# BIG DATA ANALYTIC DYNAMICS AND PERFORMANCE OF FINTECH FIRMS IN NAIROBI CITY COUNTY, KENYA

**ANNE ADHIAMBO OGUTU**

**D53/OL/CTY/26906/2014**

**A RESEARCH PROJECT SUBMITTED TO THE SCHOOL OF BUSINESS, ECONOMICS AND TOURISM IN PARTIAL FULFILMENT FOR THE AWARD OF DEGREE IN MASTER OF BUSINESS ADMINISTRATION (MANAGEMENT INFORMATION SYSTEMS) OF KENYATTA UNIVERSITY**

**MAY 2024**

## DECLARATION

This project is unique to me and has never been submitted for a degree at another institution.

Signed……Date ……...

**Anne Adhiambo Ogutu**

**Reg no D53/OL/CTY/26906/2014**

I confirm that the work in this project was done by the candidate under my/our supervision.

Signed……Date…….

**Dr. David M. Nzuki**
**Department of Management Science**
**Kenyatta University**

## DEDICATION

Dedication of this project goes to my parents Mr. Aggrey Ogutu and Mrs. Margaret Ogutu, who natured and walked with me in my journey to seek knowledge. Thanks for your valuable contribution: my husband Elly Kabaji, my sons and daughter Ellite, Ryan and Joy.

May you be richly blessed.

## ACKNOWLEDGEMENTS

I’d want to thank God for His favor, health and strength, which has enabled me to complete my course work and subsequently this project. My supervisor, Dr. David Nzuki, deserves special mention for his unwavering support and direction throughout the project period. My deepest appreciation to my family and friends for their support and words of wisdom. I will forever be grateful.

## TABLE OF CONTENT

## LIST OF TABLES

## LIST OF FIGURES

## OPERATIONAL DEFINITION OF TERMS

| | |
|---|---|
| **Big Data Analytics Dynamics** | This indicates the evolving nature of analytics. |
| **Big Data Characteristics Dynamics** | This indicates the ever-changing features related to big data. |
| **Big Data Component Dynamics** | Big data building blocks ever changing landscape. |
| **Big Data Technologies Dynamics** | Changes in technologies that support operation of big data |
| **Revenue** | This is the income generated from fintech operations. |
| **Profit** | Income generated after factoring out expenditures of the Fintech. |
| **Return on Investment (ROA)** | Metric for evaluating the efficiency of fintech investment |
| **Regulatory Policies:** | Regulations are created by governments to impose limits and constraints on individual actions or behaviors. |

## ABBREVIATIONS

**AI** **:** Artificial Intelligence

**ATMs** **:** Automated Teller Machines

**BDA** **:** Big Data Analytics

**BDM** **:** Big Data Management

**CBK** **:** Central Bank of Kenya

**IDG** **:** International Data Group

**REST** **:** Representational State Transfer

**ROA** **:** Return on Asset

**XML** **:** eXtensible Markup Language

## ABSTRACT

The rapid evolution and integration of big data analytics within financial technology (fintech) firms present both opportunities and challenges in optimizing performance and operational dynamics. While big data analytics has potential to enhance decision-making, customer personalization, risk management and operational efficiency, there is a lack of comprehensive understanding of how these technologies directly influence the overall performance metrics specifically, the revenues and return of investment. Additionally, regulatory compliance remains underexplored. This research seeks to address the gap by systematically analyzing the dynamics of big data analytics adoption and its performance implications within fintech firms. The objectives of the study were to determine the effect of big data characteristics dynamics, big data component dynamics, big data technologies dynamics and the moderation role of regulatory policies in the performance of Fintech firms in Nairobi Kenya. Technology acceptance theory, innovation diffusion theory, and resource-based view were used. Descriptive research design was applied. Managers of Fintech enterprises in Nairobi City County were the target population, with 64 Fintech firms serving as the unit of observation. The sample size was 55 Fintech firms operating in Nairobi City County as determined using Yamane's formula. Primary data was used in the study which were collected using open ended and close ended questionnaire. The study established those big data characteristics dynamics significantly influenced Financial Performance ($\beta$=0.428; p=0.002). Big data components dynamics significantly contributed to Financial Performance of Fin tech firms ($\beta$=0.288; p=0.030). The study established a significant effect of Big Data technologies Dynamics on Financial Performance of Fin tech firms ($\beta$=0.239; p=0.034). Regulatory policies significantly influence Financial Performance of Fin tech firms. The study concludes that the dynamic nature of big data analytics enables businesses to collect and analyze volumes and variety of data at great velocities. This allows accurate outcome predictions, improve decision-making bringing significant improvement in revenues, profit and return of investment. Actionable insights are produced by the variety of big data that is the outcome of aggregation from numerous sources. Big data is gathered from social media, transactional data and machine data are used by the businesses to derive the value. Artificial intelligence has largely contributed significantly to automation, wise decision-making, and improved customer experience. The block chain technologies have significantly increased trust, security, transparency, and traceability of shared data across business networks and have brought new efficiencies with cost savings. Finally, the absence of a regulatory framework for fintech negatively impacts their performance. Performance of the fintech industry is significantly impacted by data privacy regulations. The study recommends that businesses need to leverage big data analytics dynamics to analyze the variety of big data from multiple sources and offer actionable insights to enhance performance and remain competitive. For organizations to generate value, it is advised that they collect data from social media, transactional data, and machine data. It is recommended that firms focus on artificial intelligence and block chain technologies in data mining. This provides a reliable insight into the current market and consumer characteristics. According to the report, regulatory bodies should ensure that FinTech firms operate on an equal playing field to achieve excellent organizational performance. It is important to establish a significant policy concern addressing legislative limitations and competitiveness. Big data analytics ecosystem is dynamic in propelling performance in FinTech firms. A study could be conducted to establish the effect of data security on Fintech performance since it was not part of the inputs of the study.

# CHAPTER ONE

# INTRODUCTION

## 1.1 Background of the Study

Fintech's origins may be traced back to the 1960s, but it wasn't until 2014 that regulators, researchers, and academics began to pay notice. Fintech has continued to change and grow at a quick pace, with a global market value of $111,205 million in 2019 and a yearly growth rate of 7.8% recorded at the beginning of 2015.The growth is predicted to reach almost $ 157,980 million in 2022.This will further increase to about $191800 million in 2025, with a 10.2% annual growth rate, and to $325,311.8 million in 2030, with an 11.1 percent annual growth rate. Growth in emerging markets, more venture financing, and new technologies such as data analytics, blockchain technology and IOT have all been credited with the surge (Business research, 2019). Even though big data creates notable effect in Fintech performance, there have been multiple incidents of Fintech organizations that have been unable to run for more than five years, necessitating deeper research of other issues (Shevlin, 2019). Fintech failure rate in 2019 was 90 percent, according to the study findings, with 21.5,30 ,50 and 70 percent failure rate recorded in the first, second, fifth and tenth years respectively. (Bryant, 2020).

Though big data analytics has existed for many years, it gained traction following the 2008 financial crisis, when employees let off from the financial sector launched new lending firms known as Fintech. Fintech has risen dramatically in recent years, and even major financial sector businesses have begun to adopt the approach. Currently, most sectors in Kenyan economy e.g., health, insurance, agriculture, education and financial sector, uses some type of Fintech model of operation. Government can influence

organizational performance through their policies in regard to big data analytics. Big data analytics also impacts organization's strategy, which in turn impacts performance (Micheni, 2015).

To ground this research, three related theories will be considered. The three theories are: innovation diffusion theory (Schumpeter, 1934), technology adoption theory (Davis, 1989), and Knowledge Based View theory (Grant, 1996). Knowledge Based View (KBV) appears as the most fitting of the three theories because BDA is about producing information or awareness. Knowledge is a resource that may be used to create complicated abilities that will help you make better operational judgments. The managerial level, which encompasses cognitive skills, the personnel level, which deals with actions, and the processes level, which contains implicit knowledge and complicated capabilities, are all examples of awareness in company operations. KBV emerges as the most appropriate theoretical structure for this inquiry because all three capabilities seek to unravel information.

### 1.1.1 Performance of Fin Tech Firms

Fintech performance refers to the effectiveness and efficiency with which financial technology companies and solutions achieve their intended objectives and goals.

FinTech is the technology and tools that aid in offering financial services (Arner, Barberis & Buckley 2015). However, from 2014 onwards, the sector has attracted different stakeholders including authorities, financial institutions and consumers alike, the industry has grown in popularity. Depending on whether one looks merely at the beginning or holistic spectrum including traditional financial institutions, the word today refers to a big and fast-growing business worth between US $ 12 billion and US

$ 197 billion in investment since 2014. The quick deployment attracts legal analysis, which will undoubtedly help Fin Tech's financial performance and infrastructure.

Unlike banks, which rely on soft data and relationship-based information, Fin Tech's performance and success can be related to their ability to handle vast volumes of data and construct learning/data storage systems in general without directly comparing creditors and lenders and eventually achieve profits and return of investment. Giorgio et al., Giorgio et al., Giorgio et al (2017). As a result, Fin Tech can collect a plethora of data, making it easier to analyze prior activities and predict client preferences, wants, and trends. In comparison to typical bank lending, Fin Tech can deliver the correct financial products, at the right moment, and at the right price within short periods, notwithstanding risk assessment and pricing at the individual level. Fintech's capacity to scan data on powerful computers and use algorithms to read and find patterns is a new capability that elevates them beyond traditional business models and makes pricing discriminatory practices based on individual customer data reports possible. On the other hand, under the traditional banking system, this procedure is long, expensive, constrained in product design, and limited to rapid innovation due to rules that do not require extensive documentation and collateral.

### 1.1.2 Big Data Analytics Dynamics

Involves analyzing large volumes of data over time to uncover hidden patterns and trends that might help a business create additional revenue, improve customer satisfaction, and gain a competitive advantage, among other things. (Rouse, undated) Big data is defined as vast and dynamic Captured data that can be challenging to analyze using the traditional methods.). The notion of big data is characterized by velocity, mass and diversity. The rate at which data is produced and processed is called big data velocity. The term "big data volume" alludes to the enormous amount of data that is

available, whereas "variety" refers to the many data sets that are available (Berman, 2013).

Big data when widely applied in business makes financial institutions stay competitive in today's market. The rise of big data has ushered in a change in the financial services business, with certain traditional tasks being abandoned and data-driven decision-making adopted. Big data analytics usage has resulted in growth of Fintech which are technologically enabled enterprises that supply their goods and services through web-based systems. Big data is commonly utilized by Fintech organizations to analyze client data from many sources including social media sites like YouTube, Facebook, Twitter and Instagram, to generate credit scores that are used to calculate how much to lend to a customer (Jaya,2018).

Many firms have since used BDA to improve customer service. Only a few researches in developing nations have attempted to establish a link between big data analytics and Fintech outcomes (Wu, Straub & Liang, 2014).

As a result, data is being produced at an ever-increasing rate. According to a survey performed by the International Data Group (IDG), Kenya is obviously going into the big data revolution, with the development of big data initiatives and cooperation with huge multi-national firms with mutual interests (Tredger, 2013).

Data theft, a lack of consumer confidence, competition from other existing businesses, and fluctuating client preferences are among the many issues connected with big data, according to Miller and Nyauncho (2015). In addition, managing big data needs employee training and the hiring of new employees to fill the expanded roles. Data mishandling by employees may result in greater data exposure, including data loss and manipulation. With the benefits (and drawbacks) of big data, a company can use the

data to make informed decisions on organizational plans. Despite numerous studies by Davenport and Dyché (2013),), Wu, Straub, and Liang (2014), there are gaps in evidence about the correlation between big data analytics and Fintech's success in Nairobi thus the need for emphasizing the importance of this research to fill those gaps.

### 1.1.3 Fintech Firms

Fintech firms are "those enterprises that employ technology to the best advantage and cause innovation within the financial services industry," according to KPMG (2017). These firms have demonstrated a commitment to innovation, good customer service, and the capacity to do one thing better than the competitors in a market." Fintech have made significant progress in the use of digital technologies in lending, financial advice, insurance, and payment systems. Fintech has aided these businesses in lowering their intermediation costs and increasing financial inclusion. This performance, according to Vives (2017), is partly due to Fintech's involvement in resolving information imbalances, which is a key concern in financial sector. Fintech's still lack technologies to handle diverse customs and efficient business models. The availability of these technologies will enable them to be more innovative than traditional businesses.

Kenya, Africa's second-largest Fin Tech hub after South Africa, is home to roughly 20% of the whole Fin Tech environment, with a larger focus on payments. Nairobi, Kenya's financial technology hub, is home to more than 50 Fin Tech firms (EY, 2019). The high level of mobile access and acceptance of new technologies are responsible for the biggest number of Fintech firms. MPESA has given Fintech firms a significant boost (Mesropyan, 2017). The first Fintech, known as M-Shwari, was registered in 2012 and is controlled by NCBA. Since then, almost every bank has a Fintech, whether it's a joint venture with a telecom firm or a totally in-house Fintech, such as Ezzay

business for equity bank. Safaricom and its Fuliza product are two examples of telecom firms that have filed their own Fintech products (Lexology, 2019).

In Kenya, there is no separate regulatory framework for Fintech, hence Fintech products and services are governed by the existing financial services regulatory system. The majority of Fintech players are currently unregulated, and where they do offer regulated services or goods, they must adhere to the legislation that apply to those services or products. However, law is currently being revised to broaden the CBK's jurisdiction to cover Fintech players such as digital credit and financial services providers (Syekei, Indokhomi, & Issaias, 2021).

