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The Relationship that Exists between Chatbot Usage and Customer Relationship Management for MSMEs in Anambra State

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Abstract **Original Research Article**

Micro, small and medium scale enterprises (MSMEs) in Anambra State face challenges in managing customer relationships efficiently, often due to limited resources and inadequate adoption of digital tools. This study investigates the impact of ChatBot usage on customer relationship management (CRM) among MSMEs in the region. Utilizing a survey research design, data were collected through structured questionnaires distributed to MSME operators across various sectors. Descriptive statistics such as means and frequencies were used to analyze respondent perceptions, while Pearson Product Moment Correlation was employed to test the relationship between ChatBot usage and CRM. The results revealed strong agreement among respondents that ChatBots enhance prompt customer engagement and satisfaction, with a significant correlation ($r = .923$, $p = .000$) indicating a robust positive relationship between ChatBot usage and effective CRM. The findings suggest that ChatBots play a vital role in improving communication efficiency and customer satisfaction for MSMEs in Anambra State. It is recommended that greater emphasis be placed on digital literacy and access to AI-powered tools to strengthen CRM practices within the sector.

Keywords: ChatBot usage, Customer relationship management, MSMEs, Anambra State.

1. INTRODUCTION

Customer Relationship Management (CRM) has become a pivotal strategy for businesses globally, particularly Micro, Small, and Medium Enterprises (MSMEs), to maintain competitiveness, build customer loyalty, and drive sustainable growth. For MSMEs, effective CRM ensures better understanding of customer needs, personalization of services, and improved customer satisfaction, ultimately leading to increased profitability and customer retention. Globally, MSMEs contribute significantly to employment and GDP. According to the World Bank (2020), MSMEs represent about 90% of businesses and more than 50% of employment worldwide. In this global context, CRM emerges not only as a tool for enhancing business processes but also as a critical asset in building long-term relationships in highly competitive markets. In Africa, MSMEs account for more than 80% of employment and are fundamental to economic development and poverty reduction (African Development Bank, 2022). However, challenges such as limited access to finance, digital technology, and market information hinder their full potential. CRM systems—particularly digital CRM platforms—offer African MSMEs the ability to overcome some of these challenges by streamlining customer interactions, automating processes, and providing valuable insights through data analytics. Focusing on Nigeria, and specifically Anambra State, MSMEs play a substantial role in the local economy. The National Bureau of Statistics (NBS, 2021) reports that MSMEs in Anambra constitute a major part of the state's economic activities, ranging from retail and hospitality to agriculture and manufacturing. However, many of these businesses face hurdles in sustaining long-term customer engagement due to inadequate adoption of digital technologies, including CRM tools.

In this context, the emergence of chatbots—a form of artificial intelligence (AI) that automates communication—offers significant opportunities to improve CRM practices among MSMEs. Chatbots can engage customers in real-time, provide personalized responses, and operate 24/7, thereby enhancing

customer service and satisfaction (Chatterjee et al., 2020). The ability of chatbots to analyze customer queries and deliver consistent, timely responses improves CRM by streamlining communication, reducing human error, and increasing engagement efficiency. In Anambra State, chatbot adoption among MSMEs is still at a nascent stage, but there is growing interest in leveraging AI to enhance business performance. For instance, businesses in the retail and e-commerce sectors have begun experimenting with WhatsApp-based bots and other automated systems to handle customer inquiries and transactions. This shift is partly influenced by increasing smartphone penetration and digital literacy in the region (**Global System for Mobile Communications Association** [GSMA], 2023). The relationship between chatbot usage and CRM in Anambra State's MSME sector is increasingly recognized as complementary. Chatbots support CRM by enabling businesses to manage customer interactions more efficiently and at scale, improving both service quality and customer satisfaction. Moreover, they allow MSMEs to gather customer data, analyze behavior patterns, and make informed business decisions. However, challenges remain, including high costs of implementation, lack of technical know-how, and data privacy concerns. These barriers limit the widespread adoption of chatbot technologies among small businesses (Obi & Chukwuemeka, 2023).

