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ARTIFICIAL INTELLIGENCE APPLICATION AND MARKETING EFFECTIVENESS OF ONLINE SHOPPING BUSINESSES IN NIGERIA

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Abstract

This study investigates the relationship between artificial intelligence application and marketing effectiveness of online shopping firms in Nigeria. The objectives of the study were to investigate the influence of data mining and machine learning on sales volume. Employing the cross-sectional survey design, the study implemented the quasi-experimental research design. A research questionnaire was developed in accordance with the research questions and distributed to the management level employees and IT staff of these online businesses, who comprised the target population of the study. Each of the twenty-four (24) e-commerce companies chosen for this study received five (5) questionnaires from the researcher. Following data cleansing, an overall total of 102 copies of the disseminated questionnaire were recovered. For this analysis, we utilised SPSS Version 25.0 and the PPMCC to test our hypothesis over these copies. The findings indicated that there exist a positive and significant correlation between the volume of sales and data mining, as well as a positive and significant correlation between the volume of sales and machine learning in Nigerian online purchasing firms. The study recommended that; the data mining activities of the online shopping firms should be standardized to ensure that online shoppers can access desired products and services without any challenges or shortcomings; machine learning should be integrative enough to help both the online business and their customers maintain mutual exchange of information and directives that will not be detrimental to the online shoppers and in extension, the organization.

Keywords

Artificial Intelligence, Marketing Effectiveness, Data Mining, Machine Learning, Sales Volume

1.1 Introduction

Information and communication technological breakthroughs have brought about significant changes in societal norms and everyday routines around the world (Ovidiu et al, 2024). This transformation in particular, has revolutionized consumer's behaviour as well as their purchase habits, bringing about a drastic change on the previously established brick and mortar enterprises. Furthermore, the rise in internet technology has ushered in a new era of social media integration, which has now become an essential part of day-to-day existence. Due to the rapid growth of internet and social media technologies, electronic commerce has increased at an exponential rate (Madanchian, 2024). In today's globalised digital world, consumers may fulfil their needs and desires regardless of their location, thanks to unparalleled access to a vast array of products and services.

In recent times, artificial intelligence (AI) has been increasingly prevalent in online and social commercial platforms because of its ability to increase sales productivity and meet evolving customer demands. By utilising user data, AI-powered website developers expedite the process of developing interactive websites, cutting expenses and development time (Ma & Sun, 2020). A notable example of the dominant influence of AI in effecting enquiries and purchases can be seen in the simulated in online purchases from Amazon, which offers personalised experiences and customer-centric search (Lassane, 2017).

1.2 Objectives of the Study

The general objective of this research is to examine the effect of artificial intelligence application on marketing effectiveness of online shopping firms in Nigeria. The specific objectives include to;

- i. Examine the effect of data mining on the sales volume of online shopping firms in Nigeria,
- ii. Investigate the impact of machine learning on the sales volume of online shopping firms in Nigeria.

