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SOCIAL MEDIA ANALYTICS AND MARKET PERFORMANCE OF COMMERCIAL BANKS IN NAIROBI CITY COUNTY KENYA

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Abstract: **The ability of a firm to generate business insight from social media data and exploit it to improve business processes and decision-making is vital for market performance. However, it is a challenge for many commercial businesses in Kenya to analyze and use this data appropriately, for instance, big data. Social media has become more innovative and interactive compared to conventional print or audio/video media. However, due to unstructured and dispersed nature of this data, it is difficult to extract information that is meaningful and applicable. The firms' inability to utilize social media analytics in generation of business insights has limited their efforts to take advantage of this new marketing channel to make sound business decisions. This study aimed to establish the influence of opinion mining on the market performance of commercial banks in Nairobi City County. The banking sector has drawn new entrants into the market and heightened industrial rivalry, this has forced the subsector to be proactive in adoption of improved technology to remain relevant in the market. The foundation of this study has been anchored on two major theories; resource-based theory, and dynamic capability theory. The target respondents were selected through a stratified sampling technique. Structured questionnaires were used and a pre-test for validity and reliability was conducted. The target population for the study was 39 licensed commercial banks in Nairobi City County and a sample of 156 respondents from these banks were involved. Descriptive and inferential statistics were utilized to analyse the research data. The analysis techniques comprised means, standard deviation, regression statistics, and beta-coefficients. Multiple regression analysis was employed in this study to determine the influence of opinion-mining variable on the dependent variable. The findings indicate that, opinion mining, have had a significantly positive effect on market performance of commercial banks in Nairobi City County, Kenya. The study concludes that Opinion mining helps in keeping trends and events that act as warning signs for supply-chain risks. The study recommends that banks should establish high performance standards, and their employees should strive to meet or exceed them.**

Keywords: **commercial businesses, social media data, commercial banks, market performance, marketing channel.**

1. INTRODUCTION

1.1. Background to the Study

Globally, the banking sector is faced with a myriad of challenges ranging from financial, administrative, massive data to stiff competitive environment. Business firms are overwhelmed by big data and barely comprehend the usage in achieving business results (Evans, 2012). Therefore, the need to manage massive data overload through finding various methods of getting value and insight for them to be competitive in the marketplace. The rapid expansion of social media with approximately over two billion users globally, has therefore made organizations, to re-evaluate how they engage with their clients on the social channel (Emarketer, 2013). Besides, today's customers have higher expectations of the companies since social media has allowed them to co-create marketing content and share ideas, feedback, and opinions. These exchanges of thoughts between customers and firms aid potential customers in pre-purchase judgments and offer

organizations a special chance to comprehend what their clients, rivals, and major opinion leaders are saying (Huang and Croft, 2009).

The emergence of big data has been brought about by technological innovation, which has caused disruptions in various sectors. Goh (2002), assert that technology innovation, is the process that results in technological advancements. The notion of the creation, use, and diffusion of knowledge and know-how is linked to the idea of technical innovation. The innovation process includes both product and process ideas. It is an outcome of cooperation to integrate knowledge and talents when vying for market share in the foreseeable (Hamel, 2002). Mikalefa, Krogstiea,and Pavlouc, (2020), argue that significant advancements in methods and technology for data storage, processing, and visualization have been observed with the rapid development of data volume, velocity, and diversity. Gupta & George (2016) contend that empirical research on the potential modest benefits of big data analytics is still in their infancy, and there is a dearth of knowledge regarding the techniques by which such investments in data analytics may result in competitive performance.

Social Media Analysis can be used to identify influencers or opinion leaders, and by looking at their network of followers, one can determine their reach (Mirbabaie and Zapatka, 2017). Additionally, the role behavior is examined to understand the factors that contribute to a crucial role in the network and the impacts those factors have on the network as a whole (Bhattacharya et al., 2015). It serves many applications in enterprises and is widely used (Kleindienst, et al., 2015). It might be helpful for spotting emerging communication patterns or matters that might result in uncontrollable negative criticism (Bi, et al., 2014). To obtain continuing assessments based on live social media data, businesses utilize social media reports and dashboards. Social media analytics are applied to support decision-making processes (Tsou *et al.*, 2015).

Opinion mining is analyzing a content string to determine whether message content has a favorable or negative attitude (Tiwari, et al., 2019). Opinion mining addresses issues such as recognizing objective from subjective propositions. In addition, it involves determining the sources and points of various suggestions communicated by various social media platforms' views and news. Hsu (2012) postulates that social media serves as a hub for customers, a repository for consumer data, and a vehicle for information diffusion in order to create markets. According to Vasquez and Velez (2011), social media is viewed as a strategic communication partner since it offers businesses fresh and different ways to interact with their stakeholders. Even though there are more massive data sets accessible via the internet and on social media platforms, data mining is still seen as an intellectual exercise in the banking industry. Kenyan commercial banks are in the middle of the data collection procedure. Banks use Customer Relationship Management (CRM) system that captures clients' data for analysis and prediction and extract data on portfolio but not useful for analyzing dependent connections or understanding whether behavior is causative (Miller and Nyauncho, 2015). The study highlights the aim of a bank engaging in data mining is to help them in adapting more proactive position in pursuing and serving customers.

