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RESEARCH ARTICLE

ADOPTION OF PREDICTIVE ANALYTICS FOR MARKETING DECISION MAKING: IMPLICATIONS FOR SMALL BUSINESS GROWTH

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ABSTRACT

This study examined the adoption of predictive analytics for marketing decision making and its implications for business growth. Specifically, the study examined the nexus between adoption of sales trend forecasting and customer retention in SMEs. Survey descriptive research design was used in the study. The population of the study consist of 1,902 registered SMEs in Awka South Local Government Area, Anambra State, with sample size of 330 respondents obtained using Taro Yamane (1967) formula. Data (Primary) were collected using structured questionnaire. Mean and frequency distribution were used to conduct descriptive analysis on the data. Hypothesis was tested using multiple regression analysis, at a 5% level of significance. The result indicted that a very high positive correlation exists between the variables analyzed, with an R coefficient of 0.8849, while the R^2 value of 0.7831 means that about 78.31% of the variation in the dependent variable is explained by the model. The study, therefore, concluded that Sales Trend Forecasting significantly and positively influence overall Business Growth of SMEs through customer retention. Sequel to this, among others, it was recommended that small business should learn to leverage data analytics, and by extension, sales trend forecasting, so as to be able to predict customer behavior and track it, in order to follow-up and ensure repeat purchase, and build loyalty among customers.

KEYWORDS

Data Analytics, Predictive Analytics, Marketing Decision, Sales Trend Forecasting, Business Growth, Customer Retention

1. INTRODUCTION

Predictive analytics has emerged as a vital instrument in the contemporary corporate environment, allowing firms to identify significant insights from both historical and current data. Utilizing methodologies like sales trend forecasting and inventory management enables firms to more accurately anticipate future events, discern trends, and make informed decisions. This data-driven approach has transformed enterprises, enhancing proficiency and innovation while mitigating uncertainty (Adewumi, et al., 2024; Folorunso, 2024; Gil-Ozoudeh, et al., 2024; Samira, et al., 2024).

Small and Medium Enterprises (SMEs) frequently face unique challenges that deter their ability to adopt advanced technologies like predictive analytics, including insufficient access to quality data, limited or lack of technical expertise, and financial resources. In the Nigeria, small businesses constitute a significant portion of the economy, driving job creation and innovation. a group researcher aver that SMEs are pivotal in the economic development of many nations (Okwudiri et al., 2025). Despite this significant role, numerous SMEs continue to struggle with sustaining business expansion and customer loyalty due to market discontinuities, competitive challenges, and operational inefficiencies. Consequently, predictive analytics emerges prominently. Predictive analytics is a promising solution to these challenges, equipping SMEs with the necessary tools to enhance operations, comprehend customer behavior, and foresee market trends (Ajiga et al., 2024; Folorunso, 2024).

Through the implementation of predictive analytics, SMEs can improve decision-making, optimize resource allocation, and secure a competitive advantage in an evolving market. The principal obstacles to the implementation of predictive analytics in SMEs encompass a deficiency of experience, financial apprehensions, and inadequate comprehension of the technology's value offer (Bashir and Karr, 2021). SMEs often lack the necessary skill sets to interpret complex data; thus, a gap exists between the potential benefits of predictive analytics and the capability to leverage them effectively. Failure to adopt predictive analytics may hinder SMEs' growth potential, as data-driven decision-making is essential for optimizing marketing strategies and enhancing customer engagement. This study aims to investigate the utilization of predictive analytics in marketing decision-making in SMEs and its ramifications for business success. The paper examines the impediments to adoption, including data quality issues and deficiencies in technical knowledge, and offers pragmatic solutions to surmount these challenges. This study aims to demonstrate how predictive analytics may enhance the growth of small

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firms by examining successful case studies and outlining a viable implementation approach.

1.1 Objectives of the Study

This study aims to examine the effect of adoption of predictive analytics for marketing decision on business growth of SMEs. The study, however, seeks to specifically:

- Examine the nexus between adoption of sales trend forecasting and customer retention in SMEs.

2. Review Of Related Literature

2.1 Predictive Analytics

Predictive analytics fundamentally involves utilizing historical and real-time data to anticipate future patterns, behaviors, and events. This is accomplished by a synthesis of machine learning algorithms, data mining methodologies, and statistical analysis. Machine learning enables systems to enhance predictions over time by identifying patterns in data, whereas data mining retrieves pertinent information from extensive datasets (Ohakawa et al., 2024; Okeke et al., 2024; Olorunyomi et al., 2024). Statistical analysis subsequently quantifies these findings, furnishing firms with actionable predictions. These methods establish a coherent framework for predictive analytics, allowing organizations to make data-driven decisions with enhanced precision and assurance.

Predictive analytics necessitates distinct interrelated ideas, including descriptive and prescriptive analytics. Descriptive analytics emphasizes the interpretation of historical data to comprehend past events, providing insights into patterns and trends. Although beneficial, it does not possess the anticipatory capacity of predictive analytics. Prescriptive analytics advances by suggesting particular actions derived from predictive insights, hence enhancing decision-making processes (Achumieet al., 2024; Ezeafulukwe et al., 2024; Gil-Ozoudeh et al., 2023). Predictive analytics holds a distinct position within this continuum, acting as a conduit between descriptive insights and prescriptive recommendations. By forecasting future outcomes, companies may proactively tackle difficulties and seize opportunities, a skill that is particularly vital in dynamic contexts.