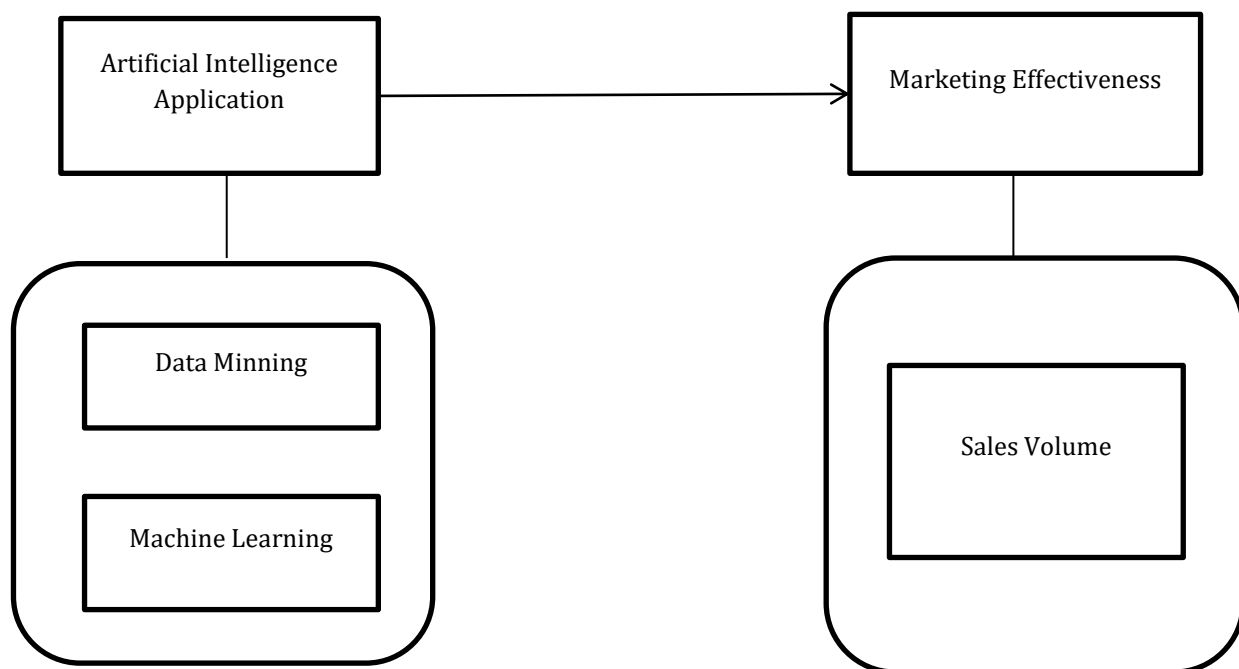
1.3 Research Hypotheses

H0₁ There is no significant relationship between data mining and sales volume of online shopping firms in Nigeria.

H0₂ There is no significant relationship between machine learning and sales volume of online shopping firms in Nigeria.

2.0 Literature Review

2.1 Conceptual Framework



Source: Conceptualized by the researcher (2025)

Figure 2.1: Conceptual Framework on Artificial Intelligence Application and Marketing Effectiveness of online shopping firms in Nigeria.

2.1.1 Artificial intelligence

In computer science, "artificial intelligence" (AI) refers to software that can learn to understand and act like humans. Utilising the given data, AI has developed a new intelligent computer that mimics human thought, response, and task performance. AI can do complex and precise tasks such as robotics, picture and audio recognition, natural language processing, problem solving, etc. The term "artificial intelligence" (AI) refers to a broad category of computer programs and systems that can learn and perform tasks often associated with human intelligence. Once accustomed to standard business practices, these technologies can learn, act, and perform just like people. By teaching robots to think like humans, it helps businesses save time and money (Pengyu Liu, 2024).

The goal of AI research is to give computers the ability to think and reason like humans. For a wide variety of companies, it ushers in extraordinary opportunities. The imminent arrival of AI is a source of both excitement and fear for several industries. Utilising AI, machines and other technology may simulate human intelligence in many ways, including how we think and act. Some have even referred to this development as the "next stage" of production. A large portion of the population holds the view that ML and AI will magically fix all of our problems. One area where AI can be helpful is in problem prediction. AI has the potential to give rise to whole new markets, goods, and ecosystems. AI refers to systems that model human intelligence. The ability to learn, reason, and, most crucially, fix one's own mistakes could all be instances of this (2010).

One characteristic of AI is its capacity to analyse, comprehend, and make decisions. This dataset of existing users has several applications, including user behaviour prediction and market forecasting. Companies worldwide use this strategy, which is also known as data forecasting, to fine-tune their sales and marketing tactics. Most AI marketing applications nowadays rely on ML. Personalised product concepts, churn rate or customer lifetime value prediction, improved customer group creation, and identifying the optimal marketing channels are all areas that benefit from it (Madanchian, 2024).