The Anambra State government has taken steps to support digital transformation for MSMEs, including initiatives such as digital skills training, youth innovation hubs, and access to funding through the Anambra Small Business Agency (ASBA). These efforts aim to create an enabling environment for MSMEs to integrate digital tools, including chatbots, into their operations. While these initiatives have begun to yield positive outcomes, the actual impact on strengthening CRM through chatbot usage remains uneven due to gaps in infrastructure and awareness (Anambra State Government, 2022). It is against this background that this study examines the relationship that exists between ChatBot and customer relationship management among the MSMEs in Anambra State.

2. LITEREATURE REVIEW

2.1. Conceptual Issues

Customer Relationship Management

Customer Relationship Management (CRM) refers to the strategies, practices, and technologies that organizations use to manage and analyze customer interactions and information throughout the entire customer journey. Its main goal is to strengthen relationships, improve customer retention, and drive sales growth. According to Guerola-Navarro et al. (2021), CRM capabilities represent a firm's ability to sustain long-term customer connections and generate customer-level profitability. Similarly, CRM skills reflect an organization's capacity to build continuous engagement with customers by allocating resources to meet diverse needs, whether targeting key clients, high-value customers, or re-engaging inactive ones (Hung, Hung, Tsai & Jiang, 2010; Guerola-Navarro et al., 2021).

ChatBot

Chatbots represent a significant aspect of AI adoption in small business operations. Companies employ AI tools such as chatbots, customer recognition systems, and intelligent agents to handle various marketing functions, including customer acquisition, retention, and relationship management (Li, Lin, Luo & Luo, 2023). Among these, voice search and embedded chatbots are widely valued by customers for simplifying product searches, retrieving information, and responding to frequently asked questions (Arachie, Dibua & Idigo, 2023).

2.2. Empirical Review

Olateju (2024) explored how digital technology influences the activities of Micro, Small, and Medium Enterprises (MSMEs) in Nigeria. The study involved 320 MSMEs, of which 150 had integrated digital technology into their operations, while 170 had not, although both groups operated within the same business sectors. Data were collected through questionnaires and analyzed using descriptive statistics (frequency and percentage) alongside econometric analysis through Propensity Score Matching (PSM). Findings revealed that adopting digital technology contributed to business expansion among MSMEs compared to those that had not adopted it. However, the results also showed that digital technology adoption did not significantly enhance profitability among participating MSMEs relative to their non-adopting counterparts.

Adeniyi and Adeeko (2024) investigated the connection between the adoption of Industry 4.0 (i4.0) technologies and the market scalability of SMEs in Southwest Nigeria. Employing a descriptive survey design, the study used a multistage sampling technique to select 1,200 SME owners. Data were gathered through structured questionnaires and analyzed using descriptive statistics, while regression analysis was applied to test the hypotheses. The findings revealed that most SME owners in the region lacked awareness of i4.0 technologies. The major barriers to adoption included limited expertise, financial difficulties, and unstable electricity supply.

Similarly, Li, Lin, Luo, and Luo (2023) examined the role of artificial intelligence (AI) in enhancing customer relationship management (CRM) performance and the mediating effect of CRM capabilities. Using survey data from 193 e-commerce companies in China, the study tested a theory-driven research model through structural equation modeling (SEM). The results indicated that AI adoption positively influences CRM performance and that CRM capabilities significantly mediate this relationship.

Ifekanandu, Ezirim, and Asemota (2023) conducted a study on the use of AI and its impact on the marketing effectiveness of publicly traded manufacturing companies in Nigeria. The study employed the positivist research philosophy and utilised a correlational research design. The study's population comprised 426 managers selected from the 71 industrial enterprises listed in Nigeria. The study utilised a sample size of 206 managers. The sample size was calculated using Taro Yamene's formula.

