, has a positive and direct effect on improving organizational performance. This was the primary objective of the research.

5.2 Conclusions

The primary purpose of the study was to evaluate the impact of information technology on the organizational performance of local information technology companies in Ethiopia that are based in Addis Ababa by examining the role that IT investment plays as a mediator in this relationship.

According to the findings of the study, there is a correlation that is both positive and direct between the use of information technology (IT), the adoption of IT, and the performance of businesses. In addition to this, it has been discovered that both variables have a substantial association with the overall performance of the company. Therefore, the findings of the study indicate that investments in information technology have a very strong correlation with firm performance in comparison to other variables. As a result, it is possible to draw the conclusion that local businesses ought to carefully consider their investments in information technology in order to improve their organizational performance.

In addition to this, the study reveals that the use of information technology in terms of hardware is shifting toward mobile devices, which indicates that mobility is replacing stationary devices. On the other hand, in terms of application usage, particularly CRM and ERP, the study reveals that businesses are not making as much use of these technologies as they could be, but their responses indicate that they are in agreement that these technologies have a positive impact on their overall performance.
This study has proved, in a nutshell, that the usage of information technology, adoption of information technology, and investment in information technology all have a significant and beneficial impact on the enhancement of performance on the ten local IT firms that were chosen. Therefore, it can be

concluded that the result of this study agreed with findings of Pulley and Braunstein (1984) & Diewert and Smith (1994) & (Hagen, 2010) which was stated on chapter two section.

Knowing the effect and where to focus more could help the selected firms or others who might use this paper as an initial point could be benefited by enhancing their organizational performance, which led them to achieve their organizational goal, and the aggregate effect could benefit Ethiopia as a country to achieve her "Digital Ethiopia" plan for the future, as explained on the background of the study part on chapter one.

5.3 Recommendations

Taking into consideration the findings of this research, the researcher needs to make the following recommendations concerning the impact of information technology use, adoption, and investment on the performance of the selected organization which could significantly contributing to improve their current operations and gain competitive advantage over their competitors.

- ✓ The findings indicated that fewer firms make use of the systems and applications that are widely available, thus it is imperative that those firms get themselves up to the speed with the most recent technological developments in the fields of computer hardware and software. In order for the companies to stay current and competitive, they can engage in benchmarking with high-performing organizations either local or international companies in order to learn the best practices that can be adapted to their own settings and become more effective.

- ✓ As a result of the findings, the firms could devise ways and means to deploy and sustainably apply CRM, ERP and Office 365, which can improve the operations and processes of their firms, as the respondents reported low and neutral responses. The use of these systems and programs improves operational efficiency and quality of service delivery, which has a positive impact on the overall performance of the company.

- ✓ According to the reports provided by the respondents, the majority of businesses have automated their manual processes by implementing technology-driven solutions. However, this automation does not take place on a larger scale than what was indicated by the mean score,

which was in the moderate range. Therefore, automating manual processes could significantly improve the respondents' organizations' overall performance.

In general, despite the fact that it is difficult to generalize when working with such a small sample size and such a limited number of variables, the researcher would like to recommend that studies of this kind that are focused on the impact of information technology be conducted not only at the level of schools but also at the level of government research offices. This would assist the nation in achieving her digital economic transformation strategic plan in 2025.

5.4 Areas for further research

- The study primarily concentrated on ten Addis Ababa based organizations and had a sample size of only 80 respondents; as a result, it is necessary to conduct the same research using a much larger number of organizations and a much larger sample size. This will allow researchers to determine whether or not there are any other factors that influence the impact that information technology has on organizational performance in Ethiopia, as well as translate the findings of the research into something that can be practically applied to a large number of businesses.

- The mediating variable on this study information technology investment is taken us a holistic concept from the cost perspective, however future researches can dig in details of investments in related to employee training, cost of device and application refreshment, how much percentage from there revenue or profit should be spent to IT and many other variables could be drawn from this big area of research concept.

- The dependent variable firm performance measurements are not the only one’s which are listed on conceptual framework there are so many other variables in related to performance like firm efficiency, innovativeness, competitiveness, creativeness, effectiveness etc. could be considered in future researches.

- The researcher desires to provide guidance as TAM Model consideration for future information technology impact studies, given that the model encompasses perceived usefulness and perceived acceptance, which may correlate with the degree of information technology use and technology adoption.