2.1.1.1 Data Mining

In congruent with (Kalu, Ogungbangbe & Nto, 2017), data mining is the process of evaluating big data sets in search of patterns and correlations that may aid organisations in finding solutions to issues and making better choices. Problems with implementation continue, even though academics have proposed models that prove data mining and continual auditing are beneficial (Genter et al., 2018). In congruent with Kalu and Ogungbangbe (2024), expert system software may be created for any issue that requires selecting one solution from several options, particularly those involving logical stages. This means that expert systems may be useful in any area where specific knowledge is required. Due to the growing complexity and possibility of manipulating consumer behaviour via online systems and technical gadgets, data mining has become more important in auditing. Data mining has grown in importance in the e-commerce sector, in congruent with Kalu and Ogungbangbe (2024), since it makes it easier to assess massive volumes of market and customer data for the attest function.

2.1.1.2 Machine Learning

A subfield of computer science known as "machine learning" (Isa et al., 2016; Dagunduro et al., 2023) investigates how to program algorithms to draw conclusions from massive datasets by spotting patterns and correlations. Numerous domains have found uses for this area, including as economics, biology, medicine, and teaching. Although their definitions differ, scholars refer to "machine learning" as the capacity of a computer to learn from previous data and apply that knowledge to predict future data. Building mathematical models from data samples and assessing how successfully these models estimate market and consumer behaviour data in the future is what machine learning is all about, in congruent with Akinadewo (2021) and Owonifari, Awotomillusi, igbekoyi, and Dagundiwo (2023).

Among machine learning's numerous real-world uses is evaluating pertinent data to forecast results in comparable contexts. Predicting why a customer may display different behavioural patterns over time under certain situations is another possible application of this information. Online trading and e-commerce stand to gain a great deal from machine learning and other recent tech developments like big data and blockchain, which will allow for more efficient analysis of massive amounts of consumer and market data and better automation overall. In congruent with Kalu and Nwokah (2020) and Chen et al. (2018), big marketing online service providers are already utilising machine learning to automate manual operations, detect any issues or mistakes, and engage clients as they buy online. By analysing client data, machine learning algorithms may spot trends in buying habits. An excellent illustration of this is the utilisation of clustering algorithms to the problem of consumer behaviour segmentation and regression algorithms to the problem of customer churn prediction. Online stores may better understand their customers' tastes and preferences and adjust their advertising campaigns appropriately by analysing consumer behaviour utilising machine learning.

2.1.2 Marketing Effectiveness

The degree to which marketing activities have contributed to the attainment of organisational objectives is the definition of marketing effectiveness in congruent with Ambler et al. (2001). It is the skill with which managers shop around for the best deals so that they may reap both immediate and distant benefits, in congruent with Solcansky and Simberova (2010). Spending wisely to maximise return over time.

An increasing number of academics and professionals in the business world have taken an interest in the idea of marketing effectiveness in recent years. Marketing activities are progressively becoming a vital aspect of the corporate environment nowadays. In congruent with O'Sullivan et al. (2008) and Solcansky & Simberova (2010), these acts definitely impact the current and future results of an organisation. The only way to justify very large marketing expenditures is to evaluate marketing goal achievement, which means quantifying the influence of marketing instruments on customer behaviour and financial results. Therefore, it is required to monitor and, more importantly, analyse these activities. It is clear how important it is to evaluate marketing tools effectively since only then can a company go on to enhance their marketing efforts further.

Marketing tool effectiveness is therefore defined as an integral part of the marketing organization's performance.

2.1.3 Artificial Intelligence and Marketing Effectiveness

AI marketing offerings in e-commerce apps have a major influence on consumers' propensity to buy. AI can tailor discounts, special offers, and product suggestions to each consumer by analysing their past purchases and other data (Wang, 2018). In congruent with Kotler (2016), personalised marketing campaigns improve customer experience, make offers more relevant, and make consumers feel like they need to act quickly to make a purchase. Chatbots powered by AI provide instantaneous customer support and assistance, which in turn influences purchase intentions. These tools handle consumer issues and make buying a breeze. To summarise, online shopping apps that include AI marketing offers enhance the entire shopping experience by driving consumer engagement and influencing buy intentions.