When it comes to Fintech, it looks that the rose's bloom has finally faded. Fintech, which was once the trendiest industry, has recently experienced a number of setbacks and disasters. Longer fund-raising cycles, failed targets, and growing losses have all been experienced by everyone from internet lenders to bank technology businesses. The finance sector's incumbents are tremendously powerful and complacent. Other reasons claimed for Fintech startups poor performance or failure include disregarding legal issues, selecting the wrong strategic investor, and ignoring client adoption obstacles (Vardanyan, 2018).

### 1.1.4 Fintech Revenue and Return on Investment

Fintech firms generate revenue through various streams each tailored to their specific business model.This include but not limited to transaction fee,subscription services,interest income,advisory fees and data modenization.By understanding and adaptng to market trends,regulatory changes and technological advancements,they can optimize their revenue models and achieve return on investments.

## 1.2 Statement of the Problem

Theoretically, Big Data Analytics impacts the performance of Fintech firms. There has been a new wave of Fin Tech organizations investing extensively in big data analytics, Investing in data analytics capabilities can help organizations enhance their financial performance.

While big data analytics has the potential to enhance decision-making, customer personalization, risk management, and operational efficiency, there is a lack of comprehensive understanding of how these technologies directly influence the overall performance metrics specifically, the revenues and return of investment. Additionally, regulatory compliance remains underexplored. Superiority in data analysis techniques is a major differentiator in performance that develops from big data analytics (Ghasemaghaei, Hassanein, & Turel, 2017).

According to a survey on big data analytics, 91 percent of Fortune 1000 organizations around the world have substantially invested in big data analytics to stay ahead of the competition (Kiron et al., 2014). By looking at its client's cash flow performance, the Commonwealth Bank of Australia employs big data analytics to analyze customer risk, allowing them to provide recommendations on the best strategy to manage their risks (Eyers, 2014). After conducting big data analytics on compromised user accounts, Alibaba, a Chinese ecommerce giant, recognized that more security measures were required. The corporation implemented five verification processes that an internet customer must pass before proceeding with their purchase (Kaushik, 2016). These studies demonstrate the importance of big data analytics in financial sector and in banks, but they do not show any links between Fin Tech performance and big data analytics.

The empirical studies reviewed yielded diverse conclusions on how big data affects corporate performance. According to Vidgen et al., 2017, Constantiou & Kallinikos( 2015), investing in big data analytics improves a company"s overall performance, even if the majority of firms are unable to reap the benefits. According to Kiron (2017), big data analytics is ineffective in determining an entity's performance. Most businesses,as per Popovi et al., 2018; Wamba et al., (2017), are unaware of how big data analytics are valuable. (Gillon et al., 2014) suggest that big data isn't as reliable as traditional business intelligence and so may not be a key factor in a company's performance.

Ndambo (2016) conducted earlier research on big data effectiveness in banking and insurance sectors. Mitieka (2019) conducted study on the integration of big data analytics in commercial banks operations decision-making process, but they were unable to demonstrate how big data has aided the performance of Kenyan Fin Tech enterprises. Nderi's study focus was mainly in business analytics, relying heavily on human interaction, whereas this study focuses on analytics dynamics, leaning towards technology. According to Ndambo (2016), studies on the influence of BDA on diverse finance industry areas should be conducted.

Three research gaps have been identified from the studies reviewed. The first being conceptual gap where studies reviewed lack consensus on how big data analytics influences performance. The second being contextual gap which arises because majority of the reviewed studies are from other sectors other than Fin Tech. The third being methodological gap where the studies reviewed have looked at how big data analytics directly affects performance without factoring effects of moderating and intervening variables. This research seeks to address the gaps by systematically analyzing the dynamics of big data analytics adoption and its performance implications within fintech firms.

The research has attempted to answer the question; what is the influence of big data analytics dynamics on performance of Fin Tech firms in Nairobi City?

## 1.3 Objectives of the Study

### 1.3.1 General Objective

The overall objective of the study will be to establish the influence of big data analytics dynamics on the performance of Fintech firms in Nairobi City County.

### 1.3.2 Specific Objectives

The study will seek to;

i. To determine the effect of big data characteristics dynamics on performance of Fintech Firms in Nairobi Kenya.

ii. To investigate the effect of big data components dynamics on performance of Fintech firms in Nairobi County.

iii. To determine the effect of big data technologies dynamics on performance of Fintech firms in Nairobi.

iv. To investigate the moderating role of regulatory policies on the relationship between big data analytics dynamics and performance of Fin tech firms in Nairobi.

## 1.4 Research Questions

i. What is the effect of big data characteristics dynamics on the performance of Fintech Firms in Nairobi County?

ii. What is the effect of big data components dynamics on performance of Fintech firms in Nairobi County?

iii. What is the effect of big data technologies dynamics on performance of Fintech firms in Nairobi County?

iv. Is there a moderating role of regulatory policy in regard to big data analytics dynamics and performance of Fin tech firm in Nairobi County?

### 1.5 Significance of the Study

First and foremost, the study conclusion was extremely beneficial to financial organizations considering implementing data analytics. They gained insights on what industry players are doing and the resulting benefits.

It also highlighted the most prevalent adoption difficulties so that individuals who plan to use big data analytics may devise strategies to address them ahead of time. Second, the research was useful to technology oriented big data analytics service providers. It provided information on the most common areas where businesses use data analytics services. Finally, it contributed to the knowledge base on industry practices and tendencies in Kenya's financial sector when it comes to big data use. It has information on the level to which Fin Tech organizations have used big data analytics, including the benefits, difficulties, and possibilities that big data analytics presents.

### 1.6 Study Scope

It was contextually confined to studying big data analytics dynamics and their impact on Fintech Kenya's performance between 2012 and 2020. The study focused on this period because it was around this time that Kenya experienced the highest Fintech revolution. The study will also look into how big data characteristics dynamics, big data components dynamics, big data technology dynamics, and regulatory policies affected the profitability, revenue, and return on assets (ROA) of Fin Tech banks. The study was restricted to Fin Tech firms based in Nairobi County.

## 1.7 Organization of the Study

The research presentation, research background, problem statement, research aims, and research importance are documented in the first chapter of the study. The literary review, theoretical review, and a powerful study review, theoretical framework, and conclusions in book reviews are covered in the second chapter. The third chapter covers research procedures such as research design, number of researchers, sample, data collecting, data analysis, data validation, and dependability as well as ethical issues. Chapter four covers research findings and discussion and finally summary, conclusion and recommendation in chapter five.

## 1.8 Limitation of the Study

Various difficulties are expected to arise during this research. These include data inaccessibility, other respondent's reluctance to answer to inquiries, unforeseen events, and respondent's reluctance to disclose information for fear of harassment. Some respondents may be scared to share information therefore the researcher may have trouble gathering useful data on the real subject matter. Respondents will be assured about the intention of the study being educational only and giving information about their names and Company name will be optional.

Reaching out to respondents at their workplaces and facilities is also predicted to be difficult, especially with the new way of working from home brought about by Covid dynamics. In this situation, the researcher will resolve to use online forms as a way of collecting data. This will be shared with the respondents after getting their authorization in advance.

# CHAPTER TWO

# LITERATURE REVIEW

## 2.1 Introduction

The section reviews existing big data analytic dynamics and Fin Tech company performance in Nairobi City County literature. This will be done to strengthen the basis of the research.

## 2.2 Theoretical Review

Three theories will be used to address the difficulties under investigation in an attempt to understand big data analytics dynamics and performance of Fin Tech firms. These are;

Technology Acceptance Model.

Schumpeter's innovation theory

Resource-based view.

### 2.2.1 Technology Acceptance Model (TAM)

According to Davis (1989), TAM seeks to explain factors that cause user to embrace and adopt new information technology systems. The concept uses two principles to determine computer usage behavior which include perceived ease of use and perceived usefulness. Perceived usefulness is termed as the user's opinion regarding how employing a given technology improves their performance whereas the belief that a new technology will be simple to use is referred to as perceived ease of use. The factors can also be influenced by political, social and cultural variables. The user's willingness to use the program is measured by their attitude toward it (Davis, 1989).

The rate of adoption will be higher if users in banks and Fin Tech businesses regard BDA as useful or capable of assisting them in working more effectively and efficiently, and vice versa. Similarly, if people consider BDA to be simple to use, adoption will be widespread.

### 2.2.2 Schumpeter's Innovation Theory

According to Schumpeter, innovation in business causes economic dynamism. New combinations facilitate innovation. According to the notion, consumer desires are innate rather than spontaneous, and so cannot create economic change. Consumers, according to this notion, play a passive role during an economic downturn. Economic growth, according to Schumpeter's (1934) thesis, is a classical structural changes process fueled by creativity.

Five innovation categories are identified by Schumpeter. They include advanced products creation, latest manufacturing methods employment, green field markets, new raw material supplies and industry structures adjustments. He distinguishes four categories of innovation: invention, innovation, invention, diffusion, and imitation. He went on to say that businesses that want to be profitable must innovate to stay competitive. In economic growth, he thought that innovation creates creative destruction. The dynamic entrepreneur uses scientific advances to develop new financial opportunities (ledzik, 2013).

BDA is viewed as an innovation in this study, whereas enterprises that have embraced BDA are considered revolutionaries in the industry. These entrepreneurs are employing BDA an innovation tool to obtain a leading edge by developing new markets and altering corporate procedures to improve efficiency.

### 2.2.3 Resource- Based View (RBV)

The theory suggests that firms that control tactical resources have a leading edge over others. Competitors may easily acquire resources, hence

these may not be regarded as sources of long-term competitive edge. Strategic resources must be valued, uncommon, difficult to replicate, and unique (University of Minnesota, 2010).

When resources help a company capitalize on its strengths while also addressing challenges, they are valuable. There are few or no rivals for a rare resource. Patents and copyrights are examples of legally protected intellectual property that might be considered inimitable. If competitors can't combine their resources in the same way as a given organization's resource bundle, it fits the non-substitutable characteristic (University of Minnesota, 2010). A corporation with a resource that possesses all four traits can obtain a long-term competitive edge.

The RBV hypothesis can help financial organizations acquire a long-term competitive edge by utilizing unique data sources within their control or reach. They can blend their exclusive internally generated data with acquired external data to produce unmatched insights. Hiring the best data analysts with both business acumen and data science skills is key in providing the company with unrivaled insights.

## 2.3 Conceptual Discussion

### 2.3.1 Big Data Characteristics Dynamics

Big data is characterized by four qualities. The first is mass, which means that data is generated in vast quantities. Consider how much data phones generates daily including traffic data, blogs, short messages, media uploads, searches, Audio and video streaming, lottery, chats, location information, news etc. According to IDG, by 2025,

the worldwide data may reach 175 zettabytes, with roughly 30% being real-time, generated by connected people who will interact digitally every 18 seconds. The second feature is velocity, which is proportional to mass. Data generated at rapid speeds and on a regular basis quickly accumulates resulting in a mass problem. Velocity introduces a new challenge that needs a new strategy. Streaming data such as logs generated by mobile applications, telemetry, location data, social media streams and IoT system sensors data makes up a substantial amount of the data generated in today's world. Streaming data frequently demands immediate attention to avoid losing its meaning. Variety is the third characteristic, which relates to the numerous sorts of data originating from diverse systems and applications. Big data comprises structured data found in predefined models like relational databases, Unstructured data found in word processing documents, images, videos and Semi-structured data such as JSON and XML. Data engines have historically concentrated on structured data processing as it is the most frequent sort of data in use for transaction. Unstructured data is currently produced in significantly greater quantities by social, web, and streaming applications. REST and JSON are used in a lot of app-to-app communication. The fourth factor, authenticity, ensures that the data is of high quality, resulting in precise and consistent results. It’s important to have clean, dependable data for analysis, insights generation and reporting purposes since poor data quality leads to erroneous and unreliable outcomes. AI/ML models rely on correct data to deliver high-quality predictions, poor data distorts machine learning's value. Customers can use Informatics big data management solution in conjunction with Informatics Data Quality and Governance policies to clean and grade data. Informatics organizational Data portfolio supports data discovery and authentication. Enterprise Catalog can be used to analyze data to generate insights. Enterprise Data Catalog is part of the Informatics Intelligent Data Platform

therefore, it leverages on big data engine for data profiling, high performance, and availability.

### 2.3.2 Big Data Components Dynamics

There are three components or sources that make up big data. To begin, social data is generated from Likes, shares, tweets, Comments, Audio/Video Uploads, and other multimedia that are posted in social media. The data can be used for market analysis because of the customer insights it provides. The public internet is another good source of social data which has various tools that can assist boost the amount of big data. Machine data is generated by heavy processing equipment, sensors and online logs that track consumers habits. Data is predicted to grow tremendously as the IOT gets increasingly pervasive thereby growing around the world. Sooner, sensors embedded in medical devices, smart meters, smart cameras, satellites, sports devices, and increasingly expanding IOT devices can provide high velocity, mass, and diverse data.

Finally, transactional data is generated from daily transaction activities. Transactional data may include sales order, payment orders, shipping and distribution records. Data on its own is almost worthless hence the need for most firms to generate meaningful insights from the data they generate.

### 2.3.3 Big Data Technological Dynamics

Analytical Big Data Technologies has increased in complexity in the recent years as compared to Operational Big Data Technologies because it involves significant changes to Big Data Technologies. This category covers practical Big Data analysis, which is crucial for business decisions making. Examples include Online trade activities, weather prediction, stock marketing and medical records analysis. Artificial intelligence (AI) being widespread focuses on creation of machines that mimic human

intelligence. AI development has been swift in the recent years ranging from smart assistants to automated financial investing. It leverages on machine learning with the ability to rationalize and take actions to enable a shift in the tech businesses as an interdisciplinary branch of study. AI is revolutionizing existing Big Data technologies.