1.1.1. Market Performance

The market performance of any organization is determined by how well customers are satisfied, degree of product innovation, market share, sales volume, growth rate and profitability. Campbell (2012); states that financial performance is one of the methods of evaluating the outcomes of a company's efforts in financial terms. It encompasses the firm's results. Market performance of commercial banks is measured through the use of various financial metrics such as return on capital employed, revenue and profit growth (Whittington & Kurt, 2001). Echeboka (2014); states that measuring tools that are employed by businesses include benchmarking, financial ratio analysis and performance against budgets. Ebaid (2009) used ratios like ROE and EPS to measure performance. Donald and Delno (2009) identified three financial performance measures: ROA, ROE, and ROS. ROA measures a firm's ability to acquire deposits and invest in profitable investments, while ROS represents corporate profit after tax. According to Muia's (2017) research on the impact of financial innovations on Kenya's commercial banks' financial performance, variances in return on assets can be ascribed to online banking, mobile banking, and electronic financial transfers. The research also found that the return on assets was positively impacted by online banking, mobile banking, and electronic money transfers

1.1.2. Commercial Banks in Kenya

The banking sector is composed of 46 commercial banks and 8 representative offices of foreign banks (CBK, 2022). Banking industry in Kenya in-between stage in the process of data collection. The banks utilize in-house CRM systems, which captures comprehensive clients' information for purpose of analysis and prediction (Miller & Nyauncho, 2015). The banks could further utilize big data from social media to complement the existing information in CRM system. The

perception of social media analytics has proved to drive growth and sustainability as indicated in South Africa banking sector (Manzira & Bankole 2018). The banking sector in Kenya has gone through momentous progress regarding deposits, loan assets, profitability, and service offerings because of the adaptation of technology. The banking sector in Kenya currently has a total asset base of Kenya shillings 6.5 trillion, loan portfolio of Kenya shillings 3.6 trillion and deposits of Kenya shillings 4.2 trillion (CBK, 2022). This growth has drawn new entrants into the market and heightened industrial rivalry (Muiruri & Ngari, 2014). This has forced the subsector to be proactive in adoption of improved technology to remain relevant in the market. Parasuman *et al.*, (2001) opines that being insufficiently market-oriented and customer needs as well as wide and bloated branch network have portrayed the banking industry with great inefficiency, which has contributed to low financial performance.

The emergence of new technologies, social media, and delivery processes, and competition have placed pressure on commercial banks to apply innovative analytical skills to remain competitive and achieve high market performance. Mugambi (2006) outlines the research that has been done on the banking sector's commitment to providing excellent customer service. The effect of social media analytics on market performance for commercial banks, however, hasn't been thoroughly researched in Kenya. The study's aim is to determine how social media analytics and the market performance of commercial banks on the Kenyan market in Nairobi City County relate to one another.

1.2. Statement of the Problem

Parasuman et al. (2001) portrayed that the banking sector lacks a strong focus on the market and provides services with little consideration for the needs of the clientele, both of which influences the market's performance. Commercial banks must be managed efficiently and effectively by always pursuing financial and service innovations in order to keep up with the unpredictable competitive environment, globalization, economic changes, laws, and privatization. The embracing and success of social media have presented the Kenyan banking industry with significant challenges as well as opportunities. They have embraced social media in service promotion, strategy and policy formulation. However, the commercial banks need to be more customer oriented, communicative and innovative for growth and sustainability (Manzira and Bankole, 2018). This calls for banking sector to be proactive in information technology adoption to remain relevant in the competitive environment.

The main obstacles faced by banks are poor quality data (unstructured big data) and lack of qualified and experienced staff in managing such data and their unwillingness to use the relevant tactics. The local banking sector have embraced internal data mining through CRM system and are not utilizing external sources such as big data from social media and internet. (Miller and Nyauncho, 2015). This could complement the data sources and make prediction and insights more accurate and to minimize challenges that are inherent in effecting strategic marketing and financial decisions. However, there are drawbacks to utilizing social media as an informational resource. The quantity and disorganized nature of the data, which is dispersed across a number of social platforms, makes it difficult to mine and analyze pertinent data (Dai *et al.,* 2011). Furthermore, Agarwal et al., (2010) contend that many problems, such as spam and context-specific data, impair the quality of social media data, making it more challenging to gather. It is more crucial for the business to use intelligence from numerous places than it is to actually find and gather it (Rollins *et al.,* 2011). Many companies are struggling with utilizing social media data due to inexperience and inadequate knowledge of data analytics. In addition, firms are overwhelmed and struggling with big data to utilize it for business performance. The study on social media analytic and intelligence by Zeng *et al.,* (2010) conducted in China centered on the general aspect of social media analytics and the study can be replicated in focusing on specific method of analysis. The study by Yuheng et al., (2019) on generating business intelligence through social media analytics-the study used a text analytic framework, that is, elastic-net regression that used different sources of social media data generated by different stakeholders in measuring brand personality, which may yield different results through use of analytical tools. However, the study has gaps because it dwelt on data analysis and focused not on performance metrics and furthermore, the focus was China and therefore, this can be replicated here in Kenya since such studies are scarce.