AI has the potential to greatly improve marketing by changing the way companies engage with consumers and generate revenue (Zhang, Lv, & Zhang, 2019). Here are a few important benefits:

Data Analysis and Personalisation: AI algorithms are capable of processing and analysing a vast quantity of data, such as customer behaviour, preferences, and demographics. Insights like this provide marketers provide more relevant and engaging experiences to consumers by allowing them to personalise their message and offerings (Ma & Sun, 2020).

Automation and Efficiency: Customer assistance and ad targeting are two examples of repetitive and time-consuming processes that may be streamlined with the help of AI-powered automation. While human agents are free to concentrate on higher-level strategy, chatbots and virtual assistants powered by AI can respond quickly and accurately to consumer enquiries. Ad targeting is another area where AI algorithms excel; by determining which channels and audiences provide the best results, they boost campaign efficiency and return on investment.

Enhanced Recommendation Engines: According to Jan, Jeannette, & Emily (2018), recommendation engines powered by AI examine consumer data including web surfing habits and previous purchases in order to provide tailored product suggestions. These engines may learn about customers' tastes and provide recommendations based on that information, which boosts sales and happiness.

Personalised experiences, increased operational efficiency, and consumer engagement are three ways in which AI is helping companies succeed in the cutthroat e-commerce sector (Rosenberg, 2018). Furthermore, in the fiercely competitive e-commerce market, AI equips marketing experts with potent resources for campaign strategy and execution, leading to increased customer happiness and significant company expansion (Kunar, Raian, Aian, Venkatesan, & Lecinski, 2019). Marketers may optimise their efforts, get a better understanding of consumer preferences, and achieve quantifiable outcomes by utilising data-driven decision-making, personalised experiences, and AI-driven insights. This will lead to revenue and market success.

2.2 Theoretical Foundation

2.2.1 Technology Acceptance Model (TAM)

The Technology Acceptance Model, sometimes known as TAM, is a theory that is concerned with the use of certain information technologies. Following Davis (1986), Andryanto (2016), and Sugandini (2017), the information systems theory is also called TAM. Understanding and making use of information technology is the goal of this description. Perceived advantages and perceived ease of use are the two most important perceptions for consumers when it comes to technology adoption. According to the TAM, this is the way things should be. We may learn more about the myriad of elements that affect consumers' trust, attitudes, and objectives by beginning with TAM. A decline in among these trust factors is the need to complete a purchase while doing business online. There is a chance that businesses and people may reap both immediate and distant rewards by embracing and making use of IT. Two sources that support this idea are Foley Curley (1984) and Sharda, Barr, and McDonnell (1988). These sources state that these benefits include more speed, less effort, and better use of time and money.

The level of human openness to new kinds of technology has long piqued the curiosity of researchers in the field of information systems management. This is because technological advancements hold great promise for a host of advantages (Davis, 1989). The number of studies looking at people's reactions to new technologies increased in the 1980s, when personal computers started becoming popular. Not having any actual data on how consumers react to the information system's performance was a major roadblock in the evolution of studies measuring PC adoption. Before this, researchers have attempted to broaden the scope of information systems (IS) studies to include both technical and organisational aspects; for instance, Robey and Farrow (1982) and Benbasat, Dexter, and Todd (1986) are only two such instances. Important aspects, according to Robey and Farrow (1982), are user participation in information system design and development.

The major goal of the Technology Acceptance Model (TAM) was to offer a theoretical account of how technology is effectively integrated, to forecast how individuals would respond when presented with new technology, and to illuminate the steps that result in the acceptance of technology. It was TAM's goal to help practitioners learn what steps to take before implementing systems by providing them with practical information. Many things must come together for the theory to work (Davis, 1989; Davis, 1993). A key component of Davis's model of technology adoption is the emphasis on procedures mediating the connection between IS characteristics (external factors) and actual system use. According to Davis (1989) and Davis (1993), the need for a theoretical framework to explain human behaviour in the field of information systems prompted the development of the model derived from the Theory of Reasoned Action.

Users' perceptions of a technology's usefulness and simplicity of use impact their confidence in the technology, their attitude towards the technology, and their ability to achieve objectives related to the technology. The Technology Acceptance Model (TAM) examines this relationship. It is crucial for IT developers to make their interfaces easy to use and simple since people avoid technologies with too complex user interfaces. Since it describes how people take in, absorb, and use newly

found technology, the Technology Acceptance Model (TAM) provided the theoretical groundwork for the study.

