

ARTIFICIAL INTELLIGENCE AND DIGITAL MARKETING IN BLUE-CHIPS BANKS IN ABUJA, NIGERIA

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ABSTRACT

This study seeks to investigate artificial intelligence and digital marketing in blue-chip banks in Abuja, Nigeria. The other specific objectives include examines the relationship between; machine learning and content marketing, natural language processing and social media marketing, robotics practice and mobile marketing respectively. Descriptive research designed was used in the study. The study adopted a quantitative research method where closed ended questionnaires were used for data collection from staff of blue-chips banks Abuja, Nigeria. The population of the study was 391 respondents and was adopted as sample size for the study using census approach. Simple regression technique was used to test the relationships between the research variables through statistic package for social science (SPSS version 27.0). The study findings revealed that artificial intelligence had positive significance effect on the performance of digital marketing strategies of blue-chips banks in Abuja. The study concluded that there is a significance positives link between machine language and content marketing, natural language processing and social media marketing, robotics practice and mobile marketing adoption in blue- chips banks Abuja respectively. It was recommended that blue-chips banks top management and board members should focus on using AI tools to analyse customer data and personalize marketing messages as this leads to significance positive improvement in banks digital marketing growth and development aiming at attracting large market shares.

KEYWORDS: Artificial intelligence (AI), digital marketing (DM), Machine learning, robotic practice and content marketing.

INTRODUCTION

Artificial intelligence (AI) in banking operations has to deals with the application of various AI technologies to streamline and enhance the efficiency of banking processes. AI algorithms can analyse vast amounts of transaction data in real-time to identify patterns indicative of fraudulent activities. These algorithms can detect anomalies and suspicious transactions for further investigation, helping banks prevent financial losses. AI-powered

chabot and virtual assistants are used to provide round-the-clock customer support, answer inquiries, and assist with basic banking tasks such as account inquiries, fund transfers, and loan applications. Natural language processing (NLP) allows these systems to understand and respond to customer queries in real-time. AI algorithms analyse customer data, including credit history, transaction patterns, and other relevant factors, to assess creditworthiness and determine the risk associated with lending to particular individuals or businesses. This helps

banks make more informed decisions when approving loans or issuing credit cards. AI enables banks to offer personalized recommendations and financial advice to customers based on their individual preferences, spending habits, and financial goals (Dubyna, et al., 2023; Lazo, & Ebardo, 2023). By analysing customer data, AI algorithms can identify opportunities for upselling or cross-selling relevant products and services. In investment banking, AI algorithms are used to analyse market trends, predict price movements, and execute trades at optimal times. These algorithms can process large volumes of data and react to market changes much faster than human traders, potentially maximizing returns and minimizing risks. AI systems can assist banks in ensuring compliance with regulatory requirements by monitoring transactions for suspicious activities, identifying potential compliance risks, and generating reports for regulatory authorities. The AI indicators used in the study are machine learning, natural language processing (NLP) and robotic practice.

Digital marketing is a form of marketing that leverages on the internet and digital technologies, such as computers and mobile devices to connect with customers; it is set of practices that interact with customers at every state of buying journey. It can be deduced from the above development that digital marketing refers to the use of website application (APP), mobile device, and search engine and other digital means to promote and sell products and services. Adani, (2023) stated that, Digital marketing may involve of same practice as traditional marketing and often considered on additional way for companies to approach consumer and understand their behaviour, companies often combine traditional and digital marketing techniques in their strategies. The indicators of digital marketing in this study are content marketing, social media marketing and mobile marketing.

Artificial intelligence has a significant effect on digital marketing to enables companies to personalize and automates their marketing strategies to improve customers' satisfaction. Artificial intelligence can also help companies increase users experience achieve better return on investment and reach the right target audience.

The adoption and implementation of artificial intelligence in digital marketing have brought significant problems to banking operations. AI algorithms used in digital marketing can sometimes lead to ethical dilemmas, such as targeting vulnerable customers or discriminating based on sensitive attributes like race or gender. AI algorithms may exhibit biases based on the data they are trained on, leading to unfair treatment of certain customer segments. This bias can affect marketing efforts and the overall customer experience. Integrating AI and digital marketing systems with existing banking infrastructure can be complex and costly. Compatibility issues and technical challenges may arise during the implementation process. Banks face increasing competition from fintech start-ups and tech giants that leverage AI and digital marketing effectively. Staying competitive requires continuous innovation and investment in technology.