Block chain is a Big Data technique that is used in the digital Bitcoin money to provide a data security feature protecting data from being withdrawn or altered after it has been written. It's a secure environment that's ideal for a wide range of Big Data applications in industries such as food, finance, insurance, medical care, and retail, to mention a few. Hadoop Framework is a programming architecture for storing and processing data in a distributed data processing environment. Data can be saved and evaluated from various high-speed and low-cost equipment. Businesses have embraced Hadoop technology for their data warehousing needs in the previous year. In the following year, the pattern appears to be continuing and accelerating. Firms that haven't investigated Hadoop yet are likely to find its advantages and implementation areas.

### 2.4 Summary of Literature Review and Research Gap

The connection between big data analytics and performance was examined by Srivastavaa and Gopalkrishnan (2015) among banks in India. The study used time series data collected from one bank for a period of four years i.e., 2011-2014.The number of records analyzed were more than 20,000 collected from different card holders. Customer transactions were monitored over the period while adjusting some institutional characteristics. The observations were that, the number of transactions and the value oscillated depending on the institutional characteristics adjusted. The study conclusion was that big data analysis can enhance performance of an organization as was seen in the findings. The study however focused on banks and on only one

performance indicator which is qualitative in nature. This study will focus on more than one indicator of performance with a mix of qualitative and quantitative indicators.

Labib and Banna (2019) conducted a study on leveraging big data analytics to add value to products for commerical bank as a marketing tool. Data from several banks was collected which included report on customer satisfaction, 39,000 customers and 4,000 cardholders transactional records.The data was analyzed using Apache hadoop where profiling,segmentation and customer behaviour prediction was done to derive insights for designing new market strategies and products to suit the bank clients needs. The study concluded that,big data analytics was useful for achieving marketing inteligence for the bank.The study context was Egypt of which the result would be different if done in Nairobi county.The research was limited to banks and more specifically in the area of marketing while this study will focus on Fintech and performance with SPSS used as a tool for analysis of the big data. Lee (2020) investigated the impact of big data analytics capability and well calculated alliances on financial performance among Taiwan selected industries.The researcher administered questionnaires to collect quantitative information which was used to measure multpile dimensions.The study findings were that,extensive big data analytics use ,availability of infrastructure and skills within an organization facilitates firms strategies alignment attaining growth in market share and profitability.The area under study was a developed economy.This might yield different results when done in the developing economy. Goo and Heo(2020) studied the impact of the regulatory sandbox on the Fintech Industry, with a discussion on the relation between regulatory sandboxes and open innovation in Korea. The researcher collected data across nine countries which had adopted regulatory sandboxes. Comparative and regression analysis was employed to validate the data.Research findings were that regulatory sandboxes influences the growth of Fintech

venture investments. The study only considered the effect of regulatory sandboxes on the Fintech venture investment, but did not pay attention to the Fintech performance. Lee and Teo(2015) examined the drivers of succesful Fintech business.The researcher focused on two succesful Fintech organization i.e Mpesa and Alibaba. The study findings were that ,businesses not subjected to strict regulatory regimes can produce innovative products at much lower prices. The study further found out that doing business in a moderately regulated environment saves on cost of compliance activities which enhances innovation.The study pointed out on only two Fintech which may not be a representive samples due to high margin of error.This study will use a sample size of 64 Fintech domiciled in Nairobi County.

### 2.5 Summary of Literature Review

Kenya's Fintech business is still in its infancy, with few academic and professional research available. There is still more to be done in terms of big data analytics dynamics and Fin Tech company performance. The research examined were conducted in the 34 banking and insurance industries, as well as in wealthy countries, creating a context mismatch. The studies that were analyzed focused on a direct association without taking into account the moderating variable that will be included in this analysis.

**Table 2. 1: Literature Review Summary and Research Gaps**

| Author(s) | Country | Study area | Findings | Gap | How the study will address the gaps |
|---|---|---|---|---|---|
| Srivastavaa and Gopalkrishnan (2015) | India | Big data analytics and performance of banks | Big data influence the performance of the bank | -The context is banking and in developed country.<br>-No moderating variable | -The context will be Fin tech and in Kenya.<br>-Moderating variable will be included. |
| Lee and Teo(2015) | South Africa | Drivers of successful Fintech business | Businesses that are not subjected to high regulatory regimes are able to produce innovative products at much lower prices. | -The study only focused on two Fintech.<br>-No moderating variables. | -The sample size will be 55 Fintech firms in Nairobi, Kenya.<br>-Moderating variable will be included. |
| Labib and Banna (2019) | Egypt | Big data analytics and as a marketing tool of banking products | Big data analytics influences marketing of banking product | -The context is in a developed country and in banking.<br>-No moderating variable. | -The context will be Fin tech and in Kenya.<br>-Moderating variable will be included. |
| Lee (2020) | Taiwan | Big data analytics and financial performance of banks | Big data influence the performance of the bank | -The context is in a developed country and in banking.<br>-No moderating variable. | -The context will be Fin tech and in Kenya.<br>-Moderating variable will be included. |
| Goo and Heo(2020) | Korea | Regulatory sandboxes and venture investments | Regulatory sandboxes influence the venture investments | -The context is in a developed country and in focus on venture investments<br>-No moderating variable. | -The context will be Fin tech and in Kenya.<br>-Moderating variable will be included. |

## 2.6 Conceptual Framework

A conceptual framework, according to Robson (2011), is a visual or textual product that outlines the important items to be taught, the basics, concepts, or variables, and the supposed links between them, either explicitly or implicitly. The conceptual framework for this study will be made up of two variables: independent and dependent variables. The former is the opposite of the latter. When the values of the independent variable are utilized to analyze its impact on other variables, the independent variable is a functional variable. Independent variable is the cause, whereas the dependent variable is the result. Dynamic independent variable values are changed to see its effects on other variables. The performance of Fin Tech firms will be the dependent variable, while the independent factors will be big data characteristics, big data components, and big data technologies, with regulatory policies being the moderating variable. The figure 2.1 shows the conceptual framework.

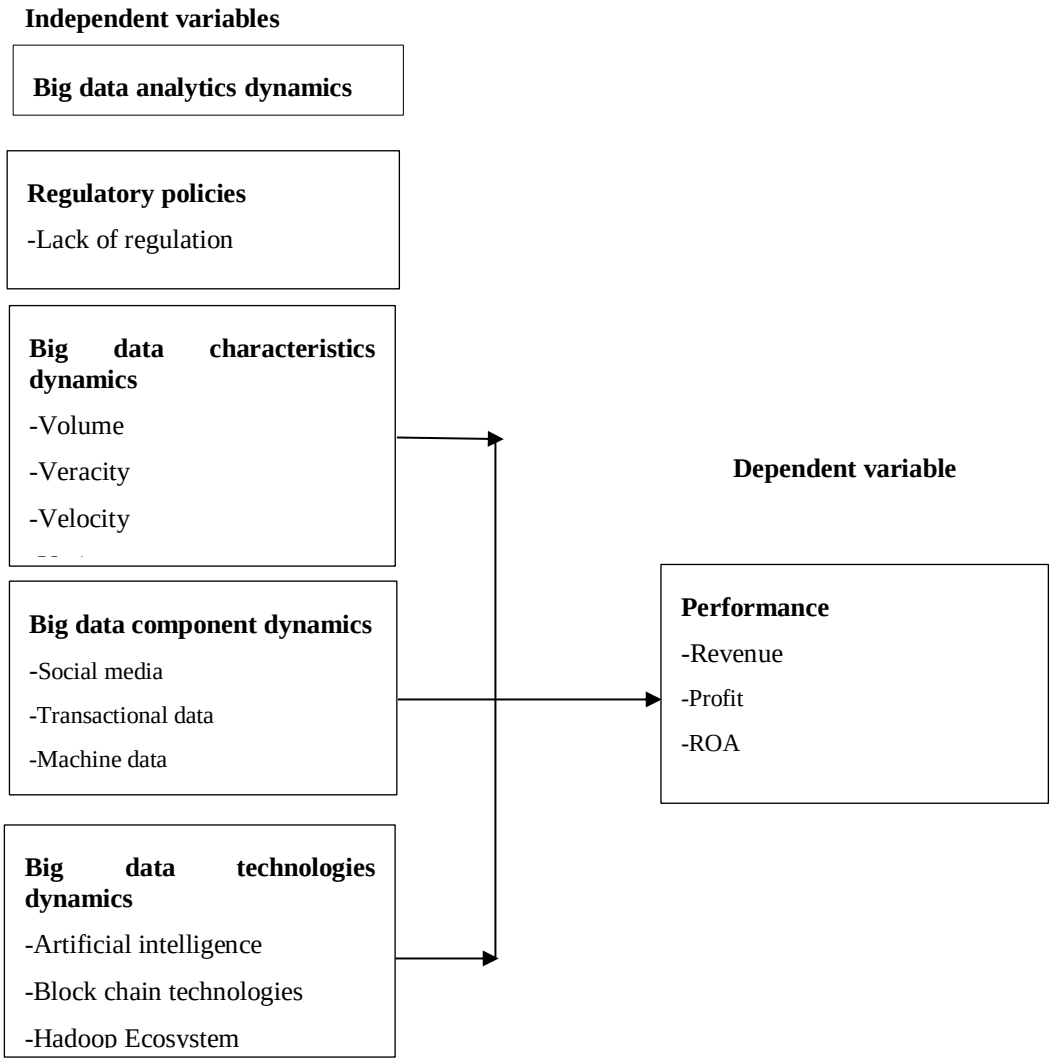



**Fig 2. 1: Conceptual Framework**

**Source: Author (2024)**

# CHAPTER THREE

# RESEARCH METHODOLOGY

## 3.1 Introduction

Covered in this chapter include research design, study population, sampling methods and procedures, data collection procedures and instruments, data processing and reporting and ethical issues.

## 3.2 Research Design

This is a roadmap for approaching research issues. It specifies the data source, how the data was processed and analyzed, and how ethical issues and constraints will be addressed (Saunders, Lewis, & Thornhill. 2016). According to Cooper and Schindler (2014) research design is "a scheme and structure of investigation to achieve answers to research questions." A research design is defined as an activity and time dependent strategy based on research objectives, a source selection guide, and a structure for identifying the relationships between the study's variables, according to the authors. A descriptive research design will be deployed for this purpose. The goal of descriptive research is to formulate a comprehensive picture of events, individuals, or circumstances (Saunders, Lewis, & Thornhill, 2016). It is an attempt to explain a topic by constructing a profile of a set of problems using data collection and presentation of frequencies on research variables or their interactions with the goal of revealing who, what, where, when, and how much, and the analysis discusses the scale, type, distribution, or nature of a variable, and the analysis discusses the scale, type, distribution, or nature of a variable (Cooper & Schindler, 2014).

### 3.3 Operationalization and Measurement of Variables

**Table 3. 1: Operationalization of Variables**

| Variable | Indicator | Operational definition | Measurement | Questionnaire reference |
|---|---|---|---|---|
| Independent variables | Volume | Big data characteristics | Likert scale | Q2 |
| | Veracity | | Likert scale | Q2 |
| | Velocity | | Likert scale | Q2 |
| | Variety | | Likert scale | Q2 |
| | Social media | Big data components | Likert scale | Q3 |
| | Transactional data | | Likert scale | Q3 |
| | Machine data | | Likert scale | Q3 |
| | Artificial intelligence | Big data technologies | Likert scale | Q4 |
| | Block chain technologies | | Likert scale | Q4 |
| | Hadoop ecosystem | | Likert scale | Q4 |
| Independent variable | Regulatory policies | Government interventions | Likert scale | Q5 |
| Dependent variable | Revenue | Ability of a firm to utilize assets to maximize shareholder's wealth. | Likert scale | Q6 |
| | ROA | | Likert scale | Q6 |
| | Profit | | Likert scale | Q6 |

**Source: Author 2021**

### 3.4 Target Population

This is the component from which we want to draw conclusions (Cooper & Schindler, 2014). Population is a complete group of cases or items where sample is drawn, and target population is a part of the population that is the focus of the study. This is as per Saunders, Lewis, and Thornhill (2016). The population of the study was 64 Fintech firms in Nairobi City County (Appendix II). The target demographic would be people in managerial positions. Fintech executives will be the research unit, while Fintech firms will be the observation unit.

### 3.5 Sampling Design

#### 3.5.1 Sampling

Sampling techniques exist in two categories: Probability sampling and non-probability sampling. Probability sampling employs uneven selection, allowing statistical judgement to be made about the whole group. Non-probability sampling employs nonrandom selection based on convenience or other considerations, allowing the researcher to swiftly collect preliminary data (Taherdoost, 2016). Sampling, according to Burns and Grove (2003), involves choosing a group of individuals, events, or behaviors to examine. The participants can provide extensive accounts of their perceptions and points of view. A sampling is a subset of the population intended to be representative of the full population (Polit et al., 2001). The generalizability of the findings is inextricably connected to the sample size. This analysis utilized non-probable and deliberate sampling. According to Chen and`41 Hirschheim, researchers chose the study subjects focus areas based on individual personal experience with the phenomenon (2004).

#### 3.5.2 Sampling Technique

The two types of techniques commonly used are probability sampling and non-probability sampling (Showkat & Parveen, 2017). There are several sampling methods under these two techniques. This analysis deployed probability sampling, in which a small, randomly chosen population representation is used to approximate the diffusion of an opinion in the vast population with statistical reliance, and survey polling will be used (Howard, 2019).

### 3.5.3 Sampling Frame

Sampling frame lists the entire population of interest. The source of material or devices from which a sample is taken is referred to as a sampling frame (Carl-Erik, Bengt, & Jan, 2003). The frame for our study comprised all Fintech enterprises in Nairobi County, Kenya. All of these were chosen because they share comparable characteristics (Carl-Erik et al., 2003). An updated list including all the frame units were used.