Data from the respondents was collected using a standardised questionnaire. The acquired data were subjected to statistical analysis, with the hypotheses being checked using the Spearman Rank Order Correlation Coefficient (rho). The study discovered that the utilisation of AI technology in marketing operations is strongly correlated with the increase in sales of publicly traded manufacturing companies in Nigeria. The study also found that the implementation of AI technology in marketing operations is strongly and significantly correlated with the rise of market share in listed manufacturing firms in Nigeria. The study also verified that the capabilities of AI are strongly and significantly correlated with the sales growth of industrial enterprises listed in Nigeria.

Olarenwaju (2023) examined the impact of AI on Small and Medium-sized businesses (SMBs) in California, United States, the challenges encountered when using the application as well as the coping ways in overcoming the challenges. The study was descriptive in approach making use of secondary sources of data. It was discovered that AI had impacted the ways SMBs operate in California despite the challenges.

Salemcity, Aiyesan and Japinye (2023) examined the effect of AI on employee cost and other operating cost in the banking sector in Nigeria. The study adopted ex-post facto research design. Secondary data were gathered between 2012 and 2022 from the respective financial statements of the DMBs and analysed using panel regression model. It was gathered that the adoption of AI has negative effects on employee cost while it has positive effects on operating expenses of DMBs in Nigeria.

Qomariah et al. (2023) investigated the correlation between knowledge management, AI, innovation, and the performance of MSMEs. By employing a literature review methodology, a total of 40 papers were chosen from esteemed databases and subjected to analysis utilising VOSviewer software. The findings demonstrated that the implementation of knowledge management is essential for enhancing the performance of small and medium-sized enterprises (MSMEs). Artificial intelligence (AI) and innovation have a crucial role in improving the connection between information management and the performance of small and medium-sized enterprises (MSMEs).

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Pacho (2023) conducted a study in Tanzania to explore how entrepreneurial marketing strategy decisions and the adoption of social media influenced women's business performance during the COVID-19 pandemic. The research further assessed the mediating role of the Technology Acceptance Model (TAM) in these relationships. To achieve the objectives, the study employed a field survey using questionnaires, with data validated through Confirmatory Factor Analysis (CFA), while hypotheses were tested using Structural Equation Modeling (SEM). The findings showed that entrepreneurial marketing strategy decisions had a positive and statistically significant impact on business performance. Similarly, social media adoption was found to significantly and positively influence performance. Mediation analysis revealed that perceived usefulness mediated both the link between entrepreneurial marketing strategies and business performance, as well as the relationship between social media adoption and business performance.

In a related study, Echendu and Williams (2023) examined the link between data-driven management and organizational innovation in selected manufacturing firms in Port Harcourt, Rivers State, Nigeria. The study sample included 106 staff members from the firms under review. Data were collected using simple random sampling and a combination of quantitative and qualitative research methods. The relationships between variables were analyzed using Spearman's Rank-Order Correlation Coefficient with the aid of the Statistical Package for the Social Sciences (SPSS). The results indicated a significant positive relationship between the dimensions of data-driven management (robust analytical capabilities, a data-driven culture, and technological capabilities) and organizational innovation. These elements were found to be strongly connected with process and product innovation as well as competitive advantage, thereby fostering overall innovation.

Drydakis (2022) employed the International Labour Organization's scale for assessing business risks during the COVID-19 epidemic in MSMEs to examine the potential link between AI applications and decreased business risks in MSMEs. A novel decalogy was devised to measure the utilisation of AI applications in fundamental functions such as marketing and sales, pricing, and cash flow. A total of 317 MSMEs in London, England were surveyed between April and June 2020. Additional data was collected from the same MSMEs between October and December 2020. AI solutions that target online consumers, provide cash flow forecasts, and facilitate HR processes are linked to decreased business risks resulting from the COVID-19 epidemic for small and medium firms. The study demonstrated that AI empowers MSMEs to enhance their dynamic capacities by utilising technology to address emerging forms of demand, swiftly adapt business processes, improve efficiency, and consequently mitigate business risks.