Studies had been conducted on the artificial intelligence and digital marketing banking operation and in various industrial activities. However, the focus was on events in developed countries and not on developing countries and Nigeria in particular (Bhuvaneswari, et al., 2024; Sugiharto, et al., 2023; Alqasa, 2023; Radaković, 2023). Additionally, there is no measurement of artificial intelligence on this aspect such as machine learning, natural language processing (NLP) and robotic practice as well as digital marketing in terms of content marketing, social media marketing and mobile marketing has been done by any of these studies (Mogaji, et al., 2020; Srinadi, et al., 2023; Herdianti, et al., 2023; Sheth, et al., 2023). Despite the adoption of artificial intelligence in many companies, it is unclear its effect on digital marketing practice in these companies' operations (Dubyna, et al., 2023; Lazo, & Ebardo, 2023).

Recent studies focusing on artificial intelligence and digital marketing have little literature and their findings are contradictory and have mixed results, not helping to resolve strategic issues organizations. Most of these previous studies conducted on artificial intelligence and digital marketing were more of qualitative studies than quantitative study on difference industrial operations. These had exposed and pointed out several gaps compared

to previous studies in terms of geographical gap, conceptual gap, knowledge gap, evidence gap, empirical gap and theoretical gap in these previous studies. Therefore, to address the above-mentioned gaps, this study aims to investigate artificial intelligence and digital marketing strategies in blue chip banks in Abuja as a fair of contribution to knowledge. The main of objective of the study investigate the effect of artificial intelligence on digital marketing strategies in blue chip banks in Abuja, Nigeria.

LITERATURE REVIEWS

Artificial intelligence

AI is designed to create systems that can perform tasks that would normally require human intelligence. These tasks can range from simple tasks such as recognizing speech or identifying objects in images to complex tasks such as understanding natural language, making decisions, and even creative thinking.

AI has revolutionized the banking industry in various ways, transforming operations, customer service, risk management, and more. AI-powered chatbots and virtual assistants are being deployed by banks to handle customer inquiries, provide account information, assist with transactions, and even offer financial advice. AI enables banks to offer personalized recommendations and services tailored to individual customer needs and preferences and analysing customer data and behaviour. Banks can suggest relevant products, provide financial planning advice, and offer targeted promotions, thereby improving customer satisfaction and loyalty (Maseke, 2024; Agrawal, et al., 2024).

Machine Learning: Machine learning (ML) is a branch of artificial intelligence (AI) that focuses on creating systems that can learn from data, identify patterns, and make decisions with minimal human intervention. The core idea behind machine learning is to develop algorithms that enable computers to learn from and make predictions or decisions based on data, without being explicitly programmed to perform specific tasks. Machine learning algorithms require data to learn from. This data can come in various forms, such as text, images, audio, or numerical values. The quality and quantity of the data greatly influence the performance of the learning algorithms. The machine learning features are the individual

measurable properties or characteristics of the data that help to make strategic business decisions (Bharadiya, 2023).

The above explanation indicate that machine learning is a branch of artificial intelligence which is designed specifically to learn task from data, brings out patterns ways of getting things done, and make decision without excessive human interference. It enables tasks to be done as if it were done by human beings.

Natural language processing (NLP): Natural Language Processing (NLP) is a branch of artificial intelligence that focuses on the interaction between computers and humans through natural language. Its goal is to enable computers to understand, interpret, and generate human language in a way that is both meaningful and useful.

Natural Language Processing (NLP) has various applications in banking operations, facilitating automation, efficiency, and enhanced customer experience. NLP is used to analyse large volumes of text data, such as transaction descriptions, customer communications, and account notes, to detect suspicious activity and potential instances of fraud. By identifying anomalies and patterns in textual data, banks can enhance their fraud detection capabilities and mitigate risks. Banks leverage NLP to analyse and interpret regulatory documents, legal agreements, and compliance-related communications.

