

Artificial Intelligence and the Performance of Quick Service Restaurants in Lagos State

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Abstract

There has been exponential growth in the service food restaurants in Nigeria in recent time. To cope with this trajectory the use of Artificial Intelligence (AI) in the quick service restaurants is vital. The study examined the influence of artificial intelligence on performance of quick service restaurants in Ikeja area of Lagos State. Cross-sectional design, was employed accompanied by the use of structured questionnaire to gather data for the study. The study structured questionnaire was administered on 165 respondents. Judgmental sampling technique was employed in the selection of 150 sample size for the study drawn from Ikeja area of Lagos State. The research instrument was subjected to content validity while Cronbach Alpha test was used to determine the reliability of the instrument. Data collected were analyzed through the use of regression analysis to determine the effect of Artificial Intelligence (AI) on. The study findings indicate that Artificial intelligence have positive influence on the performance of quick service restaurants customers based on placing orders, and providing customers services. The study finding established that Artificial intelligence (AI) applications improve and enhance business performance in the quick service restaurants. The study concluded that Artificial Intelligence (AI) is imperative for the efficiency of quick service restaurants in Lagos state, Nigeria and globally. The study recommended that other quick service restaurants in Lagos state should engage the use of chatbot ordering, predictive analytics, personalized menus in order to deliver effective services to customers. Other related sector should also embrace the use of Artificial Intelligence (AI) in their services to meet customer needs effectively.

Keywords: Artificial Intelligence (AI), Business performance, quick service restaurants, placing orders, service delivery and customize meals

INTRODUCTION

Artificial Intelligence (AI) has been at the forefront of organizations delivering customized services to individual (Murugeah, 2024). This growing recognition indicates the capacity of Artificial Intelligence (AI) to solve personal and global customer issues (Millán & De La Torre, 2024). Therefore, the adoption of Artificial Intelligence (AI) has become a strategic tool to create unique and customized services to customers. As such, the emergence of artificial intelligence is redefining quick service experience globally (Daqar & Smoudy, 2019). By providing unique services to customers (Bashir et al., 2020). Besides, AI is creating unique personal experience that meet customers preferences in a seamless fashion (Ameen et al, 2021). AI has brought some measures of improvement to customers services and enabled the creation of unique experience through unconventional know-hows employed by a firm (Ehigiator, 2017).

Therefore, artificial intelligence has led to revolution by enhancing effective service delivery, innovative process and offering unique product to customers (Jadhav et al., 2024). In addition, it hugely contributed to the operational efficiency of service firms across the globe essentially the Quick service restaurants. Therefore, artificial intelligence has been conceptualized as an enabler that is slowly entering the food service sector (Addanki et al., 2022). Also, it has been theorized as technological tool that acts respond, or behave very logically to offer required services with the aid of online application (Prentice et al., 2020). Similarly, Tussyadiah et al. (2022) contextualized benefits that accompanied AI technology to include business efficiency reorganizing activities and delivering tailored services to customers. Despite the benefits, Nozawa and colleagues (2022) indicates that AI application in the service sector has attracted criticism because AI-powered service has been found to be impersonal and less responsive to individual needs.

Previous studies indicates that business dynamics is changing especially in the service sector in Nigeria, (Ameen et al, 2021). Yet some QSR have failed to spread their business tentacle by adopting the power of AI in order to increase their interaction with customers. This is considered a necessity because of the changing taste of customers which has presented itself as a critical factor that affect the operations of businesses. More worrisome is that some QSR are yet to see the necessity of AI, reasons some of them struggle to match customers demand and achieve competitive advantage. This means that QSR are expected to adopt AI in order to offer fast and reliable service to consumers to match consumers marked rise in demand for reliable and effective service. By implication, any fast food QSR firm that failed in the adoption AI applications for seamless services to receive orders, and provide customized meals might not experience rise in customers' patronage. To this effect, the survival of fast-food restaurants largely depends on the effective adoption of AI to deliver seamless services for positive sales trajectory. This is confirmed by Agwu (2014) that some fast-food firms in Nigeria lacks the innovative strategies that should supposedly offer seamless services; hence reasons for some failures. Previous study equally established that about 80% of quick fast-food firms does not

exceed the first (5) five years (Sahagun & Vasquez-Parraga, 2014) due to lack of innovation strategies. The Nigeria small business experience may not be far from these postulations. The aforementioned laced the necessity for the research in addressing a critical issue of this nature. This study followed the perspective on the efficacy AI tools for business performance (Abdallah et al., 2024; Taneja et al., 2023). In specifics, the study is scoped within the use of digital tools of AI and its benefits in assisting firms to offer seamless services while taking customers' orders, offer customized services and ease of service delivery.