Empirical Review

Hermann and Puntoni (2024) made use of a secondary data source in investigating the relationship between AI and consumer behaviour, specifically focussing on the transition from predictive to generative AI. Artificial intelligence (AI) research in marketing is expanding at an unprecedented rate, and goods and services powered by AI are quickly changing customer behaviour. In this paper, we take a look at two big phases of AI development: algorithmic predictions, which can make people feel good or bad about a product depending on a lot of factors, and GenAI, a new area that could change the way we study consumer behaviour by opening up new ways to create content and complete tasks.

Pengyu & Hui (2024) utilised quantitative data from primary research to examine how Chinese customers use AI information while making product selections. Accurate text retrieval is crucial for AI recommendations, in congruent with the report, which also notes that picture and voice recognition technologies have lesser acceptability among Chinese customers. The research examines the effects of AI-driven information on product choice and buying habits. In congruent with the research, AI's insightful capabilities boost product contemplation, intent to buy, and emotional investment, which in turn increases sales.

Sachin (2024) utilised quantitative data from primary sources to investigate how AI may improve the online shopping experience for customers. Personalised product suggestions, dynamic pricing models, and curated user reviews are just a few ways that Amazon employs AI to impact consumer behaviour, in congruent with the study. These features aim to improve the browsing experience and sway purchase choices. The research shows that utilising AI-powered tactics increases sales, conversion rates, and customer knowledge.

Maharjan (2024) utilised qualitative and primary data to study the effects of AI on online buying and customer behaviour. In congruent with the study, online shoppers are more satisfied, trusting, and engaged when they use features driven by AI, such as virtual assistants, price comparison tools, and personalised suggestions. To guarantee responsible AI implementation in ecommerce contexts, it is necessary to address ethical factors, such as privacy problems and algorithmic biases.

Eickhoff and Zhevak (2023) in their investigation of customer attitudes towards AI (AI) in marketing made use of a primary data source with quantitative data to conduct an experimental study. The compatibility of AI with customer expectations has a beneficial effect on attitudes and buying behaviour, in congruent with this research, which investigated how consumer attitudes towards marketing AI affect their purchase intentions. Furthermore, it utilises the Theory of Planned Behaviour and the Diffusion of Innovation Theory to demonstrate that, while compatibility does impact attitudes, the source of content (i.e., whether it is AI-generated or human-created) does not substantially impact intents to buy.

3.0 Methodology

This study employed a descriptive survey design and a correlational design to investigate the extent to which the marketing effectiveness of online purchasing firms in Nigeria is influenced by AI applications. Descriptive design strives to ascertain and establish the status quo, facts, or pieces of information at the time of research, and to present these facts in their original form, as per Nwankwo (2011). Answering the research questions and verifying the hypotheses entails describing the current conditions without manipulating the variables. In congruent with Wali (2002), correlational design is a method that aims to determine the relationship between two or more variables. He also clarified that these studies provide insight into the direction and magnitude of the relationship between the variables.

This study included management-level personnel from these Nigerian online purchasing organisations. The researcher administers five (5) copies of the questionnaire to the management level employees of each of the twenty-four (24) online purchasing firms sampled in this study systematically. This resulted in a total of one hundred twenty (120) copies.

Table 3.1: List of online shopping firms in Nigeria

S/No.	Names of online shopping firms	No. of questionnaire distributed
1	Pay-Porte	5
2	Kilimall - Affordable Online Shop	5
3	Deal-Dey	5
4	AliExpress	5
5	Facebook marketplace	5
6	Obiwezy	5
7	E-shop.com.ng	5
8	Konga	5
9	Jumia	5
10	Slot	5
11	OLX Nigeria	5
12	Kusnap	5
13	Amazon	5