NLP algorithms can extract key information, identify regulatory requirements, and ensure compliance with banking regulations, such as Anti-Money Laundering (AML) and Know Your Customer (KYC) regulations (Rane, et al., 2024). NLP techniques are used to extract information from unstructured documents, such as loan applications, financial statements, and legal contracts. (Oyewole, et al., 2024). By automatically extracting relevant data from documents, banks can streamline document processing, accelerate loan approvals, and reduce manual errors.

In all of these, it is absolutely clear that by understanding customer preferences and behaviour, banks can offer tailored products and services that meet individual needs. With the rise of voice-enabled devices and virtual assistants, banks are integrating NLP technology into voice banking applications,

social media marketing and digital marketing holistically.

Robotic Practice (RP): Robotics in banking operations refers to the integration and utilization of robotic process automation (RPA) and artificial intelligence (AI) to streamline, automate, and enhance various banking processes. This trend is part of a broader digital transformation in the financial services sector, aiming to improve efficiency, reduce costs, enhance customer service, and ensure compliance with regulatory requirements. By leveraging these technologies, banks can significantly improve their operational efficiency, reduce costs, enhance customer experience, and stay competitive in a rapidly evolving financial landscape.

Robotism often involves the integration of AI technologies into robots to enable them to perceive their environment, make decisions, and adapt to changing circumstances autonomously.

Robotism encompasses the development of autonomous systems capable of operating independently in complex environments (Dong, et al., 2024). This includes self-driving cars, drones, delivery robots, and other applications where robots must navigate and interact with their surroundings without human intervention. This involves the integration of various hardware and software components to create cohesive robotic systems. It encompasses areas such as sensor fusion, control systems, communication protocols, and software architecture

Digital Marketing (DM)

Digital marketing involves promoting a business's brand and products to attract a global audience and potential customers by applying technological innovations new and digital media strategy so as to accomplished large target market objectives of organization (Hassani, et al., 2024).).

Digital marketing for banks delivers any benefits that contribute to the total success of banking business.

Digital marketing tools often come with advanced security features that ensure safe communication between the bank and its customers. This builds trust and reassures

customers about the safety of their personal information.

Arising from the above development, it therefore simply means that digital marketing platforms help banks adhere to regulatory requirements by providing tools for tracking and documenting marketing activities, ensuring compliance with financial regulations. More so, digital marketing is vital for banking operations as it enhances customer engagement, reduces costs, improves acquisition and retention, leverages data for strategic decisions, strengthens brand reputation, fosters innovation, and ensures security and compliance. By embracing digital marketing, banks can stay competitive and meet the evolving needs of their customers in the digital age.

The following are digital marketing indicators adopted in this study:

Content Marketing (CM): Content marketing in banking involves creating and distributing valuable, relevant, and consistent content to attract and retain a clearly defined audience and ultimately drive profitable customer action. Unlike traditional advertising, which often interrupts customers with direct sales pitches, content marketing focuses on providing information that is genuinely useful to customers, helping them solve problems, understand financial products, and make informed decisions (Soleymani, et al., 2024; Bučo, 2024). Banks need to establish trust with their customers by providing accurate and helpful content marketing. Banks can position themselves as trustworthy advisors. This is crucial in an industry where credibility and reliability are paramount.

Engaging content keeps customers interested and engaged with the bank's services. Blogs, videos, webinars, and social media updates can foster a community of loyal customers who regularly interact with the bank's content.

Social Media Marketing (SMM)

Social media marketing involves activities such as posting text and image updates, videos, and other content that engages the audience, as well as paid advertising on social media platforms. By regularly sharing content on social media platforms, businesses can increase their visibility and reach a larger audience. Social

media marketing can be used to direct users to a company's website, blog, or other online platforms where they can learn more about products or services. Social media platforms provide opportunities for businesses to promote products or services directly to potential customers, leading to increased sales and revenue.

Mobile Marketing (MM): Mobile marketing refers to any advertising or promotional activity conducted through mobile devices such as smartphones and tablets. It encompasses a wide range of strategies and tactics designed to reach consumers on their mobile devices, where they spend a significant amount of their time. Mobile marketing offers several advantages, including the ability to reach consumers anytime, anywhere, and to deliver highly targeted and personalized messages based on factors such as location, behaviour, and preferences. (Kohli, et al., 2024).