Objective of the study

The study aim is to examine the influence of artificial intelligence on the performance of quick service restaurants in Lagos State.

LITERATURE REVIEW

It is obvious that the emergence of artificial intelligence is affecting the strategic decisions of firms. This makes Millán and De La Torre, (2024) to state that artificial intelligence (AI) has become an essential aspect for businesses in the 21st century and most importantly the quick service food restaurants (Millán & De La Torre, 2024). The fast-food sector is one of the service sectors, with huge potentials that contributes to national development of a country through employment creation and improving society welfare. The sector is known for offering intangible services, unique experiences, supports to categories of customers (Ishola & Olusoji, 2020). Artificial intelligence has been conceptualized as the deployment of technologies delivering automated decisions using customer data. Similarly, Tjepkema (2016), opined that artificial intelligence is a technology instrument that leverages on customer data through machine learning to improve transaction journey. In addition, Nwachukwu and Affen (2023a) submitted that AI involves the effective use of technology to offer personal services and improve customer engagement. Previous study by Jim Sterne (2017) agreed that artificial intelligence is an advanced technology used to enhance business and customer relationship, and ultimately achieve business efficiency (Sterne, 2017). Previous study by Yeo, Goh, and Rezaei (2017) that AI technologies aided unique customers experience by saving time with freedom to choose products at ease. Similarly, Tang et al. (2020) study affirmed the seamless customers interaction by AI in recent time among quick service restaurants. By implication artificial intelligence have become a strategic tool and an indispensable aspect of business life influencing services offered. (Prentice et al. 2020).

Placing orders

In this conceptualization AI has the capacity to differentiate a firm, by giving them advantage over others (Micheal & Redbord, 2022). Thus, is confirmed by Daradkeh's (2023) that the deployment of AI has crucial impact on business performance based on the services offered. In fact, it was stated that AI enabled technology has the capacity to give speed and precision to firm services, by achieving faster delivery, and customers satisfaction when orders are placed. This infers, AI enabled technology is becoming significant to business interactions and competitiveness in the 21st century. (Brynjolfsson & McAfee 2014; Xu et al., 2018). An empirical study was conducted to examine customers sensitivities and behaviour when they engaged chatbots in restaurants to take orders (Leung & Wen 2020). The study was done using a controlled laboratory experiment to determine the role of AI in ordering procedure, and its

effect on customer perception, satisfaction, attitude and behaviour. The study findings indicate that AI have effects on customers attitude, and satisfaction as they placed order through chatbot technique. It was concluded that customers satisfaction is achieved through technology when orders are made (Leung & Wen 2020). Based on this, AI tools are found to have potentials for seamless customers' orders and personal customer's service. The study by Ramos (2021) on QSR and AI indicate that AI technology has been adopted as means to receive orders in selected QSR in Kenya among the likes of; Uber eats; Glovo, Jumia Food, yum delivery, Food plus, take eat easy among others. He further states that the use of AI has assisted in saving cost, track orders and the achievement of effective delivery. The review of literatures affirm that AI adoption offered service efficiency through orders and increase personal customers services.

Personal customers service

The term personal services through AI refers to providing tailored made product through efficient means (Ameen et al, 2021). Similarly, it has been reported as the use of AI to create adapted benefits to customers (Huang & Rust 2018). It is also seen as meeting customers preferences and expectations (Chen, Chiang & Storey 2012). To add, previous study agreed that AI perennial service improves customers interaction, and product recommendations (Li & Karahanna 2015). In the literature, the study by Salesforce Meeker and Wu (2018), established that consumers trust the personal engagements using AI with 51% with the expectations that it will meet their needs, while 69% believed adoption of AI will solve their problems. In addition, study conducted by Chen et al. (2021) on the use of AI for personal preferences through digital menu in public canteen in the United Kingdom, Greece, France, and Denmark stated that getting food quality stands as the most common reasons for customers preferences for digital menu across these countries. Therefore, existing literatures confirmed that use of AI technologies strategically enabled and define the QSR offering of unique customers' experience as such businesses should adopt it (Davenport, Guha & Grewal 2020).