3. METHODOLOGY

3.1. Research Design

A research design functions as a strategic plan or framework that guides the process of conducting a study. As noted by Kothari and Garg (2014), it entails structuring the conditions for data collection and analysis in a way that aligns with the research objectives and promotes efficiency throughout the process. In this study, a Survey Research Design was adopted, as it is well-suited for collecting information from a defined group of respondents about a specific phenomenon, using a structured questionnaire as the primary data collection tool.

3.2. Area of the Study

The study area is Anambra State, one of the five states in Nigeria's South-East region. The state was created in 1976,

emerging from the former East Central State, and is named after the Omambala River that runs through it, with "Anambra" being the Anglicized form of Omambala. Officially established in 1991, Anambra State has its capital in Awka and consists of 21 Local Government Areas (LGAs). Onitsha, known for its significant historical role as a port in the pre-colonial era, serves as a key commercial hub in the state, featuring one of the largest markets in West Africa.

3.3. Population of the Study

The study's population includes MSMEs from three regions within the state's three senatorial zones. Specifically, the areas and the number of MSMEs are as follows: Onitsha (772), Awka (231), and Nnewi (396), resulting in a total of 1,399. This information was sourced from the market traders' unions in each senatorial zone and the Anambra State Ministry of Commerce and Industry in June 2024.

3.4 Sample Size and Sampling Technique

The sample size of the study is determined using Krejcie and Morgan's 1970 sample size determination formula. The formula is given below as:

$$s = \frac{x^2 NP(1-P)}{d^2(N-1) + x^2 P(1-P)}$$

Where

s = Sample size

x^2 = Table value of chi-square for 1 degree of freedom at 0.05% confidence level (3.84)

N = population size (1399)

P = population proportion (assumed to be 0.5 since this would provide the maximum sample size)

d = Degree of accuracy expressed as a proportion (0.05)

$$s = \frac{3.84\ (1399)(0.5)(1-0.5)}{(0.05)^2(1399-1) + (3.84)\ (0.5)(1-0.5)}$$

$$s = \frac{1343}{3.5 + 0.96}$$

$$s = \frac{1343}{4.46}$$

$$s \cong 301$$

To determine the appropriate allocation of questionnaire to each of the areas, Bowley's (1926) allocation formula is adopted as shown below:

$$nh = \frac{nNh}{N}$$

Where n = total sample size.

Nh = No. of items in each stratum in the population.

N = population size.

Application of the Formula

1	Onitsha	301	(772)	/ 1399	= 166
2	Awka	301	(231)	/ 1399	= 50
3	Nnewi	301	(396)	/ 1399	= 85
Total					**301**

3.5 Sources of Data

While data collection in research typically involves both primary and secondary sources, this study primarily utilizes primary data. The choice of primary data is considered most appropriate for this research, as it allows for the direct collection of firsthand information that is specific, current, and directly aligned with the study's objectives.

3.6. Method of Data Collection

Data collection was carried out through personal distribution. Two trained research assistants were assigned specific areas and instructed on the distribution process and how to handle potential questions. The research assistants covered Onitsha and Nnewi, while the researcher oversaw the distribution in Awka. This approach was implemented to ensure comprehensive coverage and timely completion of the data collection.

3.7. Validity of Instrument

The instrument was validated with the assistance of the supervisor and experts in instrument design and measurement from the Faculty of Education at Nnamdi Azikiwe University, Awka. They reviewed the questionnaire for clarity and conciseness in simple English. Additionally, the content of the questionnaire was assessed to ensure it accurately measures the intended constructs. This process involved both face and content validity evaluations.

3.8. Reliability of the Instrument

The reliability of the research instrument was evaluated using Cronbach's Alpha, which produced a coefficient of 0.873—well above the commonly accepted threshold of 0.7—indicating a high level of internal consistency and confirming the instrument's reliability. To derive this result, 30 questionnaires were administered to MSMEs located in Ekwulobia. The collected responses were coded and analyzed using SPSS version 20, which generated the reported reliability coefficient.