Mobile marketing in the banking sector refers to the use of mobile devices, such as smartphones and tablets, to promote banking products and services, engage with customers, and facilitate transactions. Banks develop mobile applications that allow customers to access their accounts, check balances, transfer funds, pay bills, and perform other banking activities directly from their mobile devices.

Effect of Artificial Intelligence applications in digital marketing strategies

Artificial intelligence has made several industries to effectively meet customers buying expectations leading to higher customer satisfaction desire and level (Jain, 2020). AI technologies are very instrumental to digital marketing application to support effective and reliable decisions making processes of contemporary organizations operation as well as that of the banking sectors (Ponomarenko, et al., 2024)

AI technologies help businesses gather valuable insights, automate tasks, and provide tailored experiences to their intended audience. By analysing large amounts of customer data, AI algorithms can identify patterns and categorize audiences based on demographics, behaviour, preferences, and purchasing history. This allows marketers to create focused campaigns and provide personalized content to particular customer segments. By analysing large

amounts of customer data, AI algorithms can detect patterns and classify audiences based on demographics, behaviour, preferences, and purchasing history. It allows marketers to create focused campaigns and tailor content to particular customer groups.

Theoretical Framework

Technological Acceptance Model (TAM)

The Technology Acceptance Model (TAM) is a widely used framework in information systems and technology research that aims to explain how users come to accept and use a technology. Developed by Fred Davis in 1989, TAM is based on the theory of reasoned action (TRA) and has been extensively validated and adapted in various contexts. TAM is utilized across various sectors, including education, healthcare, e-commerce, and organizational management. Organizations use TAM to predict how new systems will be received by users. Insights from TAM help in designing systems that are perceived as useful and easy to use. TAM can guide the development of training programs that enhance user perceptions of usefulness and ease of use. The technology acceptance model remains a foundational tool in understanding how and why users adopts technology. Its adaptability and extensive validation across different studies and sectors underscore its importance, though on-going research continues to refine and expand the model to better account for the complexities of technology acceptance and use.

The Technology Acceptance Model (TAM) is highly significant in studying the effect of Artificial Intelligence (AI) on digital marketing within banking operations. By leveraging TAM, researchers and practitioners can better understand how AI technologies are perceived and adopted by both bank employees and customers. TAM helps gauge whether bank employees and customers believe that AI-driven digital marketing tools enhance their productivity and decision-making (Suhartanto, et al., 2022). For instance, AI can provide personalized financial recommendations or detect fraudulent activities efficiently, which users might find very useful. Insights from TAM can guide the design of AI applications to ensure they meet user expectations for usefulness and ease of use (Gupta, et al., 2024). For example, AI tools that automate customer

service should be designed to be intuitive and integrate seamlessly with existing banking systems. Understanding the factors influencing acceptance can help in developing effective training programs. If bank employees understand the benefits and find AI tools easy to use, their willingness to use these tools in digital marketing will increase.

The adoption of TAM helps in predicting the behavioural intention of users towards AI in digital marketing, banks can strategize their implementation processes (Humairoh, et al., 2024). For instance, if employees show a high intention to use AI for customer segmentation and targeted marketing, banks can prioritize rolling out these AI applications. TAM helps in assessing whether the intended use translates into actual use. This is crucial for measuring the success of AI integration in digital marketing campaigns. By applying TAM, banks can predict the adoption rates of AI technologies in their marketing operations (Cheng, et al., 2023). This information is vital for making strategic decisions about investment in AI technologies and marketing campaigns. TAM can help in creating feedback mechanisms to continually improve AI tools based on user perceptions, ensuring that these tools remain effective and user-friendly. Understanding TAM components helps banks implement AI in a way that maximizes acceptance and usage, thus driving better marketing outcomes and customer experiences.

Theoretical base of the study

This study on artificial intelligence and digital marketing from the theories reviewed had adopted and aligned the TAM model as theoretical based. The technology acceptance model (TAM) is a well-established framework used to understand user acceptance and usage of technology. TAM suggests that perceived ease of use (PEOU) and perceived usefulness (PU) are fundamental determinants of users' acceptance of a new technology. In the context of studying the effect of artificial intelligence (AI) on digital marketing within blue-chip banks in Nigeria, TAM can provide a robust theoretical foundation for exploring how AI technologies are adopted and utilized by these banks to enhance their marketing efforts.