Theoretical Review

The relevant theory that best explained the studied variables are espoused by Korpelainen (2011) as follows:

- i. Theory of Planned Behavior (TPB);
- ii. Unified Theory of Acceptance and Use of Technology (UTAUT);

The theory is anchored on Ajzen (1991) theory of planned behavior which assumes consumers perceptive self-regulation. The theory fundamentally emphasized on perceived behavioural control of individual. The theory established that consumers behaviour is a function of individual attitude, public pressures and sense of control regarding the choice of services made (Korpelainen 2011). In addition, Korpelainen (2011) unified theory of acceptance and use of technology (UTAUT) explain a consumer's intention to use a particular technology with the expectation to repeat it in the future. The theory opined that consumers acceptance of a technology is based on acceptance, social influence and facilitating conditions. The UTAUT provides the knowledge that the deployment of technological tools is aimed at providing innovative services, and promote consumers future purchase intentions. Therefore, at the core

of these theories is the benefit of social interaction between QSR the customers through the use of AI leading symbiotic relationship. To the Nigerian QSR, the TPB theory affirmed the relevance of understanding consumers planned behaviour when adopting AI. In addition, the rationale for the use of UTAUT theory is based on the fundamental benefits that accompanied use of AI technology to deliver the most innovative services to consumers. Therefore, application of these theories established the benefits that accompanied use of AI to quick service restaurants in business exchange. More, importantly the theories are considered appropriate when compare to technology acceptance model (TAM) that postulates the acceptance of technology, perception of technology usefulness in performing a task, ease of use of its use and perceive usefulness within the context of behavioral intentions of the individual.

METHODOLOGY

The study followed cross sectional design which was accompanied by survey design, The survey design investigates a precise phenomenon at a particular period (Saunders et al., 2012). The study was drawn on quantitative approach. The quantitative approach employed questionnaire to collect data drawn from the studied variables on artificial intelligence and performance of quick service restaurant. The study aligned with the positivist ideology that leaned towards quantitative approach to measure research variables and targeted samples. The positivist philosophy is premised on quantitative results and findings to delineate study conclusion within the context of making generalizations of samples behaviour. The study instrument was administered one hundred and sixty-five (165) respondents, while one hundred and fifty (150) was the sample size for the study. The sample selection was done based years of patronage at least 2 two years and use of the AI application by the firm. The choice of these customers is because they fall within those that are loyal to Quick service restaurants Ikeja area of Lagos. The judgmental sampling techniques was employed to collect data on the studied constructs. A structured questionnaire was considered the most appropriate to obtain information in this study. The instrument was subjected to content and construct validity, for reliability and dependability of results, through Cronbach alpha results based on pilot test conducted on selected small and medium scale enterprise in Ikeja area of Lagos state. The study ensures confidentiality, privacy, and seek the consent of the respondents,

Table 1: Reliability of scales

	Scales	No. of items	α- Value
i.	Placing orders	7	0.876
ii.	Personal Customer services	8	0.859

Source: Cronbach alpha results Researcher (2025)

Table 1. shows that placing order scale with 7 variables is reliable at an alpha value of 0.876. Similarly, personal customer scale with scale with 8 variables is reliable at an alpha value of 0.859. These values suggest that survey instrument has good internal consistency and reliability

across all sections. Arising from these, data collected were subjected to quantitative analysis through regression analysis of the statistical package for social sciences VI 25.

RESULTS AND DISCUSSIONS

The results generate actionable insights that advance both academic understanding and practical management applications in the quick service restaurant sector.

Hypotheses one

Table 2: Regression Analysis

Placing of orders through AI does *not influence* quick service food restaurants performance in Ikeja area of Lagos State.

Variable	Unsaturated Coefficients		Standardized Coefficients	T	P
	B	SE	Beta (β)		
Constant	1.603	0.256		6.267	0.000
Placing of orders	0.579	0.077	0.554	7.499	0.000

Note. (N= 123); Constant = 1.603; F (1, 127) = 56.232; p < 0.001; Adjusted R²=0.301

The table 1 above shows the regression analysis indicates if AI *influence of* quick service food restaurants performance in Ikeja Area of Lagos State as shown in Table 1. AI explained 30.1% QSR food restaurants performance as stated in the result (R²=0.301; F (1, 127) = 56.23; p< 0.001). the result also shows that placing of orders through AI applications significantly predicts QSR food restaurants performance (β = 0.554; p< 0.001). The B value tells the amount of increase in QSR food restaurants performance that would be predicted by one unit increase in the use of AI applications. The result revealed that for 1 unit increase in AI applications, it is predicted there would be a corresponding 0.579 unit increase in QSR food restaurants performance (if and only if other variables are held constant). The t- value (t = 7.499; p< 0.001) is an indication that the coefficients in this model (regression model) is significantly different from zero (since t is greater than ±2, there is a greater confidence in the result). Thus, the corresponding predictor (placing of orders through AI applications) has a meaningful contribution to this model. The null hypothesis is therefore rejected while the alternative is accepted.