1.3. Objectives of the Study

1.3.1. General Objective

The study's general objective was to ascertain the influence of opinion mining and market performance of commercial banks in Nairobi City County in Kenya.

1.3.2. Specific Objectives

i) To evaluate the effect of opinion mining on market performance of commercial banks in Nairobi City County, Kenya.

1.3.3. Hypotheses

The following research hypotheses were intended to be tested;

i. **H_{01}** There is no significant effect of opinion mining on market performance of

Commercial banks in Nairobi City County, Kenya;

H_{a1} Opinion mining has a significant effect on the market performance of commercial banks in Nairobi City County, Kenya;

2. LITERATURE REVIEW

2.1. Introduction

The chapter discusses the theoretical and empirical literature on market performance of commercial banks in Kenya and Social Media Analytics. The chapter highlights market performance indicators, theories, and independent variable. The section also presents a literature review summary, empirical review and a conceptual framework establishing the correlation between independent and dependent variables, including the moderating variable.

2.2. Theoretical Literature Review

The study was underpinned on the subsequent theories; Dynamic Capability Theory and Resource-Based Theory. These theories have been chosen on the virtual support on social media data and analysis.

2.2.1. Dynamic Capability Theory

The theory was postulated by Teece and Pisano (1994), which is an advancement of Resource-Based View (RBV) of the firm (Samsudin and Ismail, 2019). Dynamic theory, according to Teece, et al. (2010), explores how businesses coordinate, create and reorganize their internal and external firm-specific skills into new capabilities that suit their tumultuous environment. The preparedness (strengths) of the company to respond to its external environment (threats), specifically in a tumultuous market condition, governs the dynamic capabilities of the company. Developing dynamic talents is crucial for gaining a competitive advantage (Houghand, 2004).

The Dynamic Capability Theory concurs that entities with substantial capacities will outdo firms with less significant abilities. Pavlou and Sawy (2006) argue that dynamic capabilities assist businesses reconstitute present practical realities so that they can transform and realign as per the needs of the clients. Teece (2007) argues that dynamic capacities include sensory opportunities and analytical systems to learn, feel, filter, shape, and calibrate circumstances. Secondly, it encompasses seizing opportunities through existing enterprise structures, procedures, designs, and incentive systems that are within the organization. Lastly, it comprises controlling (minimizing) dangers and turning them into opportunities, which requires the constant reconfiguration of some physical and intangible assets. This theory of dynamic capabilities is central to this study.

The operating business environment has greatly changed due to fast and flued technology disruptions, complexity in social cultural dynamics, change in consumer behavior and stiff competitive environment. To respond to the dynamic turbulent business environment, the insights and intelligence generated through social media analytics are remodeled to develop new organizational capabilities and strengths. The theory anchors the study as it discusses how an organization may utilize their resources and abilities to scan and seize opportunities in the outside world while deftly avoiding threats. The organization has a set of capabilities such as human skills (capital) and technology, which they must utilize always in analyzing data from the internet to gain insight that will help in formulating marketing strategies and attaining competitive advantage.

2.2.2. Resource-Based Theory

This theory put forth by Grant (1996), agrees that enterprises can be seen of as collections of assets that are heterogeneously appropriated across industries, according to Amit and Schoemaker (2003). Sanchez (2004) asserts that evaluating a company's internal virtues and flaws should focus on the following areas: the value and scarcity of a

resource, the ease with which a capability or resource can be copied, and the organization's capacity to use its resources, all of which must be heterogeneous. Recognizing resource attributes that are essential to establishing a sustained competitive advantage is the Resource Based View (RBV) framework's primary goal (Peteraf, 2003). This study benefits from the Resource Based Theory since it clarifies how the firm might use its resources to gain a competitive advantage. An organization is blessed with a variety of resources, which they must make use of to thrive in a cutthroat and ever-changing environment. Data analytics software, qualified staff, financial resources, and supportive management are a few of an organization's critical resources. The corporation must employ resources effectively and efficiently to get a competitive edge in the market, according to the theory. According to the notion, the company can use its resources to mine and analyze the large amounts of data from social media so as to gain important insights and create smart business plans.

2.3. Empirical Review

Pyrczak and Bruce (2011), asserts that an empirical review helps develop understanding of the body of literature already in existence. This section will focus on a review of the literature in the topic field.

2.3.1. Opinion Mining and Market Performance

According to Laaksonen and Pääkkönen's (2020) study on the correlation between automation and interpretation, social media analytics are determined by the requirement to present organizations with understandable and appealing results. Social media analysis employs data visualization to maximize the commercial value of data. The study suggested that organizations are using the automated analysis to understand the conversion of their online stakeholders to make the right decision and derive insights. Opinion mining is the primary method utilized by numerous trend analysis and social media surveillance programs, according to Pang and Lee's (2008) study on opinion mining and sentiment analysis. Opinion mining extracts user opinions at any level of granularity from text sources automatically utilizing cognitive linguistics, natural-language processing, and other text analytics methods. The study employed methodologies and procedures that directly support opinion-oriented information-seeking systems and strategies that concentrate on the brand-new issues brought about by sentiment-aware applications. Tapscott and Williams (2006) studied how mass collaboration changes everything claimed that a vital element in fostering innovation is a close evaluation of client communications, feedback, and opinions. The information gathered from social media on products, customers, vendors, opponents, or services supports a variety of tasks, such as anticipating stock market movements, recognizing market trends, looking into product faults, consumer complaints, and addressing crises.