AI technologies, such as chatbots and personalized recommendation systems, can

significantly improve customer engagement by providing tailored services and responses with the effect TAM. This perceived usefulness can drive acceptance among bank employees and customers. AI can analyse large volumes of customer data to provide actionable insights, helping banks develop more effective marketing strategies. The ability to make informed decisions based on data enhances the perceived usefulness of AI tools. The implementation of AI in digital marketing is often accompanied by user-friendly interfaces and tools that make it easy for marketing teams to adopt and use these technologies without extensive training with the adoption and implementation of TAM theory. AI can automate routine and repetitive marketing tasks, such as email marketing campaigns and social media postings, making it easier for marketing professionals to manage their workload.

Ensuring that bank employees receive adequate training and on-going support is crucial for enhancing both PEOU and PU. This involves not only technical training but also demonstrating the practical benefits of AI in marketing. AI is solutions to customizable and fit the specific needs of each bank. Flexibility in AI tools can enhance perceived ease of use and ensure that the solutions are seen as useful across different marketing contexts. Building trust in AI systems is essential. Ensuring that AI tools comply with security standards and protect customer data will increase user confidence, thereby enhancing perceived usefulness. Incorporating feedback mechanisms where users can report issues and suggest improvements can help in continuously improving the AI tools, thus maintaining high levels of perceived usefulness and ease of use over time. Aligning TAM with the study of AI's impact on digital marketing in blue-chip banks in Nigeria offers a comprehensive framework to assess how these technologies are perceived and adopted. By focusing on perceived usefulness and ease of use, researchers can identify the key drivers and barriers to AI adoption, thereby providing valuable insights that can guide future implementations and strategies for digital marketing in the banking sector.

Digital marketing model which postulate that the acceptance of digital technological is

electronic marketing using artificial intelligence techniques or medium had the essential attributes which provides the users with behavioural intension, which is, in turn determined by the perception of technology usefulness in performing the task and perceived ease of its user with TAM model technology, marketers and blue chip banks can explore the inherent opportunity by providing their employees especially online marketers the basic usability skills, approach to using the Artificial intelligence technology in marketing for their respective banks digital.

Empirical reviews

Gökerik, & Aktaş, (2024) studied digital business transformation through intelligence: a bibliometric approach. Focusing on academic journals analysed by Scopus from 2010 to 2024, this study examines how the digital economy is changing. The level of artificial intelligence has a significant impact on optimizing business strategy and improving data analysis capabilities. The aim is to evaluate current research, key findings and potential future areas at the intersection of intelligence and digital marketing through a bibliometric approach. This review was conducted using the bibliometric package of the "R" program to evaluate the articles in the Scopus database based on selected keywords, frequency, number, author, source, and content. In addition, integrative, collaborative and analytical methods were used to discover themes and relationships in the data. The results showed the growing influence of the intellectual skills of the digital economy.

Alexander, T et al (2024) focus on understanding the influence of machine language on content marketing of Lead way Assurance Ltd, Kano. 65 questionnaires were distributed to employees for data collection. The t-test statistic was used to perform the result which showed that machine language has substantial effect on content marketing creation of the company.

Luz et al. (2024) investigated natural language processing AI techniques and content marketing influence of prtex automobile company in Hong Kong. Primary data was collected from 305 e-retailer's customers and analysis was done using quantitative methods. The results showed that natural language

processing AI techniques led to strategic improvement in operation of digital marketing practice holistically in terms of content and social media marketing and mobile marketing in the organization.

Abildtrup, S., Barile et al. (2024) studied effect of robotic practice AI techniques on mobile marketing at Chicago U.S Super market shops. The main rationale of this study is to map research trends related to the application of AI in digital marketing through bibliographic analysis. A qualitative research method with a historical approach is used to collect and analyse scientific papers from leading international journals. Bibliographic analysis was performed using VOS viewer software to visualize patterns and clusters of key terms. The results show a significant positive effect of robotics practice on mobile marketing in in super store. This study contributes to the understanding of trends, opportunities, and challenges in integrating AI into digital marketing practice. These findings can help researchers and practitioners identify future research directions and develop effective marketing strategies through the use of AI.