14	Obeezi Mall	5
15	Mall for Africa	5
16	Jjumia Nigeria	5
17	Jiji.ng	5
18	Jumia Nigeria	5
19	Ajebomarket	5
20	Supermart.ng	5
21	Bumpa	5
22	Kara	5
23	About foodlocker Nigeria-f6s Profile	5
24	Kara Nigeria: your reliable electronics store	5
	TOTAL	120

Source: abdigital.com.ng, 2025

The questionnaire served as the primary instrument for data acquisition. The questionnaire was self-administered for the purposes of this investigation. There were two sections in the questionnaire: A and B. The demographics of the respondents were the subject of Section A, while the study variables were the subject of Section B. The queries were structured in a straightforward manner to facilitate administration. In order to collect data from the targeted staff of the various online purchasing firms that were chosen for the study, the questions were formulated utilising multiple choice methods and structured utilising a five-point Likert scale. The researchers employed resource persons to distribute and retrieve the questionnaires for each firm. A small number of the questionnaires were electronically transmitted to respondents through the IT department of some of the organisations. This was made possible after thorough consultations and deliberations between the researchers and the public relations officers of the organisations selected for this study. Nevertheless, the retrieval process was not conducted electronically.

In order to facilitate the analysis in this study, the researchers implemented an inferential statistical instrument with the statistical package for social sciences (SPSS) version 25.0. The PPMC was implemented to investigate the correlation between the independent and dependent variables at a significance level of $P > 0.01$ (two-tailed test). It was determined that only one hundred and two copies of the research questionnaire were suitable for analysis.

4.0 Data Analysis and Results

Data mining and machine learning, which are dimensions of AI applications, were correlated with the dependent variable's marketing effectiveness (sales volume) measure. The objective was to determine whether there exist a substantial correlation between the dimensions of AI application and the marketing effectiveness metric, as well as the direction of this correlation. The data acquired for this study was analysed utilising the PPMCC statistics, which was performed utilising the Statistical Package for Social Sciences (SPSS) version 25. The null hypothesis as formulated at the 0.05 level of significance was either accepted or rejected based on the results obtained.

Decision rule

Accept H_0 if $P\text{-value} > \alpha$

Reject H_0 if $P\text{-value} < \alpha$

Table 4.1: Rule of correlation co-efficient

Sign of correlation co-efficient	Strong	Moderate	Weak	Very weak or None
+ values (Positive relationship)	0.5 to 1.0	0.3 to 0.49	0.1 to 0.29	0 to 0.09
- Values (Negative relationship)	-1.0 to -0.5	-0.49 to -0.3	-0.29 to -0.1	-0.09 to 0

H_{01} There is no significant relationship between data mining and sales volume of online shopping firms in Nigeria.

Decision rule:

If $P\text{-value}$ is greater than alpha value, accept the null hypothesis. If $P\text{-value}$ is less than alpha value, reject the null hypothesis.

Table 4.2: Statistical analysis of hypothesis one

		Data Mining	Sales Volume
Data Mining	Pearson's Correlation	1	.548**
	Sig. (2-tailed)		.000
	N	102	102
Sales Volume	Pearson's Correlation	.548**	1
	Sig. (2-tailed)	.000	
	N	102	102

Correlation is not significant at the 0.05 level (2-tailed)

Table 4.2 disclosed the PPMCC. Sales volume and data mining correlation analysis. As illustrated in the table, the correlation value of .548** suggests a relatively robust positive correlation between the sales volume of online purchasing firms and data mining. Further, the positive sign indicates that a rise in data mining will result in a higher sales volume. Due to the fact that the P-value (0.000) is lower than the alpha value (0.05), this association is also statistically significant at the 0.05 level of significance. Hence, we may conclude that "There exist a considerable link between the sales volume of online buying enterprises in Nigeria and data mining" and reject the first null hypothesis. Consequently, there is an abundance of statistical evidence to support the assertion that there exist a substantial and positive correlation between the sales volume of online purchasing firms in Nigeria and data mining.

H0₂ There is no significant relationship between machine learning and sales volume of online shopping firms in Nigeria.

Decision rule:

If P-value is greater than alpha value, accept the null hypothesis. If P-value is less than alpha value, reject the null hypothesis.