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APPENDICES

Appendix I: List of selected IT firms in Ethiopia

1. Alta Computec PLC
2. IE Networks Solution PLC
3. Irack IT Solution PLC
4. IPCom Technologies
5. Newave HI Tech Solutions
6. Kenera International PLC
7. Symbol Technologies
8. Ethiotec PLC
9. Malam Engineering PLC
10. Vascom Engineering

Source: http://www.ppa.gov.et (2022)

Appendix II: Questionnaire

Dear Respondents,

This questionnaire is designed to gather information about the impact of Information Technology on Enhancing Business Performance in the Case of Ethiopian Information Technology Firms. All responses will be used to conduct a study for the partial fulfillment of Executive Master's Thesis in Business Administration. I would like to assure you that you will be guaranteed anonymity as I do not ask your name here and your responses will not be used for any other purposes other than the intended purpose. I am grateful for your cooperation in advance!

N.B Please put a "√" mark to all your responses in the circle provided beside each statement. If you do not use, at least, any one of Technology-based services/products, please do not fill out the questionnaire.

Part A: General information:

1. Please state your designation
   a) Director [ ]
   b) Senior management [ ]
   c) Middle management [ ]
   d) Subordinate [ ]

2. Indicate your highest level of qualification (tick where appropriate).
   a) Secondary education [ ]
   b) Certificate/diploma [ ]
   c) Graduate [ ]
   d) Masters [ ]
   e) Doctorate [ ]

3. How many years have you worked for your employer? (Tick ( ) where appropriate).
   a) Less than 5 Years [ ]
   b) 5-10 Years [ ]

c) 11-15 Years [ ]

d) 16-20 Years [ ]

e) 20 Years and above [ ]

4. What is your gender?

   [ ] Male [ ] Female

5. In which of the following age brackets do you belong?

   [ ] Below 20 years

   [ ] 21-30 years

   [ ] 31-40 years

   [ ] 41-50 years

   [ ] Above 50 years

Part B: Use and impact of information technology

1. What information technology (IT) devices do you have at your disposal to fulfill your duties?
    1. Mobile phone [ ]
    2. Desktop Computer [ ]
    3. Laptop [ ]
    4. iPad or Tablet [ ]
    5. Other [ ] Please specify _____

2. Kindly indicate the extent of use of the following systems/devices at your company (tick where appropriate).

Measure of Independent Variable "Information Technology Usage"					
Hardware	**Very large extent**	**Large extent**	**Neutral**	**Little extent**	**Very little extent**
Mobile devices and tablets					
Personal Computers (Laptop or Desktop)					
Internet Usage					

Software's Usage					
Customer Relationship Management (CRM)					
Enterprise Resource Planning (ERP)					
Office365 (email/OneDrive etc)					

3. To what extent do you agree with the following statements in regard to use of IT at your company?

   (Tick where appropriate).

Measure of Independent Variable "Information Technology Adoption"					
	Strongly Agree	**Agree**	**Neutral**	**Disagree**	**Strongly Disagree**
Office Automation					
The Company uses modern IT Applications & infrastructure					
The company automate most of its business operations.					
Adopted IT Application of the company facilitate easy user-friendly interfaces for employees.					
ERP					
The use of enterprise resource planning (ERP) system helps the company					
Use of ERP has increased performance in the company.					
Measure of Mediating Variable "IT Investment"					
Cost of Adoption	**Strongly Agree**	**Agree**	**Neutral**	**Disagree**	**Strongly Disagree**
The company invests on IT significantly.					
IT Investment significantly supporting the company business operation.					

The company allocate a significant amount for IT growth & adoption improvement.					
Cost of Adopting IT applications is feasible for the company.					
Measure of Dependent Variable "Overall Firm Performance"					
Financial Performance & Targets Achievement	**Strongly Agree**	**Agree**	**Neutral**	**Disagree**	**Strongly Disagree**
Use of IT has improved target monitoring and reporting significantly at the company.					
Use of IT has helped the company to increase a profit.					
Use of IT has helped the company implement target schedules on time.					
Use of IT has helped the company improve employee's productivity and increased flexibility.					
Adopted IT Applications has improved the company overall performance.					
Accountability	**Strongly Agree**	**Agree**	**Neutral**	**Disagree**	**Strongly Disagree**
Use of IT has helped the company monitor variances (budget versus actual) in real time basis.					
Use of IT has facilitated better management of the company Products and services offered to Its customers.					
The use of IT has led to more formalization of communication and procedures.					
Whistleblowers have used the company IT services in reporting malpractice and malfeasance.					
Quality of Service	**Strongly Agree**	**Agree**	**Neutral**	**Disagree**	**Strongly Disagree**
Use of IT has facilitated quality service delivery to the company customers.					

Use of IT has facilitated better communication with its beneficiaries and partners in service delivery.					
Use of IT has improved planning and execution activities of projects in reaching its customers.					
Use of social media has helped your company reach its beneficiaries and also collaborate with our partners.					

4. Please give suggestions/recommendations on how else the use of information technology has made its impact on your company overall productive.

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THANK YOU FOR YOUR COOPERATION