METHODOLOGY

Descriptive research design was used for this study. The population for the study was three hundred and ninety-one (391) staff drawn from the regional offices of the blue-chip banks in Abuja. This population comprises the management and non-management staff of the blue-chip banks in Abuja which were extracted from the human resource (HR) offices cutting across difference department and units that adopt and implement the use of artificial intelligence and digital marketing.

The study adopted the probability sampling of simple random sampling technique to ascertain the expected population from the selected blue-chip banks in Abuja which was equally adopted as the study sample size using census techniques. This became necessary hence the population size was relatively small. The inferential statistics was used to analyse data with the help of statistical packages for social science (SPSS version 27.0). Simple regressions technique was done to assess the relationship between artificial intelligence and digital marketing.

The study's variables have a structural model that addresses the two main variables in the study, which were the independent and dependent variables. The independent variable was Artificial Intelligence= AI that was proxies by (I) Machine Learning= ML (II) Natural Language Processing= NLP and (III) Robotic Practice= RP respectively. The independent **DM=f (AI)..... (i)**

variable was Digital Marketing = DM that was focused on (I) Content Marketing = CM (II) Social Media Marketing= SMM and (III) Mobile Marketing= MM vehemently. As a result, in this model, Digital Marketing is functionality that is driven by the strengths and sustainability from Artificial Intelligence.

Where DM = Digital marketing (dependent variables), AI is Artificial intelligent (independent variables).

DM= F (ML, NLP, and RP). Therefore, where:

ML= Machine Learning

NLP= Natural Language Processing

RP= Robotic Practice

β_0 = Constant, while $\beta_1, \beta_2, \beta_3$ are regression coefficient of each independent variables. Then AI includes the various proxies describing each of the independent variables as in ML, NLP & RP. The Dependent variables is the DM which included (CM (content marketing), SMM

(social media marketing) & MM (Mobile marketing).

β = Beta Coefficient of the parameter or the explanatory variables

e= Error Term.

DATA PRESENTATION AND ANALYSIS

Inferential statistics

Table 1 Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.633 ^a	.400	.396	.32517

a. Predictors: (Constant), RP, NLP, ML

Source: Generated using SPSS Output Version 27.0

Table 1 presents the model summary for a regression analysis, indicating that the predictors—RP (Robotic Process Automation), NLP (Natural Language Processing), and ML (Machine Learning)—collectively explain 40% of the variance in the dependent variable. “R” is the coefficient correlation which showed the relationship between the various variables, while R-square was the coefficient of determination which shows how well the model 1 adopted predicts the observation. The

adjusted R square, at 0.396, suggests that approximately 39.6% of the variance in the dependent variable is accounted for by the predictors, adjusting for the number

of predictors in the model. The implies that artificial intelligent strategies employed by blue-chip banks in Abuja since the past five years of operation explained 39.6% of digital marketing in terms of various proxies explaining attributes of digital marketing used.

Table 2. ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	27.300	3	9.100	86.062	.000 ^b
	Residual	40.920	387	.106		
	Total	68.220	390			

a. Dependent Variable: Digital marketing (CM, SMM, &MM)

b. Predictors: (Constant), RP, NLP, ML

Source: Generated using SPSS Output Version 27.0

The ANOVA table sought to show significant of regression model. The result shows that the f-value was 86.062 which were significant at $p = 0.001$ that was lower than 0.05 (95% level of significance). Therefore, the model is said to possess a 95% confidence interval.

Table 2 presents the results of an analysis of variance (ANOVA) for the regression model.

Therefore, the regression model with predictors RP, NLP, and ML, is statistically significant (F

(3, 387) = 86.062, $p < .001$), indicating that the predictors collectively explain a significant amount of variance in the dependent variable. The model accounts for 27.300 units of the total variance, while the residual variance is 40.920. This suggests that the model has a good fit to the data, as indicated by the significant F-value and the low residual variance. Therefore, based on the ANOVA results, it can be concluded that the regression model is statistically significant in predicting the dependent variable.