3.9. Method of Data Analysis

The analysis in this study employed both descriptive and inferential statistical techniques. Descriptive statistics, including frequencies, means, and rankings, were used to summarize and interpret the data. To test the research hypotheses, inferential statistics were applied, with the Pearson Product Moment Correlation Analysis serving as the primary method for examining the relationships between variables.

4. DATA PRESENTATION AND INTERPRETATION OF RESULTS

4.1. Data Analysis

Table 1: Questionnaire Distribution, Collection and Analysis

S/N	Ministries	Distributed	Retrieved	Analysed
1	Onitsha	166	145	140
2	Awka	50	42	40
3	Nnewi	85	78	75
	Total (Percentage)	**301 (100%)**	**265 (88%)**	**255 (85%)**

Source: Field Survey, 2024

Table 1 presents the schedule for the distribution, collection, and analysis of the questionnaires. A total of 301 questionnaires were distributed, reflecting the targeted sample size across the selected areas. Out of these, 266 were successfully retrieved, accounting for an 88% response rate. However, only 255 questionnaires—equivalent to 85% of the total distributed—were deemed suitable for analysis, as 10 of the returned questionnaires were either damaged or incomplete and thus excluded from the final data set.

4.1.1. Descriptive Statistics for Research Questions and Test of Hypotheses

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Table 2: Distribution of responses for ChatBot usage and customer relationship management

S/N	Questionnaire Items	SA (5)	A (4)	UD (3)	D (2)	SD (1)	Mean	Decision
	ChatBot							
1	Making use of chatting assistants can reduce stress on me to always be active online.	200	35	5	10	5	4.63	Accept
2	Chatbots can help me to attend to customers more promptly.	179	21	-	30	25	4.17	Accept
3	I do not make use of Chatbot because I do not see its importance.	45	69	21	70	50	2.58	Reject
4	I am aware of Chatbot usage in business and how important it is in this modern day and age.	59	58	-	50	88	2.80	Reject
	Customer Relationship Management							
5	I can attend to customers more promptly with the help of chatting robots.	45	160	15	35	-	3.84	Accept
6	Customers will be more delighted to get responses from me fast.	140	100	-	15	-	4.43	Accept
7	My customers do not care if they are answered immediately or not.	-	15	39	80	121	1.80	Reject
8	Making use of Chatbots will not make any difference in how I manage my customers.	12	19	21	111	92	2.01	Reject

Source: Field Survey, 2024

Table 2 shows the distribution of responses for ChatBot usage and customer relationship management, using a mean threshold of 3, and starting with questions used in measuring ChatBot, the respondents agreed that making use of chatting assistants can reduce stress on them to always be active online. They also agreed that ChatBots can help them to attend to customers more promptly as shown with a mean of 4.17. They however rejected that they do not make use of ChatBot because they do not see its importance and that they are aware of ChatBot usage in business and how important it is in this modern day and age with a mean of 2.58 and 2.80 respectively.

On questions used in measuring customer relationship management, the respondents agreed that they can attend to customers more promptly with the help of chatting robots with a mean of 3.84. A mean of 4.43 indicates that the respondents agreed that customers will be more delighted to get responses from them fast with a mean of 4.43. They, however, rejected that their customers do not care if they are answered immediately or not and that making use of ChatBots will not make any difference on how they manage their customers with a mean of 1.80 and 2.01 respectively.

4.1.2. Hypothesis Testing

H_0: There is a significant relationship existing between ChatBot usage and customer relationship management for MSMEs in Anambra State.

H_1: There is no significant relationship existing between ChatBot usage and customer relationship management for MSMEs in Anambra State.

Table 3: Correlation Analysis Result for Hypothesis

		CB	CRM
CB	Pearson Correlation	1	.923**
	Sig. (2-tailed)		.000
	N	255	255
CRM	Pearson Correlation	.923**	1
	Sig. (2-tailed)	.000	
	N	255	255
**. Correlation is significant at the 0.01 level (2-tailed).			