### 3.5.4 Sample Size

A sample represents a portion of the population. Bulsink and Georges (2013) claim that sample size has no influence on the study's relevance or consistency, and that there are no guidelines for establishing sample size in any research. Data integrity promotes the credibility of findings, according to Asiamah, Mensah, and Oteng-Abayie (2017), and sample size has an impact on this credibility. Using Yamane"s formula (Yamane, 1967) and a survey, this study targeted managers from Fintech firms working at the headquarters and adhere to data integrity on a sample of 55 firms.

$$\text{Sample size} = \frac{N}{1 + Ne^2}$$

Where, N is the total study population, and e is the error of margin.

$$\text{Sample size} = \frac{64}{1 + 64 * 0.05^2}$$

Sample size ≈ 55

### 3.6 Data Collection and Procedure

A standardized questionnaire was used for data collection. The questionnaires for different Fintech firms were distributed through online channels such as email and

online software such as google forms. Since it is anticipated that they will oversee the implementation of BDA, the questionnaire was provided to the Chief Operating Officer or any other employee in a managerial role in each Fin Tech. There was four parts of the questionnaire.

### 3.7 Pilot Study

A pilot test was conducted by the researcher prior to the actual data collection phase. Pilot studies help in recognizing ambiguity and examining the types of replies received to see if they help the researcher meet the objectives (Robson, 2007). A pilot sample was between 1% and 10%, according to Mugenda & Mugenda (2003), depending on the sample size. The responses from pilot study will not be considered in the final analysis. The pilot study's findings were used to fine-tune the questionnaire before it is utilized for the first time.

#### 3.7.1 Data Validity

Validity refers to degree of accuracy to which an instrument measures what it promises to measure, is a strength of qualitative research (Creswell, 2003; Oloko & Ogutu, 2012). Data is considered valid in qualitative analysis if its logical, trustworthy and reliable. As a result, if this information is challenged, it can be defended. When the information sought is obtained in a descriptive manner that makes the context easier to comprehend and assures that experience is gained, it is said to be valid (Castillo, 2009). According to Seidman (2006), the essence of validity is to draw sense out of the interview framework. There are different types of validities including construct, material, face, criterion, concurrent, predictive, experimental, and diagnostic validities. In this study, construct validity was employed to determine correlations between the test and other construct measures.

### 3.7.2 Reliability

In qualitative analysis, reliability aids in achieving rigor. Within sites, internal reliability refers to the accuracy and plausibility of data (Castillo, 2009; Creswell, 2003). External reliability is concerned with data accuracy and duplication across sites (Castillo, 2009). Data integrity is necessitated by the need to identify errors made during data collection process, whether intentional (falsifications done knowingly) or not (genuine errors). (Quality assurance – These are activities that precede data collection (Knatterud et al., 1998); Quality management- Takes place in the process of data collection and afterwards. (Whitney, Lind, and Wahl, 1998). (Knatterud et al., 1998). Cronbach's alpha was used as a rule of thumb for defining internal consistency in this analysis, with an alpha value of 0.6 0.7 being appropriate (Cronbach, 1951).

### 3.8 Data Analysis and Presentation

Following the collection of data, data processing and interpretation will be performed to give significance to the data's findings. Data gathering, processing and quantitative analysis was done using the Statistical Package for Social Sciences (SPSS), (Afande, 2015). SPSS has a limitation in the number of text fields it can accommodate (255 characters). Since many open question responses can surpass the limit, a text score analysis will be done. This was resolved during the study's pilot testing process. Quantitative data was analyzed using descriptive and inferential statistics. Descriptive statistics such as mean, frequencies, standard deviation, and percentages was used in the analysis. Tables was used to present the findings. Content analysis usage to interpret qualitative data was demonstrated by Cooper and Schindler (2011). Open-ended questions were used to gather qualitative data, reports and financial data were observed (Cooper & Schindler, 2011). Data screening revealed data point scores that appeared to be substantially different from the rest of the data, prompting win soring transformation.

The Win soring strategy, on the other hand, works well in areas where data changes are less than 5%. (Verardi & Croux, 2009). Exaggerated values that had an unfair effect on the model by implying that the data was out of range were eliminated. Excluding a record(s) had a significant impact on the coefficients and was considered impactful. According to (Frydenberg and Lewis 1997), removing any considerations influenced the questionnaire's original structure. The research closely reviewed any influential documents to decide if they should be given less weight when calculating the model, truncate the outlying values to an appropriate threshold, or be removed entirely (Hoaglin, Iglewicz & Tukey, 1986). The researcher then cleaned the data and analyze to show outliers are within range, indicating that the data is moderately internally consistent.

**[$Y = \alpha + \beta 1X1 + \beta 2X2 + \beta 3X3 + \beta_4 X_4 + e$], where;**

**Y**- Dependent variable (Performance of Fintech Firms)

**$\alpha$** – Constant term

**$\beta_1$** - Beta coefficient

**$X_1$** - Big data characteristics

**$X_2$** – Big data components

**$X_3$** – Big data technologies

**$X_4$**-Regulatory policies

**e** – Error term

This will determine if the variables have a linear connection. According to Lucey, the researcher utilized the Spearman Rank Correlation Coefficient to derive relationship between variables when they are arranged in a ranked order (2010).

### 3.9 Ethical Considerations

The following considerations were adhered to.

#### 3.9.1 Informed Consent

Data used in the research was collected with explicit informed consent from individuals.

#### 3.9.2 Data Anonymization

Data was Anonymized to protect the identities of individuals. This includes removing personally identifiable information (PII) and using techniques like aggregation to prevent re-identification.

#### 3.9.3 Regulatory and Legal Compliance

Compliance with relevant data protection regulations such as the General Data Protection Regulation (GDPR) was ensured.

# CHAPTER FOUR

# RESEARCH FINDINGS AND DISCUSSION

## 4.1 Introduction

The data analysis stage is a particularly important one in any research project. Data acquired is condensed through data analysis. It comprises applying analytical and rational thought to the study of collected data in order to identify associations, relationships, or trends. This research employed descriptive and inferential analysis. To be more specific, standard deviations, means, and percentages were included in descriptive statistics. Regression and correlation analyses were also included in inferential analysis.

## 4.2 Preliminary Results

The preliminary results show the reliability of the instruments, response rate and respondents' basic information.

### 4.2.1 Reliability

With the aid of reliability analysis, one can ascertain the degree of correlation between the questions on a questionnaire, provide a general indication of the scale's repeatability or internal reliability.

**Table 4. 1: Reliability Analysis**

| Variable | No. of items | Cronbach's Alpha | Decision |
|---|---|---|---|
| Big Data Characteristics Dynamics | 4 | 0.830 | Reliable |
| Big Data Components Dynamics | 8 | 0.868 | Reliable |
| Big Data Technologies Dynamics | 3 | 0.753 | Reliable |
| regulatory policies | 2 | 0.824 | Reliable |
| Financial Performance | 3 | 0.743 | Reliable |

Cronbach's alpha was used as a rule of thumb for defining internal consistency. In this analysis, all the variables returned an alpha between 0.743 and 0. 868.This showed that

there was internal consistency with the research instrument. According to Krieglstein et al. (2022), a Cronbach's alpha value above 0.70 is often regarded as appropriate for the majority of research applications. This suggests that the test's items have a moderate degree of internal consistency.

### 4.2.2 Response Rate

Return rate, which is usually represented as a percentage, is the entire number of valid responses obtained from a certain research. . Return rates measure engagement on research like surveys. Table 4.1 summarizes this finding.

**Table 4. 2: Response Rate**

| Research Unit | Sample | Collected | Rate (%) |
|---|---|---|---|
| Fintech executives | 55 | 50 | 91 |

The response rate was calculated as follows:

$$Response\ Rate = \frac{50}{55} x100\%$$

$$= 91\%$$

According to observations, the response rate mentioned above is typical. De Vaus (2013) asserts that in the social sciences, response rates might be considered acceptable in the range of 30% to 70%. In surveys and questionnaires, the major indicator of the quality and validity of the data is frequently the response rate, according to Mellahi and Harris (2016). According to Baruch (1999), a higher response rate is preferred since it demonstrates the reliability and veracity of the findings.

## 4.3 Respondents' Basic Information

This section analyzed data relating to respondent's bio data. This includes gender, Age, Education al background, work experience,

### 4.3.1 Gender

The distribution of Male and Female respondents was analyzed descriptively, and its finding and the interpretation is presented in following tables.

**Table 4. 3: Gender**

| **Gender** | | | **Chi-Square** | ***df*** | **p-value** |
|---|---|---|---|---|---|
| | **Frequency** | **Percent** | **2.000** | **1** | **0.157** |
| Male | 30 | 60.0 | | | |
| Female | 20 | 40.0 | | | |
| **Total** | **50** | **100.0** | | | |

The study established that 60 percent of males and 40 percent of females represented the study sample. In addition, it was established from the data that the percentage of respondents who were male and female did not significantly differ from one another. ($\chi^2$=2.000**;** ***df*****=1; p**=0.157). According to Lee and Chin (2019), gender differences should be taken into account in all research projects. In order to obtain a complete understanding of a subject and prevent producing biased conclusions, it is crucial for researchers to examine the perspectives of both genders.

### 4.2.2 Respondents Age

The respective ages of participants were analyzed through descriptive statistics. The finding and the discussion were made in following Table.

**Table 4. 4: Age**

| | **Frequency** | **Percent** |
|---|---|---|
| 20-30 years | 5 | 10.0 |
| 30-40 years | 30 | 60.0 |
| Over 50 years | 15 | 30.0 |
| **Total** | **50** | **100.0** |

According to the study, 60 percent of the participants had their age between 30 and 40 years. Furthermore, 30 percent and 10 percent of participants represented those above 50 years and between 20-30 years respectively. Chung et al. (2015) state that it can be

highly helpful to gain a deeper awareness of the participants' attitudes regarding an issue due to the variations in life experiences among various ages and people's evolving preferences and behaviors as they age. Furthermore, an improvement in cognitive ability rather than years of service contributes to a senior worker's increased job performance.

### 4.2.3 Gender and Educational Background Cross-Tabulation

A cross-tabulation analysis was employed in order to carry out a comparison between Gender and Educational background. The three levels of education were college, undergraduates, and postgraduates.

**Table 4. 5: Gender and Educational Background Cross-tabulation**

| | | Educational Background | | | Total |
|---|---|---|---|---|---|
| | | **College** | **Undergraduate** | **Postgraduate** | |
| Male | Count | 8 | 18 | 4 | 30 |
| | % | 16.0% | 36.0% | 8.0% | 60.0% |
| Female | Count | 5 | 11 | 4 | 20 |
| | % | 10.0% | 22.0% | 8.0% | 40.0% |
| **Total** | **Count** | **13** | **29** | **8** | **50** |
| | **%** | **26.0%** | **58.0%** | **16.0%** | **100.0%** |

The current research recognized that 58 percent of the total sampled population had undergraduate certificate while 16 percent with post graduate qualification. Similarly, it was discovered that 26 percent were with college certificates. In the analysis by gender, it was found that 36 percent were Males with undergraduate degrees while 22 percent were female counterparts. According to Yue et al. (2022), organizations are drawn to people with higher levels of education because they are more effective and innovative. Well-educated staff members can readily accept training chances when it comes to implementing new innovations.

### 4.2.4 Work Experience

The respondents work experience was compared using their respective gender. The following table presents the findings.

**Table 4. 6: Work Experience**

| **Gender and Work experience Crosstabulation** | | | | | | |
|---|---|---|---|---|---|---|
| | | **Work Experience** | | | | **Total** |
| | | **less than 5 years** | **Between 6 to 10 years** | **Between 11 to 15 years** | **More than 15 years** | |
| Male | Count | 3 | 9 | 16 | 2 | 30 |
| | % of Total | 6.0% | 18.0% | 32.0% | 4.0% | 60.0% |
| Female | Count | 1 | 9 | 7 | 3 | 20 |
| | % of Total | 2.0% | 18.0% | 14.0% | 6.0% | 40.0% |
| **Total** | **Count** | **4** | **18** | **23** | **5** | **50** |
| | **% of Total** | **8.0%** | **36.0%** | **46.0%** | **10.0%** | **100.0%** |

In this investigation, it was recognized that 46 percent and 36 percent were those between 11and 15 years and 6to 10 years in FinTech industry. Correspondingly, 10 percent and 8 percent represented those with more than 15 years and less than 5 years respectively. This finding suggests that since respondents had experience in FinTech industry, they will be able to understand the problem under the current investigation. According to Rivaldo and Nabella (2023), work experience is a gauge of how much time and effort an individual has put into comprehending the responsibilities of a position and performing them well. A key factor in an employee's ability to complete duties in an organization is their job experience. An employee with greater work experience will outperform one with less experience.

### 4.2.5 Company Operation Period

The company's operation period was compared by gender. Percentages were used as the main descriptive statistics. With that, the outcomes are shown in the following table 4.7.

**Table 4. 7: Company Operation Period**

| Years | Frequency | Percent |
|---|---|---|
| 4 or less | 7 | 14.0 |
| 4-9 | 18 | 36.0 |
| 10-19 | 23 | 46.0 |
| 20-49 | 2 | 4.0 |
| **Total** | **50** | **100.0** |

The analysis of company's operation period reveled that majority (46 percent) had operated between 10 and 19 years. This was then followed by those between 4 and 9 years with 36 percent. Finally, those with 4 years and below and above 20 years represented 14% and 4% respectively. According to Rahayu and Ilham (2023), knowing a company's operating history can help assess its financial condition by indicating to it whether or not it would be able to settle any debts. This shows how productive the company was within the chosen time frame. The assumption of a time period makes it possible to separate the economic and operational activities of a business into distinct time periods.

## 4.3 Descriptive Analysis

The descriptive statistics used in any research enable researchers to identify and characterize the core components of a set of data. Thus, statistical methods serve as the cornerstone of the analysis of data, allowing investigators to organize, dissect, and combine data. In this section, proportions, averages and measures of dispersion were calculated and provided in subsequent Tables.