The application of predictive analytics in small business decision-making has been thoroughly investigated in both academic and practical settings. Current studies emphasize its use in several operational domains, such as financial planning, marketing, inventory management, and customer relationship management. Research indicates that small enterprises employing predictive analytics for financial forecasting might attain enhanced accuracy in revenue estimates, facilitating improved budgeting and investment plans (Adeyemi et al., 2024; Ezeafulukwe et al., 2024; Gil-Ozoudeh et al., 2024). Predictive analytics enables organizations to identify consumer preferences, create tailored promotions, and enhance client retention rates. Inventory management benefits from predictive insights, enabling organizations to anticipate demand swings and optimize stock levels, hence reducing expenses related to overstocking or stockouts. Moreover, customer relationship management is improved by identifying high-value consumers and creating targeted engagement tactics, thereby cultivating loyalty and enduring partnerships.

2.2 Sales Trend Forecasting

Predictive analytics may be fundamentally employed in financial planning. Predictive models enable small enterprises to anticipate revenue with enhanced precision by analyzing previous sales data, market trends, and seasonal variations. This facilitates enhanced budget optimization, guaranteeing that enterprises utilize resources effectively (Ajiga et al., 2024; Ekpobimi et al., 2024; Gil-Ozoudeh et al., 2024). Predictive analytics can assist a small business in identifying the weeks, months, or quarters that are likely to yield more profitability, enabling strategic planning for marketing inventory acquisitions. Moreover, predictive analytics can detect prospective financial concerns, such cash flow problems or decreasing sales, enabling organizations to implement remedial measures prior to the escalation of crises. This affirmative strategy for financial development improves decision-making and fosters enduring resilience.

2.3 Business Growth

Predictive analytics directly influences business growth by improving decision-making processes with data-driven insights. Studies have demonstrated that SMEs employing predictive analytics exhibit better operational efficiency and significantly higher revenue growth, as these technologies help forecast market trends, inform resource allocation, and mitigate risks (Opoku et al., 2024). For example, analytical models reduce uncertainty in sales predictions and improve financial planning, leading to more strategic marketing decisions and increased profitability.

Sales trend forecasting, a core aspect of predictive analytics, is critical to business growth. Sales forecasting techniques allow SMEs to anticipate demand fluctuations, optimize inventory, and tailor marketing campaigns. Research indicates a strong positive correlation between accurate sales forecasting and business performance metrics, including sales volume and market expansion (Vähä-Erkkilä, 2024). This forecasting enables SMEs to proactively adjust to market changes, reducing wastage and increasing customer satisfaction.

2.4 Customer Retention

Customer retention is a fundamental driver of business growth in SMEs. By leveraging predictive analytics to identify at-risk customers and personalize retention strategies, SMEs significantly reduce churn rates and increase customer lifetime value (Amajuoyi et al., 2024). Customer retention utilizes predictive algorithms to proactively mitigate churn or customer attrition, which is generally 5-25 times more cost-effective than the continual acquisition of new users (Kumar and Reinartz, 2016). 'Churn prediction' models utilize statistical techniques to analyze usage trends, transaction dynamics, and support interactions, efficiently identifying at-risk clients months in advance (Khormali et al., 2020; Shmueli et al., 2021). Personalized engagement, loyalty programs, and targeted communications informed by data analytics enhance long-term customer relationships and drive sustainable growth.

For example, a business services firm developed 'Churn Trees' through decision tree analysis to precisely identify over 74% of customers who became inactive in the last three billing cycles, even at initial phases of dissatisfaction not detectable by conventional methods (Angelopoulos et al., 2019). These early warnings facilitated the proactive development of specific experience improvements and financial incentives that reduced annual churn by 28% (Fu and Hozier, 2021). 'Next-best-offer' recommendation algorithms optimize up-selling prospects and enhance the lifetime value of current clients. Utilizing collaborative filtering of historical preferences and reinforcement learning to perpetually enhance personalized offers for each member, these platforms frequently increase recurring revenues by more than 30%, as indicated by multiple case studies (Chen et al., 2020).