Hypothesis Two

Personal customers service does *not influence* quick service food restaurants performance in Ikeja area of Lagos State.

Table 3: Regression Analysis

Personal customers service does *not influence* quick service food restaurants performance in Ikeja area of Lagos State

Variable	Unsaturated Coefficients		Standardized Coefficients	t	P
	B	SE	Beta (β)		
Constant	1.227	0.244		5.026	0.000
Personalized customers service	0.681	0.072	0.642	9.411	0.000

Note. (N= 123) Constant = 1.593, $F(1, 126) = 54.814$, $p < 0.001$, Adjusted $R^2 = 0.298$

Table 3 shows that AI through personal customers service explained a variance of 29.8% in QSR performance ($R^2=0.298$; $F(1, 126) = 54.81$; $p < 0.001$). The result shows that personalized customers service is a significant predictor of selected QSR performance in Lagos State ($\beta = 0.554$; $p < 0.001$). The B value in the result revealed that for 1 unit increase in personal customers service, it is predicted there would be a corresponding 0.681 unit increase in QSR performance in Lagos State (if and only if other variables are held constant). The t-value ($t = 9.411$; $p < 0.001$) is an indication that the coefficients in this model (regression model) is significantly different from zero. Thus, the corresponding predictor (personal customers service) has a positive contribution to this model. The null hypothesis is therefore rejected and the alternative accepted.

Discussion of Findings

The results shows that AI explained has positive effect on the performance of QSR restaurants performance in Ikeja area of Lagos. In addition, the result also shows that placing of orders through AI applications significantly predicts QSR restaurants performance. Thus, the corresponding predictor customers placing of orders through AI applications have a meaningful contribution to QSR. This agreed with the study by Mohammed and Musa (2025) that concluded that digital marketing and artificial intelligence (AI) in shaping the performance of small and medium-sized enterprises (SMEs) in Nigeria. The study equally agreed with previous empirical work by Milton (2024) that placing of orders through AI applications has the capacity to make customers more committed.

Also, the result shows that AI through personal customers service has enhanced QSR performance in Lagos State. Thus, personal customers service has a positive contribution to QSR performance in Lagos State. This aligned with Mohammed and Musa (2025) that submitted that AI adoption is increasingly becoming a critical factor in enhancing business competitive advantage, particularly among businesses that already utilize digital marketing tools. This agreed with previous study by Kim et al. (2024) that AI application have the capability to provide personal meal recommendations based on past orders and taste

preferences. This lead Kim et al. (2024) to submission that providing personal services based on individual differences enhance customers satisfaction.

CONCLUSION AND IMPLICATIONS

The study findings indicate that placing of orders through AI applications has a meaningful contribution to quick service food restaurants performance in Ikeja Area of Lagos State. This emphasized on the use of menu selections, through AI applications in this area. Similarly, the study discovered that personal customers service has *influence on* quick service food restaurants performance in Ikeja Area of Lagos State. The study concluded that placing of orders through AI applications has its strategic effect on quick service food restaurants performance in Ikeja Area of Lagos State. Also, that it enhances effective order-taking by customers and increase customers satisfaction. Similarly, the study concluded that AI applications make customers more committed because of the customized experience and seamless process. In addition, personal customers service has *influence on* quick service food restaurants performance in Ikeja area of Lagos State. The study finding established that Artificial intelligence (AI) can improve speed of service deliver and enhance business performance. The study concluded that Artificial Intelligence (AI) is imperative for the efficiency of quick service restaurants in Lagos, Nigeria and globally. The study recommended that other quick service restaurants in Lagos state need should engage the use of chatbot ordering, predictive analytics, personalized menus to adequately deliver effective services to customers. Other related sector should also embrace the use of Artificial Intelligence (AI) in their services to meet customer needs effectively.

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