### 4.3.1 Big Data Characteristics Dynamics and Performance of Fintech Firms

The first goal of the research was to determine the effect of Big Data Characteristics Dynamics on Performance of Fintech Firms in Nairobi Kenya. Table xx provides the descriptive statistics of each variable in the investigation.

| Statement | NE | Min. E | ME | LE | VLE | Mean | SD |
|---|---|---|---|---|---|---|---|
| Volume of big data enables business to predict outcome accurately, allowing better decisions to be made. | 6% | 4% | 26% | 50% | 14% | 3.62 | 0.98 |
| The speed of big data allows for real-time business and market forecasting and monitoring. | 4% | 6% | 20% | 52% | 18% | 3.74 | 0.96 |
| The variety of big data which is as a result of accumulation from multiple sources produces highly actionable insights. | 8% | 4% | 24% | 40% | 24% | 3.68 | 1.13 |
| The reliability of big data Risks are quickly mitigated by making complicated judgments in advance of unforeseen occurrences and dangers. | 2% | 10% | 26% | 44% | 18% | 3.66 | 0.96 |
| Big Data Characteristics Dynamics Mean Index | | | | | | 3.67 | 0.82 |

The key for effectively recognizing big data's usage and application is to comprehend its characteristics. The findings established that 50 percent affirmed that to a large extent, volume of big data enables business to predict outcome accurately, allowing better decisions to be made. This suggests that big data analytics empowers organizations to base choices on data and analysis rather than presumptions or speculation. Trends and patterns that might not be visible at a smaller scale might be found by examining huge quantities of data. These findings support those of Ransbotham and Kiron (2017), who stress the ability of businesses to recognize novel

possibilities and problems, create important insights and adjust their business processes based on patterns observed in the business environment by deploying large-scale data analytic strategically. It is also believed that Big data analytics may also serve as a driver of creative thinking, since firms that lead in deployment are more probable release innovative services than those that delay from its implementation.

Bigdata is essential in the current ecosystem since it allows for a whole new method of knowledge production within enterprises. The findings observed that 52 percent of the participants agreed that to a large extent, the speed of big data allows for real-time business and market forecasting and monitoring. This suggests that large-scale data mining might add benefit and provide a different viewpoint when evaluating options by improving forecast analysis and modeling methodologies. This result is reliable with that of Björkman and Franco (2017), who reaffirmed that if big data analytics are made available to employees and distributed in real-time to targeted audiences, it can result in the shift when making decisions from intuition-driven to data-based conclusion. As a result of this change, organizational decisions are becoming more precise, transparent, efficient, and, to some extent, quicker. The study finding also establish that using large data analytics and spreading it throughout an organization have an effect on roles.

It is widely acknowledged that firms may use business analytics as a tool to enhance their operational effectiveness. According to 40 percent of the findings established that to a large extent, the variety of big data which is as a result of accumulation from multiple sources produces highly actionable insights. This suggests that the discovery of enormous data may yield surprising and really useful information. This finding supports the observation made by According to Rai (2020), big data helps businesses understand their customers' problems and make improvements to their goods and

services. The researchers also contend that, in addition to being accurate, big data generates highly useful insights by combining pertinent data from several sources.

There have been assertions that large data analytics can advance businesses' profitability and efficiency. The finding established that 44 percent of the participants affirmed that the reliability of big data risks are quickly mitigated by making complicated judgments in advance of unforeseen occurrences and dangers. As a result, it appears that assuring the accuracy and dependability of the data being examined is the primary driving force behind big data and analytics risk management. The big data characteristics dynamics was observed to contribute to firm performance (Mean=3.67; SD=0.82). According to Srinivasan and Arunasalam (2013), acquiring big data analytics skills can help businesses decrease costs and preserve their competitiveness by reducing waste and fraud. Additionally, by enhancing treatment safety, it helps businesses raise the standard of care they provide. By using big data technologies, companies may increase their chances of transforming data into ideas and intellect, which will increase their output and revenue.

### 4.3.2 Big Data Components Dynamics and Performance of Fintech Firms

This study sought to examine the effect of Big Data Components Dynamics on Performance of Fintech firms in Nairobi County. Table 4.8 shows the findings of the analysis.

**Table 4. 8: Big Data Components Dynamics and Performance of Fintech Firms**

| Statement | NE | Min. E | ME | LE | VLE | Mean | SD |
|---|---|---|---|---|---|---|---|
| Big data is obtained from social media, transactional data, and machine data are used by the firms to derive the value. | 0% | 12% | 20% | 34% | 34% | 3.90 | 1.01 |
| Big data is obtained from social media, transactional data, and machine data are used by the firms to derive insights. | 4% | 6% | 22% | 26% | 42% | 3.96 | 1.12 |
| Big data is obtained from social media, transactional data, and machine data are used by the firms to derive better customer experience. | 4% | 10% | 24% | 24% | 38% | 3.82 | 1.17 |
| Big data is obtained from social media, transactional data, and machine data are used by the firms to derive operational efficiency. | 8% | 6% | 36% | 32% | 18% | 3.46 | 1.11 |
| Big data is obtained from social media, transactional data, and machine data are used by the firms to derive product improvement | 4% | 8% | 22% | 42% | 24% | 3.74 | 1.04 |
| Big data is obtained from social media, transactional data, and machine data are used by the firms to drive innovations and inventions. | 4% | 10% | 20% | 38% | 28% | 3.76 | 1.09 |
| Big data is obtained from social media, transactional data, and machine data are used by the firms to derive new revenue streams. | 2% | 8% | 28% | 40% | 22% | 3.72 | 0.96 |
| Big data is obtained from social media, transactional data, and machine data are used by the firms to derive competitive pricing matrixes. | 6% | 6% | 28% | 30% | 30% | 3.72 | 1.14 |
| Data Components Dynamics Mean Index | | | | | | 3.76 | 0.78 |

Key: NE- No Extent; Min. E- Minimal Extent; ME- Moderate Extent; LE- Large Extent; VLE- Very Large Extent

Big Data Components Dynamics is critical in determining performance in firms. This research indicated that 34% of respondents agreed that to a large extent, big data is obtained from social media, transactional data, and machine data are used by the firms to derive the value. Similar findings by 42% of the participants affirmed that to a large extent, big data is obtained from social media, transactional data, and machine data are used by the firms to derive insights. Tsai et al. (2015) assert that companies can use analytics for big data methods and instruments to make data-driven choices that

improve business-related results. Increased customer personalization, new revenue opportunities, improved marketing, and operational efficiency are some advantages. These advantages can provide you an edge over competitors if you have a strong strategy.

It is the vision of any organization to enhance customer experience regarding their products and services. The research found that 38 percent agreed to a very large extent that big data is obtained from social media, transactional data, and machine data are used by the firms to derive better customer experience. This suggests that a firm ought to use analysis for large data so as to enhance their customer satisfaction This finding is consistent with Khrais' (2020) assertion that it is impossible to overstate the advantages of adopting analysis for large data in an organization. Reduced expenses that new and enhanced business procedures could provide. Furthermore, improved product creation knowledge and perspectives can come from a deeper understanding of customer needs, behaviors, and opinions. In conclusion, enhanced risk mitigation strategies founded on comprehensive data sampling.

An effective tool for increasing operational effectiveness is data analytics. In this study, 32% affirmed that to a large extent, data is obtained from social media, transactional data, and machine data are used by the firms to derive operational efficiency. In this regard, Dubey et al. (2021) observed that the abilities of BDA may give firms an advantage over competitors through SC resilience. On the other hand, it may be argued that innovation is the most crucial instrument for businesses to maintain their competitive edge.

The company's business process innovation may be greatly impacted operationally and strategically by the analysis of big data. According to study, 42 percent of respondents affirmed that to a large extent, big data is obtained from social media, transactional

data, and machine data are used by the firms to derive product improvement. It follows that by implementing large data component dynamics, businesses may gain a competitive edge. These results support the hypothesis put forth by Gao and Sarwar (2022) who observes that big data technologies are transforming conventional company procedures and fostering organizational capacities. Businesses can now gather, store, process, and display data on a never-before-seen scale thanks to these technologies. Large volumes of unprocessed data can be quickly transformed into information by businesses using big data analytics (BDA), which improves the speed and caliber of decision-making.

Large data analysis is acknowledged to be a catalyst for businesses to transform their approaches to innovation. The study established that 38 percent of respondents avowed that to a large extent, big data is obtained from social media, transactional data, and machine data are used by the firms to drive innovations and inventions. This perspective is consistent with that of Zhan et al. (2017) and Agostini et al. (2019), who claim that businesses are searching the web for tools to evaluate market dynamics, places to find fresh ideas, and incentives to build flexible business models. As a result, big data is becoming more and more important in company initiatives. According to some academics, establishment of a framework for innovation, customer connections, and the acceleration of the innovation process are the three most important success elements in big data-driven product development approaches.

Big data has the potential to improve many processes, including revenue collecting. Accordingly, 40 percent of the participants were of the view that big data is obtained from social media, transactional data, and machine data are used by the firms to derive new revenue streams. This show that it is valuable to utilize big data analytics to enhance revenue so that forms can remain competitive. Raguseo and Vitari (2018)

reaffirm that, although the changes may be significant, it is crucial to assist managers in comprehending the various value-generating opportunities provided by big data analytics solutions and how they translate to improved company performance. Our findings demonstrate that big data continues to live up to its promise of generating more value. Big data analytics tools help businesses break into new markets, introduce ground-breaking products, and possibly outperform rivals. Big data analytics tools aid businesses in delivering their customers with better products and services than those provided by competitors.

Analytics of big data could be utilized to generate competitive pricing indices for the financial industry, which can help with establishing choices. In the current research, 30% of the respondents affirmed that large data is obtained from social media, transactional data, and machine data are used by the firms to derive competitive pricing matrixes. It was established that data components dynamics impacts on Performance of Fintech firms (Mean=3.76; SD=0.78). According to Mikalef, van de Wetering, and Krogstie (2021), big data analytics help financial institutions handle credit, market, and operational risks more skillfully. Financial institutions may examine historical market data to identify trends and patterns that may aid them in determining how much risk to assume. To help businesses make better trading and investment decisions, FinTech analyzes big data to look at market trends, financial data, and investing strategies.

### 4.3.3 Big Data Technologies Dynamics and Performance of Fintech Firms

The third goal of the research was to determine the effect of Big Data Technologies Dynamics on Performance of Fintech firms in Nairobi. In this section, percentages, means and standard deviation were computed.

**Table 4. 9: Big Data Technologies Dynamics and Performance of Fintech Firms**

| Statement | NE | Min. E | ME | LE | VLE | Mean | SD |
|---|---|---|---|---|---|---|---|
| Artificial intelligence has contributed significantly toward automation, smart decision making, and enhanced customer experience, manage repetitive task and help solve complex problems which aids in general performance of the business. | 8% | 4% | 26% | 36% | 26% | 3.68 | 1.15 |
| Block chain technologies has contributed to increase trust, security, transparency and traceability of shared data across business networks and delivers new efficiencies with cost savings. | 6% | 6% | 26% | 40% | 22% | 3.6600 | 1.08 |
| Hadoop Ecosystem helps to easily identify trends, handles multi-dimensional and multi-variety data, limits human interventions which improves the performance of the business. | 4% | 2% | 24% | 42% | 28% | 3.88 | 0.98 |
| Big Data Analytics Technologies Dynamics Mean Index | | | | | | 3.74 | 0.77 |

Big data technological characteristics are thought to improve overall corporate performance when deployed. According to the study, 36% affirmed that to a large extent, artificial intelligence has contributed significantly toward automation, smart decision making, and enhanced customer experience, manage repetitive task and help solve complex problems which aids in general performance of the business. This is a great opportunity for businesses to expand their customer base and improve their revenue. The results of this study are in line with those of Haleem et al. (2022), who assert that the application of artificial intelligence has simplified the process of developing profiles of customers and comprehending the customer experience. It makes it possible for businesses to quickly and easily provide relevant, personalized content for various consumer profiles at every stage of the advertising pipeline and on all platforms. Based on past data, AI technology in digital marketing can determine what kind of material is most probable to keep people coming back to the website. Blockchain technology is thought to increase confidence and trust between those involved in the metaverse digital ecosystem. According to the study, 40% agreed that to a large extent, block chain technologies has contributed to increase trust, security,

transparency, and traceability of shared data across business networks and delivers new efficiencies with cost savings. This suggests that blockchain technology can support timestamping and secure digital signatures, thus thereby rendering it much harder for criminals to forge or fake digital assets. This opinion is in line with that of Habib et al (2022), who claim that blockchain is a particularly revolutionary and promising technology since it helps to decrease security concerns, eradicate fraud, and provide transparency to a level that has never been experienced. Blockchain technology holds great promise for transforming gaming, securing medical records, bringing openness to food supply systems, and radically changing data and identity management practices. Blockchain innovation allows for the free exchange of cryptocurrencies (like Bitcoin) along with other electronic information between people without the involvement of a middleman.

Hadoop is an extremely scalable storing system that can greatly improve business efficiency. It was established that 42% of the participants agreed that to a large extent, Hadoop ecosystem helps to easily identify trends, handles multi-dimensional and multi-variety data, limits human interventions which improves the performance of the business. This implies that Hadoop offers a cost-effective model because it is freely accessible and uses inexpensive standard technologies. hence enterprises might significantly improve its operations. The finding established those big data analytics technologies dynamics impacts significantly on performance of Fintech firms. This perspective is in line with Haidar's (2020), who stresses how big data has transformed the way value is created in the financial services sector. The keys are machine learning and big data. They make it possible for fintech businesses to finish the normally costly and laborious tasks of credit risk scoring and evaluations more quickly and efficiently. The underbanked gain from the opportunity to create new credit risk models for nano-

and micro-finance by having access to a wider range of possibilities and the financial system.