This will also help the banks in converting prospects into buyers, knowing opinions either positive or negative towards products purchased. Parveen *et al*. (2016), suggested that social media use is positively correlated with business performance in regards to cost savings, stronger customer relationships, and easier access to information. Fan & Gordon (2016) investigated the effectiveness of Social Media Analytics and discovered that these tools give businesses useful knowledge that aids in understanding their surroundings, suppliers, rivals, and general business trends.

3. RESEARCH METHODOLOGY

3.1. Introduction

The chapter discusses the research methodology to be employed in the study. The research design, demographics, sampling strategy, data collection techniques, research processes and data analysis techniques are all described in this chapter.

3.2. Research Design

This study will utilize a descriptive research design, which entails learning the how, who, when, and where of a case in order to provide a summary (Mugenda and Mugenda, 2003). Previous studies, like Ngumi (2013), employed a descriptive research design to examine the impact of innovation on the financial performance of commercial banks in Kenya. Saunders, et al., (2012), suggests that descriptive research design is suitable where researcher desires to deliver a precise depiction of circumstances and make right interpretations about the intended audience. The chosen research design will yield statistical information for decision-making by various stakeholders.

3.3. Target Population

Cooper and Schindler (2014) states that; "these are the summation of all the factors from which the researcher hopes to derive conclusions". Saunders *et al*. (2012), asserts that population is the whole set of occurrences or objects from which a sufficient sample is selected for the study. Thus, target population can also be referred to as the whole group of people, items, or organizations; which share certain observable characteristics which generalization of results can be done (Mugenda and Mugenda, 2003). The study will have both accessible and target population. Johnson (2012) defined the term "accessible population" as the individuals' collective which the research's conclusions can be utilized. The target population, according to Scheiber and Scheiber (2014), is the group of actors who are most adversely impacted by the issue that initiatives are aiming to solve. The 39 commercial banks in Kenya with central bank licenses (*listed in appendix II: List of Commercial Banks in Kenya*) make up the target audience for this study, or those instances that have the vital information. A sample of 156 participants from various cadres, including top, middle, and low-level management, will be drawn from this population.

Table 3.1: Target Population

Categories	Frequency	Percentage
Top-level Manager (branch managers)	39	25%
Middle-level manager (departmental heads)	39	25%
Low-level manager/employees	78	50%
Total	**156**	**100%**

Source; Researcher, 2022

3.4. Sampling Design

This study targets the 156 respondents from 39 banks and it will be adequate for generalization purposes. A sampling plan outlines how to take a sample from a certain demographic. Kothari (2004), states that sampling design is the process the researcher would employ while selecting the objects for the sample. The sample picked needs to be accurate in terms of the target population as a whole. Cooper & Schindler (2003) argued that statistical generalization requires a sample size of around 30 units. Respondents will be chosen by stratified random sampling and questionnaires will be given to them. Strata will be created for the population based on the bank's various levels of management. The strata are chosen to categorize a population into significant groups that are pertinent to the study question. According to Kothari's (2005) argument, when target population members are taken into account, the sample truly represents the target population. This fulfills the requirement for accuracy and effectiveness in the research's completion. Saunders et al., (2009) assert that sampling is appropriate when it is not feasible to survey the entire population due to limitation of budget and time. Kariuki (2013) examined data from five commercial banks and asserted that these difficulties are typically shared by all commercial banks.

3.5. Data Collection

The study will employ primary data to achieve its objective. Primary data will be acquired through surveys. Miles et al., (2014), argued that data collection is the process of obtaining and analyzing information on particular variables in a predetermined methodical way that enables the interviewee to think of important questions and foretell the anticipated result. All objectives will be covered by the closed-ended study questionnaire. Through the use of a drop and pick later procedure, the anonymity strategy will be applied to ensure that the questionnaires provide more accurate and trustworthy results.

3.5.1. Reliability of Research Instrument

Test-retest reliability, an alternate type of reliability, and internal consistency are three ways that dependability can be quantified (Shukla, 2008). By posing questions consistently and uniformly, the study's objective will be accomplished and the reliability of the questionnaire will be increased. The Cronbach's Alpha score will be employed when testing internal reliability. This method calculates the mean reliability coefficient estimates for all feasible methods to divide a cluster of objects in half, and the satisfactory Alpha value ranges from 0.7 to 0.95. (Shukla, 2008). Standardizing the circumstances under which the measurement is conducted, in accordance with Kothari (2004), increases reliability.