Table 4.3: Statistical analysis of hypothesis two

		Machine learning	Sales volume
Machine learning	Pearson's Correlation	1	.446*
	Sig. (2-tailed)		.000
	N	102	102
Sales volume	Pearson's Correlation	.446*	1
	Sig. (2-tailed)	.000	
	N	102	102

Correlation is not significant at the 0.05 level (2-tailed)

Table 4.3 illustrates the PPMCC analysis of sales volume and machine learning. The table displays a correlation value of .446**, which suggests a moderately positive relationship between sales volume and machine learning. Further, the positive sign indicates that a rise in machine learning will result in a rise in sales volume. Nonetheless, the P-value (0.000) is lower than the alpha value (0.05), hence this link is statistically significant at the 0.05 threshold of significance. So, we can say that "There exist a considerable link between the sales volume of online buying enterprises in Nigeria and machine learning" and reject the first null hypothesis in the process. Consequently, there is an abundance of statistical evidence to support the assertion that there exist a substantial and positive correlation between the sales volume of online purchasing firms in Nigeria and machine learning.

4.1 Discussions

The aim of this study is to determine the relationship between AI application and marketing effectiveness of online shopping firms in Nigeria and two hypotheses were developed and were tested.

4.1.1 Relationship between data mining and sales volume

The results showed a strong and positive correlation between data mining and sales volume in the online shopping companies in Nigeria that participated in this research ($0.000 < 0.05$). Data mining and sales volume have a high positive link (0.548) with a co-efficient of determination of 54.8%. This suggests that the enhancement of data mining will result in a 54.8% increase in sales volume, with the remaining 45.2% due to factors that were not considered in the research. This study's results are consistent with those of Kalu, Ogungbangbe, and Nto (2017).

4.1.2 Relationship between machine learning and sales volume

Machine learning and the sales volume of online shopping businesses in Nigeria are positively and significantly correlated, in congruent with the results of this research ($0.000 < 0.05$). The somewhat favourable correlation between machine learning and company sales volume ($r=0.446$, $c.f.=44.6\%$) provides more evidence of the beneficial nature of the link. This indicates that an increase in machine learning will result in a 44.6% growth in sales volume, while the remaining 53.4% is due to variables beyond the scope of the study. This investigation aligns with the investigation conducted by Kunar et al. (2019).

5.0 Conclusion and Recommendations

5.1 Conclusion

The study's primary objective was to examine the marketing effectiveness and deployment of AI in Nigerian online purchasing firms. The dependent variable (sales volume) was measured utilising a single proxy, while the independent variables (data mining and machine learning) were measured utilising two proxies. The research utilised a sample size of 120 participants; however, only 102 of those participants' returned surveys were considered legitimate. When looking for a correlation between two variables, statisticians employed the PPMCC. In congruent with the results, there was a positive and statistically significant link (although at varying levels) between the predictor variable dimensions and the criterion variable measure for all of the investigated hypotheses. Finally, the use of AI in marketing impacts the success of Nigerian e-commerce companies.

This study's findings allow us to draw the following conclusions:

- i.) Data mining and the amount of money that Nigerian e-commerce companies make are positively and significantly related.
- ii.) Machine learning changes the amount of money that Nigerian e-commerce companies make.

5.2 Recommendations

In light of the data, the researcher proposes the following:

- i) AI has a major impact on consumers' propensity to shop online and their final purchase choices. Chatbots, recommendation systems, and tailored advertisements are all examples of AI solutions that may enhance consumer experiences, increase engagement, and ultimately drive sales. In light of this, it is imperative that online retailers standardise their data mining practices to guarantee that customers have a frictionless experience when purchasing goods and services online.
- ii) AI might completely change the way people buy online. Companies that jump on the bandwagon and provide AI-powered personalised, interactive, and time-saving shopping experiences will be the ones to remain competitive. But in order to succeed in the long run and keep customers' confidence, businesses must always be mindful of ethical considerations. Hence, machine learning has to be comprehensive enough to assist online businesses and their consumers in keeping the two-way flow of information and instructions healthy for everyone involved.

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