### 4.3.4 Regulatory Policies and performance of Fin tech

The fourth objective of this research was to investigate the effect of regulatory policies on performance of Fin tech firms in Nairobi. In this variable, proportions, means and standard deviation were utilized.

**Table 4. 10: Regulatory Policies and Performance of Fin tech**

| Statement | NE | Min. E | ME | LE | VLE | Mean | SD |
|---|---|---|---|---|---|---|---|
| Lack of regulatory framework for Fintech affects their performance | 6% | 6% | 20% | 36% | 32% | 3.82 | 1.13 |
| Data protection regulatory affects Fintech performance. | 4% | 12% | 18% | 46% | 20% | 3.68 | 1.03 |
| Regulatory Policies Mean Index | | | | | | 3.75 | 1.00 |

Regulatory policies are crucial in any business environment since it provides legal framework for operationalization of the Fin tech firms. The study found that 36 percent of the Participants largely concurred that lack of regulatory framework for Fintech affects their performance. This suggests that a series of significant policy challenges addressing competition, legislative boundaries, and ensuring a level playing field are brought about by the digital transformation of financial services. This perspective is in line with that of Feyen et al. (2021), who highlight that possible outcome in terms of competition, market share distribution, and competitor makeup comprise a "barbell" conclusion made up of a few large suppliers and a lot of niche competitors. In order to manage the trade-offs between productivity and performance, consistency and credibility, and safeguards for consumers including security, regulators need to work together on important activities like financial operations and provision of fair competition space. The implementation of fintech has been seen to improve efficiency and open up access to financial services. In this study, 46 percent of the participants

agreed that to a great degree, data protection regulatory affects Fintech performance. This means that there may be potential risks to financial stability when FinTech firms offer services similar to those offered by banks but do so while subject to less stringent rules. Regulatory Policies is observed to substantially affect performance of Fin tech (Mean=3.75; SD=1.00). This result is consistent with the IMF's assertion from 2022 that digital financial services centered on cutting-edge financial technologies (fintech) can be advantageous to people, businesses, and governments. Expanding inclusive economic growth and addressing sustainable development goals can be accomplished with the aid of suitable policy and an enabling regulatory environment for the creation of responsible and inclusive digital financial services. For an environment that fosters the creation and use of responsible fintech services, it is essential to have an appropriate and supportive legal and regulatory framework. The framework needs to recognize barriers to innovation as well as adjust to new threats. Legal frameworks should offer legal predictability to encourage investment, guarantee the protection of consumer rights, and serve as a foundation for electronic signatures and smart contracts.

### 4.3.5 Financial Performance of Fin Tech Firms

In the present research, Financial Performance served as the dependent variable. This variable was measured using growth in Revenue, Profit and ROA. In this section, percentages, means, and standard deviations were applied.

**Table 4. 11: Financial Performance of Fin Tech Firms**

| Statement | NE | Min. E | ME | LE | VLE | Mean | SD |
|---|---|---|---|---|---|---|---|
| Revenue growth is attributable to big data analytics. | 2% | 8% | 20% | 50% | 20% | 3.78 | 0.93 |
| Profit increase is attributable to big data analytics. | 6% | 8% | 26% | 30% | 30% | 3.70 | 1.16 |
| ROA growth is attributable to big data analytics | 6% | 4% | 18% | 40% | 32% | 3.88 | 1.09 |
| Financial Performance Mean Index | | | | | | 3.78 | 0.86 |

Big Data offers insights into potential consumers and their spending patterns, assisting FinTech organizations in rapidly expanding their customer base.

In this study, 50 percent of participants affirmed that to a large extent revenue growth is attributable to big data analytics. This suggests that by evaluating data from various sources, FinTechs and major enterprises could use BDA to achieve edge over competitors. These results align with those obtained by Aziz et al. (2023), who stress the value of BDA in enhancing organizational operations and decision-making using information technology. Organizations can enhance their abilities to comprehend the market and locate commercial prospects with BDA. Additionally, it enables companies to generate supplementary customized goods and services. Fintech companies can acquire further about their clients' demands and create specialized solutions by studying data on customer behavior.

Utilizing big data analytics has been found to improve an organization's revenue more effectively. Accordingly, 30 percent of the participants affirmed that to a large extent, profit increase is attributable to big data analytics. Similarly, 40 percent indicated that ROA growth is attributable to big data analytics. By and large, the financial performance was observed to be influenced by the study variables substantially (Mean=3.78; SD=0.86). It follows from this that large-scale data analytics aid a company in maximizing competence, efficiency, profit, or the ability to make more tactically and well-informed choices. These results align with the research conducted by Popovi et al. (2018) who hypothesized that the more broadly the case firms used BDA, the more they enhanced decision making in their operations, leading to extra benefits for every stakeholder (customers, firms themselves).

Additionally, BDA played a crucial role in advancing employee empowerment, fact-based, real-time making of choices, and proactive initiatives that facilitated advancements in performance management. Similar to this, Lee (2020) reaffirms that an organization's ability to employ big data analytics extensively, as well as have the

necessary infrastructure and talent, makes it easier for businesses to coordinate their strategy and increase their market share and earnings.

### 4.4 Correlation Analysis

In the majority of studies, correlation analysis is employed to examine mostly quantitative data in order to find any noteworthy patterns, trends, or discoveries. Correlation analysis is mostly used to identify patterns in datasets.

#### 4.4.1 Spearman's Rank Correlation

In this research, the degree and significance of the correlations between the variables were assessed using Spearman's rank correlation. This method assesses the magnitude and trajectory of the correlations between two ranking variables. Therefore, Spearman's Rank correlation coefficient is a technique for consolidating the magnitude and polarity (positive or negative) of an association between two variables. The results are presented in Table.

**Spearman's rho Correlations**

| | | Financial Performance | X1 | X2 | X3 | X4 |
|---|---|---|---|---|---|---|
| Big data characteristics | Correlation Coefficient | .489** | 1.000 | | | |
| | Sig. (2-tailed) | .000 | . | | | |
| | N | 50 | 50 | | | |
| Big data components Dynamics | Correlation Coefficient | .320* | .403** | 1.000 | | |
| | Sig. (2-tailed) | .023 | .004 | . | | |
| | N | 50 | 50 | 50 | | |
| Big Data Analytics Technologies Dynamics | Correlation Coefficient | .425** | .429** | .235 | 1.000 | |
| | Sig. (2-tailed) | .002 | .002 | .101 | . | |
| | N | 50 | 50 | 50 | 50 | |
| Regulatory Polices. | Correlation Coefficient | .705** | .285* | .198 | .362** | 1.000 |
| | Sig. (2-tailed) | .000 | .045 | .167 | .010 | . |
| | N | 50 | 50 | 50 | 50 | 50 |

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

X1-Big Data Characteristics; X2- Big Data Components Dynamics; X3- Big Data Analytics Technologies Dynamics; X4- Regulatory Polices.

The findings showed that the financial performance of fintech companies and the fundamental characteristics of big data were statistically significantly correlated $r_s$ (48) = 0.489**; p = .000). This denotes that big data analytics empowers organizations to base choices on data to predict organization performance. This view agrees with those of Awotunde et al. (2021) who cites that big data analysis shows patterns concerning the target audience, enabling businesses to provide superior services and create goods that correspond more closely to the wants of the customer. Each of these benefits helps financial organizations operate more effectively.

Furthermore, it was observed that Big data components Dynamics significantly correlates with Financial Performance of Fin tech firms $r_s$ (48) = 0.320*; p = .023). This indicates that a company should make capitalize on massive data component dynamics to improve operations and consequently obtain a competitive edge. This finding concurs with Singh and El-Kassar (2019) who observe that big data analytics enables businesses to harness their data and use it to find novel possibilities. Better business decisions, more effective operations, increased profitability, and happier clients follow from that. Companies that embrace sophisticated analytics and big data benefit in numerous ways, including lower costs and quicker decision-making.

Furthermore, according to the study, it was revealed that the financial performance of fintech companies and the dynamics of big data analytics technologies are statistically significantly correlated. $r_s$ (48) = 0.425**; p = .002). The use of analytics technologies, such as artificial intelligence, block chains, and the Hadoop Ecosystem, may thereby enhance corporate performance. The findings are consistent with those of Arshad et al. (2022), who showed that a company's competitive edge can be enhanced through the application of big data analytics, which employs special information processing

abilities in organizational value-creation processes. Big data analytics helps businesses see possibilities and threats, which speeds up operations and boosts profitability.

Finally, data demonstrated a strong correlation between regulatory policies and the financial performance of fintech enterprises. $r_s$ (48) = 0.705$^{**}$; p = .000). This suggests that in order to achieve successful organizational performance, regulatory agencies should make sure that FinTech firms compete on an even playing field. In this regard, a serious policy challenge addressing legislative restrictions and competitiveness should be developed. Bains and Wu (2023) claim that if advancements aren't adequately monitored and regulatory action isn't done, the usage of fintech could cause potential issues with market behavior if it expands quickly outside of the regulated industry. Each and every customer, whether they be corporate or individual, must be confirmed to be who they say they are, and any questionable conduct must be found and notified.

### 4.5 Regression Analysis

Regression analyses are typically carried out for one of two reasons: to estimate the probable value of the dependent variable for individuals for which certain data about the explanatory variables exists, or to calculate the impact of a specific explanatory variable on the dependent variable.

#### 4.5.1 Model Summary

The degree of correlation between the model's parameters and the dependent variable is shown in the model summary table. The linear relationship between the variable of interest's observed and model-predicted values is known as the coefficient of correlation with multiple variables, or R.

**Table 4. 12: Model Summary**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|---|---|---|---|---|
| 1 | .930[a] | .864 | .852 | .33424 |

a. Predictors: (Constant), Regulatory Polices. , Big Data Analytics Technologies Dynamics , Big data characteristics, Big data components Dynamics

The model summary of the model indicates that 85.2percent in Financial Performance of Fin tech firms can be explained using Big Data Analytics Technologies Dynamics , Big data characteristics, Big data components Dynamics and regulatory policies. According to Cheng and Garg (2014), the model summary table indicates how strongly the dependent variable and the model are related. It displays the coefficient of determination in particular, which is a useful tool for assessing a linear regression model's goodness of fit.

### 4.5.2 ANOVA

ANOVA can help you test the overall effect of a categorical predictor, or the interaction effect between two or more categorical predictors, on the outcome.

**Table 4. 13: ANOVA[a]**

| Model | | Sum of Squares | Df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 32.031 | 4 | 8.008 | 71.681 | .000[b] |
| | Residual | 5.027 | 45 | .112 | | |
| | **Total** | **37.058** | **49** | | | |

a. Dependent Variable: Financial Performance

b. Predictors: (Constant), Regulatory Polices. , Big Data Analytics Technologies Dynamics, Big data characteristics, Big data components Dynamics

The main effects model specified that by applying Big Data Analytics Technologies Dynamics, Big data characteristics, Big data components Dynamics and the regulatory policies, the model is significant at 0.05 alpha level (4,45) =71.681; $p<0.05$. According to Jahan (2017), modeling the effects of continuous variables is possible with ANOVA.

A set of covariates, or predictor variables, x1, x2, xp, and an outcome variable, y, are modeled linearly using linear regression.

### 4.5.3 Coefficients.

Regression coefficients are statistical parameters that are used to determine the mean functional interaction among variables. Regression coefficients quantify the association between a predictor variable and the outcome by providing estimates of the population's unknown characteristics.

**Table 4. 14: Coefficients[a]**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | | | Collinearity Statistics | |
|---|---|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | t | Sig. | Tolerance | VIF |
| 1 | (Constant) | -.078 | .324 | | -.241 | .811 | | |
| | Big data characteristics | .451 | .136 | .428 | 3.307 | .002 | .297 | 3.372 |
| | Big data components Dynamics | .319 | .143 | .288 | 2.237 | .030 | .300 | 3.334 |
| | Big Data Analytics Technologies Dynamics | .269 | .123 | .239 | 2.181 | .034 | .414 | 2.416 |
| | Regulatory Polices. | .415 | .075 | .497 | 5.538 | .000 | .374 | 2.674 |

The study indicates that big data characteristics significantly influence Financial Performance (β=0.428; p=0.002). This suggest that volume, speed, variety and reliability of big data influences Financial Performance. According to Nejjari and Aamoum (2021), big data is still changing how several businesses operate, most notably financial services. Big data analytics is being adopted by numerous financial organizations in an effort to stay competitive. utilizing a variety of data sources, complicated algorithms can conduct trades utilizing both structured and unstructured data.

According to the study, Big data components Dynamics significantly contribute to Financial Performance of Fin tech firms (β=0.288; p=0.030). It suggests that organizations might obtain a competitive edge by integrating big data component

dynamics. Barham (2017) claims that big data offers a practical means of comprehending the contemporary world and converting the flood of data into insights and knowledge that can be used to improve decision-making and, in the case of enterprises, gain a competitive edge over rivals.

Thirdly, the study established a significant effect of Big Data Analytics Technologies Dynamics on Financial Performance of Fin tech firms (β=0.239; p=0.034). This shows that large data analytics can provide value and present an alternate perspective in decision-making by strengthening predictive analysis and modeling methodologies. According to Khatri et al. (2021), technological breakthroughs and purpose-digital architecture are driving banking sector developments worldwide. technological and data-driven factors have powered the Fintech industry, which has developed at the confluence of the powerful finance sector and cutting-edge technological area, particularly the field of digital technology.