Table 3.2: Results of Reliability Tests

Research Variable	Cronbach's Alpha Value (α)	Comment
Opinion Mining	0.803	Reliable
Market Performance	0.786	Reliable
Average Score	**0.7945**	**Reliable**

Source: Pilot Study (2023)

The results of reliability test as illustrated in Table 3.2 show that opinion mining and market performance had Cronbach alpha values of, 0.803 and 0.798 respectively. The average alpha coefficient for every individual variable was way above 0.7 which satisfies the recommendation made by Mugenda and Mugenda (2003) that an alpha coefficient score of above 0.7 shows that the instruments are highly reliable.

4. RESEARCH FINDINGS AND DISCUSSIONS

4.1 Introduction

This chapter presents analysis of data collected from the field. The response rate is given first followed by background information of the respondents, descriptive statistics, diagnostic tests and inferential statistics results.

4.2 Response Rate

The study achieved a response rate of 96.2%, which is sufficient for drawing conclusions and making generalizations from the sample, as recommended by Mugenda and Mugenda (2003).

Table 4.1: Response Rate

Category	Frequency	Percentage
Response	150	96.2
Non response	6	3.8
Total	**156**	**100**

Source: Survey Data (2023)

Out of the 156 questionnaires administered, only 150 of them were returned resulting to a response rate of 96.2% and a non-response rate of 3.8%.

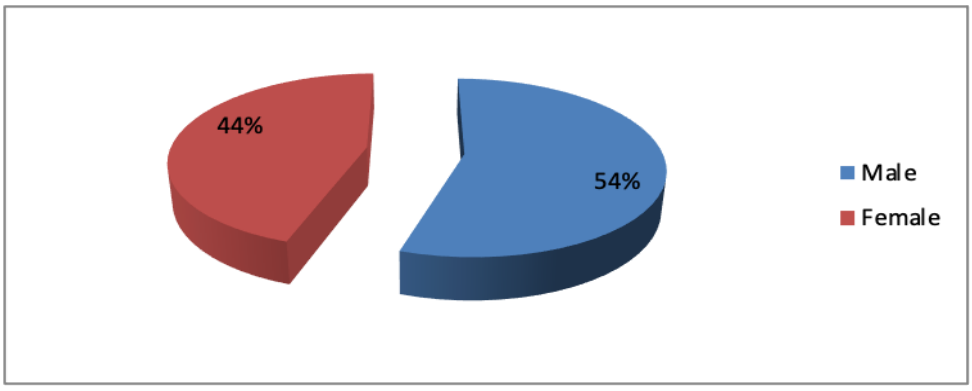
4.3. General Information

The general information of the respondents was based on the respondents' gender, work experience, age bracket and department, highest level of education and bank rating which is discussed as follows:

4.3.1 Gender

The following figure describes the gender representation of the respondents in the study.

Figure 4.1: Respondent's Gender



Source: Survey Data (2023)

As seen in figure 4.1, the gender representation of the respondents was taken into consideration by having males at 54.0% and females 44.0%.

4.3.2 Work Experience

The following Table describes the work experience representation of the respondents in the study.

Table 4.2: Work Experience

Years	Frequency	Percentage
Below 1	12	8.0
2 to 5	45	30.0
6 to 10	30	20.0
Above 10	63	42.0
Total	**150**	**100**

Source: Survey Data (2023)

As illustrated in Table 4.2, majority (42.0%) of the respondents had a work experience of above 10 years, 30.0% ranging between 2 to 5 years, 20.0% between 6 to 10 years and 8.0% below 1 year. This is an indicator that most of the respondents involved in the study had stayed in the field of marketing for a long period of time and therefore, they could respond to the study objectives effectively as they had acquired enough experience in the marketing field.

4.3.3. Age Bracket

The following figure describes the age bracket representation of the respondents in the study.

According to the results in Figure 4.2, respondents aged between 31 to 40 years accounted majority at 43.3%, those aged between 20 to 40 years accounted for 11.5%, 27.3% represented those respondents aged between 40 to 30 years, 22.7% aged 41 to 50 years and those aged above 50 years accounted for 6.7%. The difference in age indicates high level of experience pointing to a varied diversity of the team resulting to a diverse way of solving the problems.

4.3.4. Department

The following Table describes the department representation of the respondents in the study.

Table 4.3: Department

Department Name	Frequency	Percentage
Consumer banking	39	26.0
Corporate banking	18	12.0
Information technology	23	15.3
Marketing	70	46.7
Total	**150**	**100**