Source: Field Survey, 2024

Where:

CB: ChatBot

CRM: Customer Relationship Management

Table 3 indicates the correlation analysis result which states that there is a significant relationship existing between ChatBot usage and customer relationship management for MSMEs in Anambra State. From the analysis, the r is .923 while the p-value is .000. Given that the p-value is less than .05 level of significance, the alternate hypothesis is thereby accepted and it is stated that there is a statistically significant relationship existing between ChatBot usage and customer relationship management for MSMEs in Anambra State.

4.2. Discussion of Findings

After the conclusion of the hypothesis test for this study, it was revealed that there is a statistically significant relationship existing between ChatBot usage and customer relationship management for MSMEs in Anambra State. The relationship from the test of this hypothesis signifies that it is a positive relationship, and being a positive relationship implies that an increase in the independent variable in this case ChatBot usage will also lead to an increase in the dependent variable which is customer relationship management. When MSMEs deploy AI (chatting robots) to attend to customers, it makes for rapid response to customers without having to be online. That is, immediately there is a complaint(s) from customers, the bot is always there to respond to them and give them quick solutions and resolutions to problems they might have, this relieves the business owners of the responsibility to always be online attending to customers, and gives the customers a sense of being valued by the business which improves the customer management perception of the customers towards the company. This finding aligns with that of Li et al. (2023) who investigated the impact of AI usage on CRM performance and the mediating effect of CRM capabilities and revealed that AI usage which could be in terms of Chatbot deployment positively impacts CRM performance and that CRM capabilities positively mediate their relationship. Also, Olarenwaju (2023) who examined the impact of AI on SMBs discovered that AI had impacted the ways SMBs operate. This AI could be in terms of using chatbots to respond to customers which could revolutionize the way customer relationship management is handled by organizations. On a similar note, Ifekanandu et al. (2023) who conducted a study on the use of AI and its impact on marketing effectiveness showed that the utilisation of AI technology in marketing operations is strongly correlated with the increase in sales of publicly traded manufacturing companies in Nigeria. The study also found that the implementation of AI technology in marketing operations is strongly and significantly correlated with the rise of market share in listed manufacturing firms in Nigeria. Then also, Drydakis (2022) revealed from their study that assessed business risks during the COVID-19 epidemic in MSMEs to examine the potential link between AI applications and decreased business risks in MSMEs, that AI empowers MSMEs

to enhance their dynamic capacities by utilising technology to address emerging forms of demand, swiftly adapt business processes, improve efficiency, and consequently mitigate business risks

5. CONCLUSION AND RECOMMENDATIONS

The findings of the study clearly demonstrate that ChatBot usage significantly enhances customer relationship management (CRM) among Micro, Small, and Medium Enterprises (MSMEs) in Anambra State. Respondents affirmed that ChatBots enable quicker customer service, with a strong mean of 3.84 reflecting agreement that these tools help them attend to customers more promptly. An even higher mean of 4.43 further indicates strong agreement that customers are more satisfied when they receive fast responses—highlighting the value of speed and responsiveness in customer interactions. This means the more MSMEs adopt and effectively use ChatBots, the better their ability to manage customer relationships becomes. In conclusion, the study validates the pivotal role ChatBots play in transforming CRM practices for MSMEs in Anambra State. Their use leads to faster service, increased customer satisfaction, and overall improvement in how businesses interact with their clients. These insights suggest that encouraging broader adoption of ChatBot technologies—alongside appropriate training and support—can further strengthen the performance and competitiveness of MSMEs in the state.

Sequel to the findings of the study, it is recommended that instead of always being online responding to customers while leaving other things undone like making actual sales, ChatBots need to be deployed and tasked with the responsibility of responding to customers because the bots can do it faster, and this will lead to better customer relationship management for MSMEs in Anambra State.

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