Finally, it was established that Regulatory policies, significantly contributes to Financial Performance at 0.05 alpha level (β=0.**497; p**=0.000). This shows that this variable is significant in determining Financial Performance of Fin tech firms According to Arkanuddin et al. (2021), a regulatory framework for fintech is essential since it can reduce operational risk. Second, it adds new components to the FinTech ecosystem that the sector needs.

### 4.5.4 The Model Equation

The general model for the study is provided using the empirical equation:

$Y = \alpha + \beta 1X1 + \beta 2X2 + \beta 3X3 + \beta_4 X_4 + e$

$Y = -0.078 + (\beta 1 * 0.428) + (\beta 2 * 0.288) + \beta 3 * 0.239) + \beta 4 * 0.497.$

The model specifies that a unit increase big data characteristics increases Performance of Fintech Firms by 0.428 units. Similarly, unit increase in Big data components

Dynamics causes a positive 0.288 unit increase in Performance of Fintech Firms. Thirdly, a unit increase in Big Data Analytics Technologies Dynamics causes a positive deviation in Performance of Fintech Firms by 0.239 units. Finally, Regulatory Polices is the major determinant factor that influences up to 0.497 positive deviations on performance.

# CHAPTER FIVE

# SUMMARY, CONCLUSION, AND RECOMMENDATIONS

## 5.1 Introduction

A major overview of any research study often conveys the text's main points succinctly and clearly. In addition, the research process requires a conclusion and recommendations. The research's findings are interpreted in the conclusions. It responds to the problem's articulation and accepts or rejects the hypothesis. Summary, concussion, and suggestions constitute the three components that collectively make up this chapter. Finally, recommendations for further investigation will be outlined.

## 5.2 Summary of the Study

### 5.2.1 Big Data Characteristics Dynamics and Performance of Fintech Firms

Understanding big data's characteristics can help one recognize its use and applications more effectively. Based on the findings, a significant portion of participants approved that the availability of big data enables businesses to make accurate outcome predictions and, as a result, improve decision-making. As a result, it can be inferred that big data analytics enables businesses to make conclusions founded on data and analysis instead of assumptions or hunches. Examining enormous amounts of data may reveal trends and patterns that are not immediately apparent at a smaller scale.

Due to its ability to introduce a whole new technique of knowledge production within businesses, bigdata is crucial in the current environment. The finding exhibited that the bulk of the participants approved that real-time business and market forecasting and monitoring are made possible by big data's speed. This suggests that large data analytics might enhance worth and provide an alternate viewpoint in decision-making by refining forecasting inquiry and modeling methodologies.

Leveraging big data analytics dynamics by firms to advance their operational effectiveness is widely recognized. The vast majority of respondents determined that very actionable insights are produced by the variety of big data that is the outcome of aggregation from numerous sources. This shows that the finding of massive amounts of data could produce unexpected and incredibly beneficial knowledge.

It has been asserted that the analysis of large amounts of data can improve an organization's effectiveness and profitability. The findings showed that a portion of the participants agreed that risks associated with big data reliability are swiftly reduced by making complex decisions in advance of unforeseen events and hazards. As a result, it seems that the main motivation behind big data and analytics risk management is ensuring the dependability and correctness of the data being studied. It was found that the big data characteristics dynamics affected company performance.

### 5.2.2 Big Data Components Dynamics and Performance of Fintech Firms

Components of big data Dynamics is crucial in figuring out how well businesses work. The finding of this research showed that a significant portion of participants were of the opinion that big data is gathered from social media, transactional data, and machine data are used by the businesses to derive the value. Similar conclusions were reached by the participants, who confirmed that big data from social media, transactional data, and machine data are used by businesses to generate insights.

Any organization's vision is to improve customer satisfaction with its services and goods. The research’s conclusions revealed that a relatively substantial percentage of participants agreed that big data acquired from social media, transactional data, and machine data are used by businesses to create better customer experiences. In order to

increase customer satisfaction, this recommends that a company should use big data analytics.

Data analytics are a useful tool for improving operational effectiveness. The majority of the study's participants agreed that the firms use data from social media, transactional data, and machine data to determine operational effectiveness. So, it stands to reason that innovation is the most essential tool for firms to keep their competitive edge.

The operational and strategic effects of big data analysis could have a substantial influence on the company's business process innovation. The majority of respondents to the study agreed that big data from social media, transactional data, and machine data are used by businesses to improve their products. As a result, organizations could obtain a competitive advantage by implementing huge data component dynamics.

It is widely believed that big data analytics are known to be a catalyst for companies to shift the way they approach innovations. The study found that respondents affirmed that organizations use big data from social media, transactional data, and machine data to generate discoveries and inventions. As a result, big data is playing an increasingly significant role in business initiatives. The three most crucial success factors in big data-driven product development approaches, according to some academics, are the development of an innovation ecosystem, linkages with customers, and the acceleration of the innovation process.

Big data has the ability to enhance a variety of procedures, including revenue collection. The panelists agreed that big data is gathered from social media and leveraged by businesses to create new revenue streams, along with transactional data and machine data. This demonstrates the value of utilizing big data analytics to increase income and maintain the competitiveness of forms.

In conclusion, decision-supporting competitive pricing indices for the banking sector can be produced using big data analytics. The respondents to this study confirmed that big data from social media, transactional data, and machine data are used by the businesses to create competitive price matrices. It has been proven that the dynamics of data components have an influence on the profitability of fintech firms.

### 5.2.3 Big Data Technologies Dynamics and Performance of Fintech Firms

It is generally acknowledged that the technological features of big data are believed to enhance overall business performance when used. According to the study's findings, respondents agreed that artificial intelligence has largely contributed significantly to automation, wise decision-making, and improved customer experience. It has also helped manage repetitive tasks and help solve complex problems, which improves the overall performance of the business. This is a fantastic chance for firms to increase income and their consumer base.

The professionals working in the metaverse digital ecosystem are believed to have more confidence in and trust in one another because to blockchain technology. The study's participants reportedly concurred that block chain technologies have significantly increased trust, security, transparency, and traceability of shared data across business networks and have brought about new efficiencies with cost savings. It appears from this that blockchain technology can allow secure digital signatures and timestamping, making it far more difficult for thieves to falsify or forge digital assets.

Hadoop is a highly scalable storing solution that can significantly increase corporate productivity. The results showed that participants generally agreed that the Hadoop environment facilitates trend identification, manages multidimensional and multivariate data, and restricts human interaction, all of which enhance corporate

performance. Given that Hadoop is open-source and uses inexpensive commodity technology, offering a cost-efficient paradigm, this means that businesses may considerably enhance their operations. The conclusion demonstrated that the dynamics of large data analytics technologies have a major influence on the success of Fintech organizations.

### 5.2.4 Regulatory policies and performance of Fin tech

In any business setting, regulatory rules are essential since they offer the legal framework for the operationalization of Fin tech enterprises. According to the study, most participants felt that the absence of a regulatory framework for fintech negatively impacts their performance. This shows that the digital revolution of monetary services is bringing about a number of key strategy issues addressing Regulation borders, productivity, and ensuring an equal playing field.

Fintech adoption has been seen to increase effectiveness and widen access to financial services. Respondents to this study concurred that the performance of the fintech industry is significantly impacted by data privacy regulations. This indicates that when FinTech firms provide services that are similar to those provided by banks but do so while doing so while under to less severe rules, there may be potential threats to financial stability. Regulations are seen to have a substantial influence on financial technology performance

### 5.2.5 Financial Performance of Fin Tech Firms

Big Data helps FinTech firms quickly grow their customer base by providing insights into potential customers and their purchasing habits. Participants in this research agreed that large data analytics is responsible for revenue increase. This implies that FinTechs

and large corporations could utilize BDA to get an advantage over rivals by analyzing data from diverse sources.

Big data analytics have been discovered to more effectively increase an organization's revenue. As a consequence, the participants agreed that large data analytics is mostly responsible for the increase in profit. A portion of respondents also said that large data analytics was accountable for ROA rise. Overall, it was shown that the study variables had a significant impact on financial performance This implies that big data analytics help a business increase performance, efficiency, profit, or the capacity to make more strategically informed decisions.

### 5.3 Conclusion

The study concludes that the availability of big data enables businesses to make accurate outcome predictions and, as a result, improve decision-making. Actionable insights are produced by the variety of big data that is the outcome of aggregation from numerous sources. Moreover, Big data is gathered from social media, transactional data, and machine data are used by the businesses to derive the value. Thirdly, artificial intelligence has, to a large extent, contributed significantly to automation, wise decision-making, and improved customer experience. Furthermore, the block chain technologies have significantly increased trust, security, transparency, and traceability of shared data across business networks and have brought about new efficiencies with cost savings. Finally, the absence of a regulatory framework for fintech negatively impacts their performance. Furthermore, the performance of the fintech industry is significantly impacted by data privacy regulations.

## 5.4 Recommendations

1. It is recommended that businesses need to use big data analytics to analyze the variety of big data from multiple sources and offer actionable insights to enhance performance and to remain more competitive.
2. For organizations to generate value, it is advised that they collect data from social media, transactional data, and machine data.
3. It is recommended that firms focus on artificial intelligence and block chain technologies in data mining. This provides a more reliable insight into the current market and consumer characteristics, enhancing their efficacy.
4. According to the report, regulatory bodies should ensure that FinTech firms operate on an equal playing field in order to achieve excellent organizational performance. In this regard, it is important to establish a significant policy concern addressing legislative limitations and competitiveness.

## 5.5 Suggestion for Further Research

The summary of the model indicated that 85.2percent in Financial Performance of Fin tech firms was explained by the independent variables, hence 14.8 percent was explained by external factors that were not considered in the study. It's suggested that further research should be done to establish the external factors that explained the variation of 14.8 percent in the financial performance of the FinTech firms.

## REFERENCES


Berman, J. J. (2013). *Principles of big data:preparing ,sharing and analyzing complex information,Newness.*

Bigdataframework. (2018). *Formulating a Big Data Strategy.*

Blind, K. (2012). *The influence of regulations on innovation:* A quantitative assessment for OECD countries.

Bryant, S. (2020). *How many start ups fail and why.*

Businessresearch. (2019). *Fintech Global Market.*

Chen, H., Chiang, R. H., & Storey, V. C. (2012). *Business intelligence and analytics*: From big data to big impact. MIS quarterly,, 36(4).

Chu, M. (2016). Regulatory Policy. In: *Farazmand A. (eds) Global Encyclopedia of Public Administration, Public Policy, and Governance*. Springer.

Constantiou, I. D., & Kallinikos, J. (2015). *New Games, New Rules: Big Data and the Changing Context of StrategyJ. Inf*. Technol. 2015, 30, 44–57.

Davenport, H. (2006). Competing on Analytics. *Harvard Business Review.*

EY. (2019). *Fintech in Sub-Saharan Africa.*

Ghasemaghaei, M., Hassanein, K., & Turel, O. (2017). *Increasing firm agility through the use of data analytics*:The role of fit. Decis. Support Syst. 101, 95–105.

Gillon, K., Brynjolfsson, E., Mithas, S., Griffin, J., & Gupta, M. (2014). Business analytics: *Radical shift or incremental change?* Commun. Assoc. Inf. Syst. 2014, 34, 287–296.

Goo, J. J., & Heo, J. Y. (2020). *The Impact of the Regulatory Sandbox on the Fintech Industry, with a Discussion on the Relation between Regulatory Sandboxes and Open Innovation*. Journal of open innovation.

Kiron, D. (2017). *Lessons from Becoming a Data-Driven Organization. MIT sloan management review,*58(2).

Labib, M., & Banna, M. (2019). *Using Big Data Analytics to Develop Marketing Intelligence Systems for Commercial Banks in Egypt.* MATEC Web of Conferences.

Lee, D. K., & Teo, E. G. (2015). Emergence of FinTech and the LASIC Principles. *Journal of Financial Perspectives.*

Lee, S. M. (2020). Impact of Big Data Analytics Capability and Strategic Alliances on Financial Performance. *Springer*. doi:https://doi.org/10.1007/978-3-030-46828-6_6

Lexology. (2019). *Fintech in Kenya.*

Marr, B. (2020). *What is a big data strategy.*

Micheni, E. M. (2015). Diffusion of Big Data and Analytics in Developing Countries. *The internatinal Journal of Engineering and Science*.

OECD. (2021). *Regulatory Policy and Governance.*

Popovič,, A., Hackney, R., Tassabehji, R., & Castelli, M. (2018). The impact of big data analytics on firms" high value business performance. Information Systems Frontiers, 20(2), 209-222.

Press, G. (2013). A very short history of big data. *Forbes* .

Schroeck, M., Shockley, R., Smart, J., Romero, D., & Tufano, P. (n.d.). The real-world use of big data. IBM Glob. Bus. Serv. 2012, 12, 1–20.

Shevlin, R. (2019). Why Fintech Start up fails. *Forbes*.

Slack, E. (2012). What is big data.

Srivastavaa, U., & Gopalkrishnan, S. (2015). Impact of Big Data Analytics on Banking Sector: Learning for Indian Banks. *ScienceDirect*, 643-652.

Syekei, J., Indokhomi, D., & Issaias, A. (2021). *Kenya: Chambers "Fintech 2021" Global Practice Guide.*

Tabesh, P., Hasani, S., & Mousavidin, E. (2019). Implementing big data strategies:A managerial perspective. *Bushor*.

Vardanyan, A. (2018). *Why fintech startups fail. 5 mistakes and conclusions.*

Vidgen, R., Shaw, S., & Grant, D. B. (2017). Management challenges in creating value from business analytics. European Journal of Operational Research, 261(2), 626-639.

Wamba, S. F., Gunasekaran, A., Akter, S., Ren, S. J., Dubey, R., & Childe, S. J. (2017). Big data analyticsand firm performance: Effects of dynamic capabilities. Journal of Business Research, 70, 356-365. .