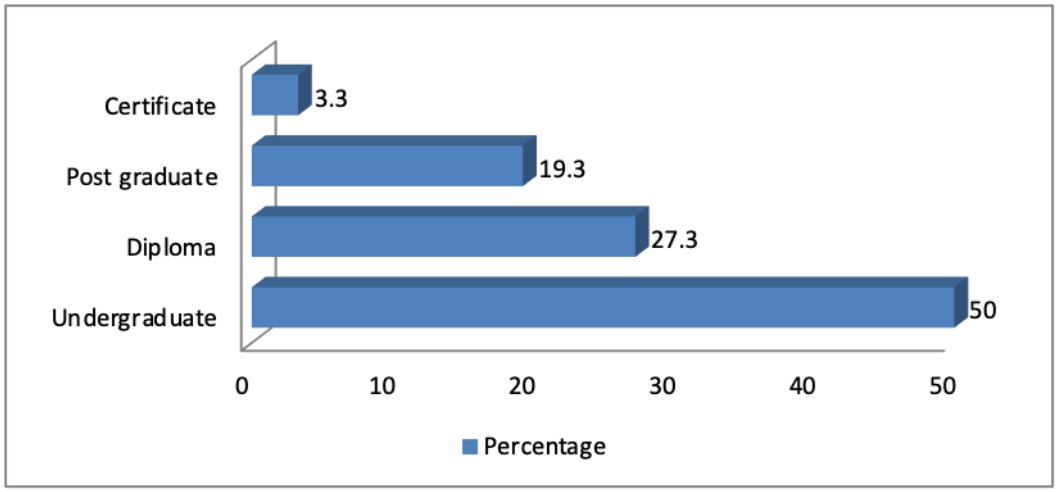
Source: Survey Data (2023) In reference to *Table 4.3*, majority (46.7%) of the respondents came from marketing department, 26.0% consumer banking, 15.3% from information technology and 12.0% from corporate banking.

In reference to *Table 4.3*, majority (46.7%) of the respondents came from marketing department, 26.0% consumer banking, 15.3% from information technology and 12.0% from corporate banking.

4.3.5. Highest Level of Education

The following Figure describes the highest level of education representation of the respondents in the study:

Figure 4.2: Respondent's Highest Level of Education



Source: Survey Data (2023)

Majority of the respondents in the study had attained higher level of education. Figure 4.2 shows that majority of the respondents, 50.0% had attained undergraduate level of education, 27.3% were Diploma holders, 19.3% had post graduate degree and 3.3% had attained certificate.

4.3.6. Bank Rating

The following Table describes the bank rating by the respondents in the study.

Table 4.4: Bank Rating

Rating scale	Frequency	Percentage
Excellent	68	45.3
Very good	76	50.7
Good	4	2.7
Poor	2	1.3
Total	**150**	**100**

Source: Survey Data (2023)

The results presented in *Table 4.4* indicate that majority (50.7%) of the respondents rated the bank very good, 45.3% excellent, 2.7% good and 1.3% poor. This indicates that the banks had a good performance due to effective implementation of Social Media Analytics.

4.4. Results of Descriptive Statistics

Descriptive statistics included Mean (M) and Standard Deviation (SD) to present the results of the quantitative data that were generated using Statistical Package for Social Sciences (SPSS). The results are presented below;

4.4.1. Opinion Mining

The study sought to evaluate the effect of Opinion Mining on market performance of commercial banks in Nairobi City County, Kenya. The following are the descriptive results in Table 4.5:

Table 4.5: Opinion Mining

Statement	Mean (M)	Standard Deviation (SD)
The rate of profitability has been influenced by opinion mining	4.42	0.58
The bank's sales volume has increased due to usage of Opinion Mining	4.49	0.51
An increase in revenues has been attributed by adoption of Opinion Mining	3.69	1.31

Opinion Mining has an impact on customer satisfaction	3.31	1.69
Opinion Mining by the banks has greatly influenced customer loyalty	4.24	0.76
Opinion Mining has general influence on market performance	4.51	0.49
The rate of adoption of Opinion Mining in bank is recommendable	4.59	0.41
Aggregate score	4.18	0.82

Source: Survey Data (2023)

The results in Table 4.5 show that the respondents agreed that Opinion Mining affects market performance of commercial banks in Nairobi City County, Kenya as shown by the aggregate score of 4.18 and standard deviation of 0.82. According to Laaksonen and Pääkkönen's (2020) study on the correlation between automation and interpretation, Social Media Analytics are determined by the requirement to present organizations with understandable and appealing results.

The respondents strongly agreed on the statements that the rate of adoption of opinion mining in bank is recommendable (M=4.59, SD=0.41) and that it has general influence on market performance (M=4.51, SD=0.49)-according to Pang and Lee's (2008) study on opinion mining and sentiment analysis. Opinion Mining extracts user opinions at any level of granularity from text sources automatically utilizing cognitive linguistics, natural-language processing, and other text analytics methods.

The respondents agreed on the statements that the bank's Sales volume has increased due to usage of Opinion Mining (M=4.49, SD=0.51). Also, the rate of Profitability and Customer loyalty have been greatly influenced by Opinion Mining by the banks (M=4.42, SD=0.58) and (M=4.24, SD=0.76) respectively. An increase in Revenues has been attributed to the adoption of Opinion Mining as well (M=3.69, SD=1.31). Tapscott and Williams (2006) studied how mass collaboration changes everything-claimed that a vital element in fostering innovation is a close evaluation of client communications, feedback and opinions.

The respondents indicated neutral on the statement Opinion Mining has an impact on customer satisfaction (M=3.31, SD=1.69). Parveen *et al*. (2016), suggested that social media use is positively correlated with business performance in regards to cost savings, stronger customer relationships, and easier access to information.

4.4.2. Market Performance

The study sought to investigate the Market Performance of commercial banks in Nairobi City County, Kenya. The following are the descriptive results in Table 4.6.