Table 3. Regression coefficients^a

Artificial intelligent and digital marketing

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta			
1	(Constant)	.387	.249		1.555	.121
	ML	.382	.042	.370	9.055	.001
	NLP	.295	.035	.332	8.416	.002
	RP	.248	.037	.274	6.709	.001

a. Dependent Variable: Digital marketing (CM, SMM, &MM)

a. Dependent Variable: Digital marketing (CM, SMM, &MM)

b. Predictors: (Constant), RP, NLP, ML

Source: Generated using SPSS Output Version 27.0

RESULTS:

Discussion of findings

From the SPSS generated output in table 6 above, the equation $DM = \beta_0 + \beta_1 ML + \beta_2 NLP + \beta_3 RP + e$ becomes: $DM = 0.387 + 0.382 ML + 0.295 NLP + 0.248 RP + e$.

The result showed that there is a significance positive relationship between machine learning and content marketing of blue-chip banks in Abuja as shown by $\beta = 0.382$ and $p = 0.001 < 0.005$. This implies that when blue-chip banks in Abuja increases machine learning AI by a unit, this in turn improves their content marketing desires significantly at a unit by 0.382. This finding was supported by the findings of recent studies conceptually and empirically that machine learning had an effect on content marketing of lead-way assurance limited, Kano (Alexander, 2024; Bharadiya, 2023).

The regression results also showed that there is a significance positive relationship between natural language processing and social media marketing of blue-chip banks in Abuja ($\beta = 0.295$ and $p = 0.002 < 0.05$). This implies that natural language significantly improves social media marketing of blue-chip banks in Abuja at a unit of 0.295 when other factors remain constant. This finding was in alignment with the recent studies findings conceptually and theoretically which agreed that natural language processing had effect significantly on social media marketing of blue-chip banks and other industrial operations (Luz, & Jonathan, 2024; Bozyigit, & Kılınç, 2022).

Finally, the regression results further revealed that robotic practice had a positive significant effect on mobile marketing of blue-chip banks in Abuja ($\beta = 0.248$ and $p = 0.001 < 0.05$) implying that when blue-chip banks in Abuja increases robotic practice AI technique, mobile marketing would improve significantly at a unit of 0.248. This finding had consistency with the recent studies findings which also agreed that robotic practice had effect significantly on

mobile marketing in banking practice and industrial operations (Abildtrup, 2024; Barile, et al., 2024).

CONCLUSION

Findings from the study made the researcher concluded that artificial intelligence had a significant effect on performance of digital marketing strategies blue-chip banks in Abuja. Holistically, the study concluded from the findings that artificial intelligence had strategic and positive effect on the adoption and implementation of content marketing, social media marketing and mobile marketing of blue-chip banks in Abuja.

The study also concluded that talent development; machine learning had positive effect on content marketing of blue-chip banks in Abuja.

The study also concluded that natural language processing had positive effect on social media marketing of blue-chip banks in Abuja. Finally, it was equally concluded that robotic practice had positive effect on mobile marketing of blue-chip banks in Abuja. This entire conclusion has addressed the study research questions and objectives respectively. The following are recommendations emanated from the findings and conclusion from the study:

1. The top management of blue-chip banks in Abuja should use machine learning algorithms to analyse customer profile details and preferences, implement machine learning models to personalize content delivery based on user behaviour, demographics, and past interactions and use machine learning for predictive analytics to forecast trends in customer behaviour and market demands.
2. Blue-chip banks in Abuja management should explore NLP tools to analyse customer sentiment in real-time in order to understand how customers feel about the bank's services, products, or any on-going campaigns. Deploy NLP-powered chatbots on social media platforms to provide instant customer support.
3. Blue-chip banks in Abuja management should implement robotic systems that

can interact with customers in real-time through chatbots or AI-driven customer support on mobile platforms, offering quick responses and solutions. This could help to utilize robotic process automation (RPA) to manage marketing campaigns.

Limitation and suggestions for further research

Arising from the findings of this study, further studies are suggested, because additional research is essential in the area of artificial intelligence algorithms and the implementation in corporate settings in Nigeria. Influence of machine learning and extensive learning on corporate performance of multinational companies in Nigeria.

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