## APPENDICES

### Appendix I: Questionnaire

This questionnaire is meant to collect information on **"BIG DATA ANAYLTIC DYNAMICS AND PERFORMANCE OF FINTECH FIRMS IN NAIROBI COUNTY, KENYA".** Kindly respond. The information provided will be confidential. Please do not write your name anywhere.

**Section 1: Demographic Information**

1. Respondents" gender

a) Male ☐

b) Female ☐

2. How old are you? (Years)

i. 20 years and below ☐

ii. 20-30 ☐

iii. 30-40 ☐

iv. Over 50 ☐

3. What is your educational background?

a) Less than Secondary school …….

b) College …….

c) Undergraduate …….

d) Postgraduate …….

4. How long have you worked in this firm?

i. less than 5 years ☐

ii. Between 6 to 10 years ☐

iii. Between 11 to 15 years ☐

iv. More than 15 years ☐

5 What are your responsibilities inside the company?

……

……

6. Please indicate the company operation period.

4 years or less ☐ between 4 and 9 years ☐

Between 10 and 19 years ☐ between 20 and 49 years ☐

50 year or more ☐

**Section 2: Big data characteristics**

This part is to investigate the impact of big data analytics characteristics on the performance of Fin Tech businesses in Kenya's Nairobi County. Please use the scale to indicate the level to which your company has realized the following contributions because of big data characteristics: "(1) – No Extent", "(2) – Minimal Extent", "(3) – Moderate Extent", "(4) – Large Extent", and "(5) – Very Large Extent" Please use the symbol (✓) to indicate what is proper.

Key: NE- No Extent; Min. E- Minimal Extent; ME- Moderate Extent; LE- Large Extent; VLE- Very Large Extent

| s/no | Statement | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|
| 1 | Volume of big data enables business to predict outcome accurately, allowing better decisions to be made. | | | | | |
| 2 | The speed of big data allows for real-time business and market forecasting and monitoring. | | | | | |
| 3 | The variety of big data which is as a result of accumulation from multiple sources produces highly actionable insights. | | | | | |
| 4 | The reliability of big data Risks are quickly mitigated by making complicated judgments in advance of unforeseen occurrences and dangers. | | | | | |

**Section 3: Big Data Components**

This part is to investigate the role of big data components in the performance of Fin Tech enterprises in Nairobi County, Kenya. Please use the scale to show the level to which your organization has realized the following contributions due to the use of big data components: "(1) – No Extent", "(2) – Minimal Extent", "(3) – Moderate Extent", "(4) – Large Extent", and "(5) – Extremely Large Extent" **Kindly indicate with (√) as appropriate.**

| s/no | Statement | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|
| 1. | Big data is obtained from social media, transactional data, and machine data are used by the firms to derive the value. | | | | | |
| 2. | Big data is obtained from social media, transactional data, and machine data are used by the firms to derive insights. | | | | | |
| 3. | Big data is obtained from social media, transactional data, and machine data are used by the firms to derive better customer experience. | | | | | |
| 4. | Big data is obtained from social media, transactional data, and machine data are used by the firms to derive operational efficiency. | | | | | |
| 5. | Big data is obtained from social media, transactional data, and machine data are used by the firms to derive product improvement. | | | | | |
| 6. | Big data is obtained from social media, transactional data, and machine data are used by the firms to drive innovations and inventions. | | | | | |
| 7. | Big data is obtained from social media, transactional data, and machine data are used by the firms to derive new revenue streams. | | | | | |
| 8. | Big data is obtained from social media, transactional data, and machine data are used by the firms to derive competitive pricing matrixes. | | | | | |

**Section 4: Big Data Analytics Technologies**

This part is to investigate the role of big data analytics technologies in the performance of Fin Tech firms in Nairobi County, Kenya. Please use the scale to indicate the level to which your firm has received each of the following benefits as a result of implementing big data analytics technologies:

"(1) – No Extent", "(2) – Minimal Extent", "(3) – Moderate Extent", "(4) – Large Extent", and "(5) – Extremely Large Extent"

**Kindly indicate with (√) as appropriate**

| s/no | Statement | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|
| 1 | Artificial intelligence has contributed significantly toward automation, smart decision making, and enhanced customer experience, manage repetitive task and help solve complex problems which aids in general performance of the business. | | | | | |
| 2 | Block chain technologies has contributed to increase trust, security, transparency and traceability of shared data across business networks and delivers new efficiencies with cost savings. | | | | | |
| 3 | Hadoop Ecosystem helps to easily identify trends, handles multi-dimensional and multi-variety data, limits human interventions which improves the performance of the business. | | | | | |

**Section 5: Regulatory Polices.**

This section investigates the effect/s of regulatory rules on the association among big data analytics and Fin Tech company performance in Nairobi County, Kenya. Please use the scale to indicate the extent to which regulatory rules have impacted your organization:

"(1) – No Extent", "(2) – Minimal Extent", "(3) – Moderate Extent", "(4) – Large Extent", and "(5) – Extremely Large Extent" Kindly indicate with (√) as appropriate.

| s/no | Statement | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|
| 1 | Lack of regulatory framework for Fintech affects their performance | | | | | |
| 2 | Data protection regulatory affects Fintech performance. | | | | | |

**Section 6: Financial Performance**

This part is to look into the role of big data analytics in the performance of Fin Tech firms in Nairobi County, Kenya. Please use the scale to indicate the level to which your firm has received each of the following benefits as a result of implementing big data analytics technologies:

"(1) – No Extent", "(2) – Minimal Extent", "(3) – Moderate Extent", "(4) – Large Extent", and "(5) – Extremely Large Extent" Kindly indicate with (√) as appropriate

| s/no | Statement | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|
| 1 | Revenue growth is attributable to big data analytics. | | | | | |
| 2 | Profit increase is attributable to big data analytics. | | | | | |
| 3 | ROA growth is attributable to big data analytics. | | | | | |

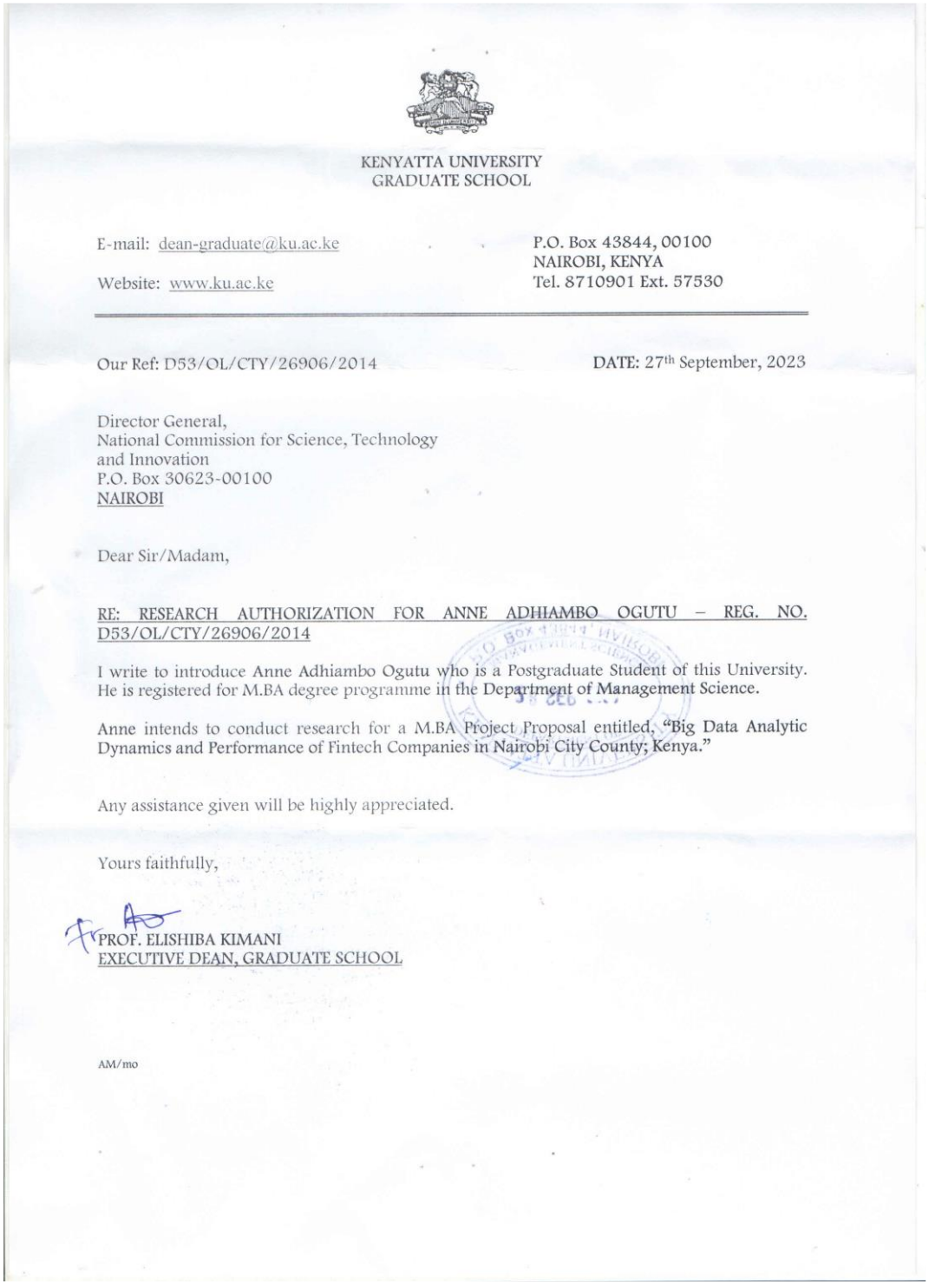
**Appendices II: Fin Tech Listing**

| | |
|---|---|
| 1 | Okoa cash loan |
| 2 | Fuliza Branch |
| 3 | Investor |
| 4 | MB-Kash |
| 5 | Ipesa |
| 6 | Kuwazo |
| 7 | Fair money |
| 8 | Lendy loans |
| 9 | Umba (Formerly Mkopo kaka) |
| 10 | Uba pesa |
| 11 | Okoa 0% interest loan |
| 12 | Kash pesa loan |
| 13 | Fair Branch: Instant and accu |
| 14 | Top loan lender |
| 15 | Hi Cash Quick and Easy loans |
| 16 | Loans Chap Chap |
| 17 | Izwa loans |
| 18 | Fintech loans |
| 19 | Imarika credit |
| 20 | Pesa pata |
| 21 | Okolea Quick loan |
| 22 | M-Kopay |
| 23 | Eazzy loans |
| 24 | Fululiza senti |
| 25 | Stawika |
| 26 | Tajiri |
| 27 | Loanika |
| 28 | Saidia |
| 29 | Okoa pesa pap |
| 30 | Kenya Quick loan market |
| 31 | Instant cash-reliable money |
| 32 | Pezesha |
| 33 | Mkopa |
| 34 | Tuma pesa |
| 35 | Duta |
| 36 | Saidia |
| 37 | Aspira |
| 38 | Phedha Loans |
| 39 | Branch International |
| 40 | Kashway |
| 41 | Tala |
| 42 | Opesa |

| | |
|---|---|
| 43 | Okash |
| 44 | Okolea |
| 45 | Lion Cash |
| 46 | i-save mobile |
| 47 | Lendi Mkopo |
| 48 | Kopa jirani |
| 49 | Flash pesa |
| 50 | Zash loan |
| 51 | Zenka |
| 52 | Kava personal loan |
| 53 | Kua |
| 54 | Palm loan Kenya |
| 55 | Afrika loans |
| 56 | Mhsiko chap |
| 57 | Kopokopo |
| 58 | Kenya Quick loan shop |
| 59 | Senti |
| 60 | Hikash |
| 61 | Mkash Bee |
| 62 | Pesa flash |
| 63 | Peso loans |
| 64 | Carbon |

**Source: The Sunday Standard April, (2020)**

## Appendix III Research Authorization



KENYATTA UNIVERSITY
GRADUATE SCHOOL

E-mail: dean-graduate@ku.ac.ke
Website: www.ku.ac.ke

P.O. Box 43844, 00100
NAIROBI, KENYA
Tel. 8710901 Ext. 57530

Our Ref: D53/OL/CTY/26906/2014

DATE: 27th September, 2023

Director General,
National Commission for Science, Technology
and Innovation
P.O. Box 30623-00100
NAIROBI

Dear Sir/Madam,

RE: RESEARCH AUTHORIZATION FOR ANNE ADHIAMBO OGUTU – REG. NO. D53/OL/CTY/26906/2014

I write to introduce Anne Adhiambo Ogutu who is a Postgraduate Student of this University. He is registered for M.BA degree programme in the Department of Management Science.

Anne intends to conduct research for a M.BA Project Proposal entitled, "Big Data Analytic Dynamics and Performance of Fintech Companies in Nairobi City County; Kenya."

Any assistance given will be highly appreciated.

Yours faithfully,

PROF. ELISHIBA KIMANI
EXECUTIVE DEAN, GRADUATE SCHOOL

AM/mo

## Appendix IV: Research Permit

REPUBLIC OF KENYA

NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Ref No: 843403

Date of Issue: 07/October/2023

**RESEARCH LICENSE**

This is to Certify that Ms.. Anne Adhiambo Ogutu of Kenyatta University, has been licensed to conduct research as per the provision of the Science, Technology and Innovation Act, 2013 (Rev.2014) in Nairobi on the topic: BIG DATA ANALYTIC DYNAMICS AND PERFORMANCE OF FINTECH COMPANIES IN NAIROBI CITY COUNTY,KENYA. for the period ending : 07/October/2024.

License No: NACOSTI/P/23/30151

843403

Applicant Identification Number

Director General
NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Verification QR Code

NOTE: This is a computer generated License. To verify the authenticity of this document, Scan the QR Code using QR scanner application.

See overleaf for conditions