Table 4.6: Market Performance

Statement	Mean (M)	Standard Deviation (M)
The level of adaption of Social Media Analytics influences profitability of commercial banks	3.91	1.09
The Social Media Analytics has effects on customer loyalty.	4.36	0.64
Social Media Analytics has influence on the revenues of commercial banks.	4.00	1.00
Sales volume is linked to Social Media Analytics	4.53	0.47
There is favorable correlation between Social Media Analytics and Market Performance.	4.60	0.40
Aggregate Score	4.28	0.72

Source: Survey Data (2023)

The results in Table 4.6 show that the respondents agreed that Social Media Analytics affects market performance of commercial banks in Nairobi City County, Kenya as shown by the aggregate score of 4.28 and standard deviation of 0.72. According to Hyvönen (2007), operational indicators like innovation rate, market share, and customer happiness are used to gauge non-financial performance. Attainment of Market Performance depends on how successfully the organization's goals and objectives are attained.

The respondents strongly agreed that there is favorable correlation between Social Media Analytics and market performance and sales volume is also linked to Social Media Analytics (M=4.60, SD=0.40) and that they owned and used a credit card (M=4.53, SD=0.47). Al-Tamini (2009), states that a firm's success includes three distinct areas of outcomes: *its financial performance*, *its effectiveness in the marketplace* (sales, market share, etc.), and *its shareholder return* (total shareholder return, economic value-added, etc.).

The respondents agreed that the Social Media Analytics has effects on Customer Loyalty (M=4.36, SD=0.64), and they had purchased stocks in the last five years. Social Media Analytics has influence on the Revenues of commercial banks (M=4.00, SD=1.00) and the level of adoption of social media analytics influence profitability of commercial banks (M=3.91, SD=1.09). According to Muia's (2017) research on the impact of financial innovations on Kenya's commercial banks' financial performance, variances in return on assets can be ascribed to online banking, mobile banking, and electronic financial transfers. The research also found that the return on assets was positively impacted by online banking, mobile banking, and electronic money transfers.

4.5. Results of Diagnostic Tests

The study carried out diagnostic tests which involved normality test, multicollinearity test and autocorrelation test.

4.5.1. Normality Test

Normality test in this study was done using Shapiro-Wilk test. The results of the test for all the variables of the study are as indicated in Table 4.7.

Table 4.7: Normality Test

	Shapiro- Wilk test	
	Statistic	Significance
Opinion Mining	0.790	0.095
Market Performance	0.810	0.072

Source: Survey Data (2023)

The null hypothesis for normality tests stated that the data was not normally distributed. Test results in Table 4.7 indicate that the p values for all the variables were greater than 0.05. Therefore, the residuals were not significant at 95% confidence level, leading to rejection of the null hypothesis and conclusion reached that the data in this study was normally distributed and thus the data could be relied upon to make conclusions about the population.

4.5.2. Multi-Collinearity Test

To determine the degree of collinearity among the parameters of the regression models, a multicollinearity test was performed using Value Inflation Factor (VIF) and Tolerance values. The results are presented in Table 4.8.

Table 4.8: Multicollinearity Test

Variables	**Collinearity Statistics**	
	Tolerance	**VIF**
Opinion Mining	0.93	1.08

Source: Survey Data (2023)

The research variables Tolerance and VIFs have values larger than 0.10 and less than 10, respectively, as indicated in Table 4.8. Based on these findings, it was determined that the study variables of interest are free of biases that could impact the researcher's decision due to multi-collinearity.

4.5.3. Autocorrelation Test

Autocorrelation implies that the error terms of the empirical models are not independent of each other. The Durbin-Watson test was used in this study to test whether the data suffer from autocorrelation problem or they are correlated across time. The results were as shown in Table 4.9 below.

Table 4.9: Autocorrelation Test

	Durbin Watson
Opinion Mining	1.828
Market Performance	3.520

Source: Survey Data (2023)

The results as presented in Table 4.9 indicate that the Durbin Watson values ranged from 1.828 to 3.520. According to Garson (2012), Durbin Watson statistics range from zero to four where scores closer to 2, that is between 1.5 and 2.5 indicate independent observations, and values closer to 0 or 4 indicate greater positive or negative autocorrelation respectively. Therefore, using Garson (2012) recommendations, it was concluded that the residuals of the model are not autocorrelated hence inferential statistics can be conducted on the study data.

4.6. Results of Inferential Tests

Inferential statistics were done using correlation analysis and regression analysis techniques. These are presented as follows:

4.6.1. Correlation Analysis

Table 4.10: Correlation Analysis

		Opinion Mining	Performance
Performance	Pearson Correlation	.804**	1
	Sig. value (2-tailed)	.000	
	N	83	83

Source: Survey Data (2023)

The results as presented in Table 4.10 show that the Pearson r value of News Analytics, Opinion Mining, , 0.804 with a significance value of 0.000 which is less than 0.05. This shows that News Analytics, Opinion Mining, was strongly correlated with performance of commercial banks in Nairobi City County, Kenya.

4.6.2. Regression Analysis

The results of regression analysis that sought to establish the extent to which independent variables influenced the dependent variable are presented as follows.

Table 4.11: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.809[a]	.731	.723	1.916

Source: Survey Data (2023)

The results from the model summary as presented in Table 4.11 show that the value of R was at 0.809 which is closer to 1. This means that the independent variables and the dependent variable were strongly related. The R square value was 0.731 which was closer to 1. Thus, the model's increased explanation of variability. The value of the adjusted R square was 0.723 which shows that there was a variation of 72.3% of the performance of commercial banks in Nairobi City County, Kenya, which was due to changes by opinion mining. This also indicates a gap of 27.7% that represent other variables not studied.

Table 4.12: Analysis of Variance

Model		Sum of Squares	Df	Critical Value	F	Sig.
1	Regression	231.001	4	57.750	169.473	.001
	Residual	50.624	145	.349		
	Total	281.625	149			

Source: Survey Data (2023)

The results as presented in Table 4.12 shows that model was statistically significant since the F statistical value was 156.473 which was greater than the critical value of 57.750. In addition, the level of significance was 0.000 less than 0.05.

Table 4.13: Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
	(Constant)	.510	.114		4.447	.000
	Opinion Mining	.836	.364	3.197	2.297	.000

Source: Survey Data (2023)

The results as presented in Table 4.13 show that the performance of commercial banks in Nairobi City County, Kenya, would be at 0.510 without the effect of Opinion Mining. The regression coefficient of opnion mining was 0.836 meaning that a unit increase in opinion mining would increase performance of commercial banks in Nairobi City County, Kenya by 83.6%.

Based on this finding the final regression equation was as follows:

$Y = 0.510 + + 0.836X_1$

Where Y = Employee performance

X_1= Opinion Mining

4.6.3. Test of Hypotheses

The first research objective sought to evaluate the effect of Opinion Mining on Market Performance of commercial banks in Nairobi City County, Kenya. A hypothesis that 'Opinion Mining has no significant effect on market performance of commercial banks in Nairobi City County, Kenya' was tested. The study revealed that Opinion Mining variable had a positive and significant effect on the employee performance of commercial banks in Nairobi City County, Kenya, as shown by t-value of 2.297 with a significance level of 0.000 thus rejecting the hypotheses. Tapscott and Williams (2006) studied how mass collaboration changes everything claimed that a vital element in fostering innovation is a close evaluation of client communications, feedback and opinions.

5. SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter covers the summary, conclusions, recommendations and suggestions for further studies.

5.2 Summary of Findings

The study's general objective was to ascertain the influence of Social Media Analytics and Market Performance of commercial banks in Nairobi City County in Kenya. The Social Media Analytics that was applied is Opinion Mining. Data was collected using questionnaire. Analysis of quantitative data was done using descriptive statistics and inferential statistics. The following is the summary of findings;

The research objective sought to evaluate the effect of Opinion Mining on Market Performance of commercial banks in Nairobi City County, Kenya. The study established that Opinion Mining had a positive significant effect on Market Performance of commercial banks in Nairobi City County, Kenya. The rate of adoption of Opinion Mining by banks is recommendable because it has a general influence on market performance. The bank's sales volume, the rate of profitability and customer loyalty have all increased.

5.3. Conclusions of the Study

The study concludes that Opinion Mining helps in keeping trends and events that act as warning signs for supply-chain risks. Social media channels would be used for monitoring critical keywords or phrases associated with the suppliers' names or specific sourcing markets. Such a system can help continuously update suppliers' and sourcing markets' risk profiles and even trigger contingency plans in case of, say, bankruptcies or natural disasters. It can also track real-time customer feedback and sentiment about a brand, product/service in ways to improve its features and customer experience.

5.4. Recommendations of the Study

The following recommendations were advanced:

i. Develop analytical models to detect risks, assess impact, manage financial and strategic implications, streamline operations, track consumer behavior, enhance customer experience, and reward shareholders.

ii. Banks should regularly gather dependable insights from customers and the public through monitoring news, social media, blogs, forums, and online reviews. They should also track their brand's progress, follow conversations about their products, and consider redesigning based on feedback from surveys, customer service tickets, and online reviews.

iii. Banks should actively gather and analyze customer feedback to enhance customer experience, establish a cyclical feedback collection process, and prioritize customer satisfaction through improved service, product redesign, and preventing crises.

5.5. Limitations of the Study

The current study's design has limitations, much like the majority of other research studies that have been carried out by others. The following key limitation was encountered while carrying out this research; -

Our study may be opinion biased due to use of one single data collection method. The main tool for data collection was through use of questionnaires; substantial information would also have been obtained through Key Inquiry Interviews (KIIs) and Focus Group Discussions (FGDs). This study has therefore relied on the qualitative data collection and analysis.

5.6. Suggestions for Further Studies

The research suggests that further studies should be done that focus on other Social Media Analytics. These are those that have not been studied to address that gap of 27.7% which was found in the regression results to account for other variables not studied. The research further suggests that a different study be carried out on Social Media Analytics and market performance of other financial institutions such as Micro Finance Institutions (MFIs) and Savings and Credit Cooperatives (SACCOs).

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