2.5 Conceptual Framework

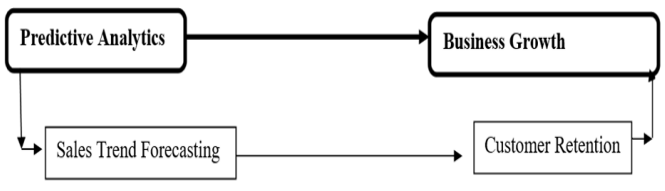

Figure 1: Conceptual Framework For Predictive Analytics and Business Growth (Source: Researcher's Conceptualization (2025)

3. Methodology

This study employed a descriptive survey design. The adoption of a descriptive survey design in this study makes it a better choice, as it aids a thorough and efficient examination of the research phenomenon, yielding a rich and contextualized understanding of the predominant trends, patterns, and characteristics. The population of the study is made up of **1,902 registered SMEs** in Awka-South Local Government Area, Anambra

State. The study deployed Taro Yamane's (1967) formula to obtain a sample size of 330. The study's data was obtained via a structured questionnaire created with Google Forms and disseminated online. Consequently, emphasis was given to SMEs whose owners possess digital literacy to facilitate online completion and submission of the questionnaire. The validity and reliability of the questionnaire were assessed, and the results confirmed that it was both valid and reliable. The data analysis employed descriptive statistics (mean, frequencies, and tables) and inferential statistics (regression analysis). The hypothesis was evaluated at a 5% significance level.

3.1 Map of Anambra State

Figure 2: Map of Anambra State (Source: https://ccrd.unizik.edu.ng/anambra-state-lgas/)

Figure 2 shows the map of Anambra State and the three senatorial zones of Anambra Central, Anambra North and Anambra South senatorial zones. Each of these zones has seven local government areas attached to each of them, making it twenty one local government areas in the State.

3.2 Data Presentation and Analysis

Table 1: Questionnaire Distribution Schedule

Distributed	Collected	Valid
330	309	300
(100%)	(94%)	(91%)

Source: Field Survey, 2025.

Table 1 shows the total number of electronically distributed copies of the questionnaire, retrieved copies and the number valid for the study. From the table, a total of 330 copies of the questionnaire were distributed in accordance with the sample size of the study, 309 copies were collected representing 94% of the distributed copies of the questionnaire, while 300 (91%) copies were analyzed as 9 copies was not answered completely.

Table 2: Demographic Statistics

S/N	Biographic	Frequency	Percentage	Total
1	**Gender of Owner**			
	Male	170	57	**300**
	Female	130	43	
2	**Age of Owner**			
	18-25	47	16	**300**
	26-35	130	43	
	36-45	83	28	
	46 and above	40	13	
3	**Educational Qualifications of Owner**			
	SSCE (WAEC/NECO)	56	19	**300**
	OND/NCE	106	35	
	HND/B.Sc	134	45	
	M.Sc/MBA/MA	4	1	
	PhD	-		
4	**Business Years in Operation**			
	Less than 1 year	-		**300**
	1 – 5 years	190	63	
	6 – 10 years	89	30	
	Above 10	21	7	

Source: Field Survey, 2025

Table 2 presents the biographic characteristics of the 300 respondents included in the study. With respect to gender, 170 respondents, representing 57% of the total sample, were male, while 130 respondents, accounting for 43%, were female. The age distribution shows that 47 respondents (16%) were between 18 and 25 years, 130 respondents (43%) were within the 26–35 age group, 83 respondents (28%) fell between 36 and 45 years, and 40 respondents (13%) were aged 46 years and above. The total number of respondents across all age categories was 300.

Concerning educational qualifications, 56 respondents (19%) possessed SSCE (WAEC/NECO), 106 respondents (35%) had OND or NCE certificates, and 134 respondents (45%) held HND or B.Sc qualifications. Additionally, 4 respondents (1%) possessed M.Sc, MBA, or MA qualifications, while no respondent reported having a PhD. The total number of respondents for this category was 300. The table also shows the number of years the businesses had been in operation. None of the respondents reported operating a business for less than one year. A total of 190 respondents (63%) indicated that their businesses had been in operation for 1–5 years, 89 respondents (30%) reported 6–10 years of operation, and 21 respondents (7%) indicated that their businesses had operated for more than 10 years, giving a total of 300 respondents.

Table 3: Distribution of responses for adoption of sales trend forecasting

S/N	Item	SA (5)	A (4)	U (3)	SD (2)	D (1)	N	Mean	Remark
	Sales Trend Forecasting								
1.	Your business currently uses sales trend forecasting techniques?	10	30	25	120	115	300	2.34	Rejected
2.	How frequently do you conduct sales forecasting	90	150	10	40	30	300	1.78	Rejected
3.	A specific personnel or a department responsible for forecasting sales	90	80	15	55	60	300	3.00	Accepted
4	**Accurate** sales forecasting leads to better business growth	125	115	22	20	18	300	4.15	Accepted

Source: Field Survey, 2025

Table 4 reveals the distribution of responses for customer retention. The analysis is done using mean, with a threshold of acceptance of 3. Here, all items under customer retention recorded mean scores above the benchmark and were therefore accepted. Regular communication with existing customers (Mean = 4.80), customer referrals (Mean = 3.50), monitoring of customer feedback (Mean = 4.48), and recognition of customer retention as a key driver of long-term business growth (Mean = 4.65) were strongly accepted. This indicates that customer retention strategies are widely practiced and perceived as essential for business sustainability and growth.

3.3 Test of Hypothesis

There is a significant nexus between adoption of sales trend forecasting and customer retention in SMEs.

3.4 Decision Rule

Reject the null hypothesis and accept the alternate hypothesis if P-value < 0.5; if otherwise accept the null hypothesis.

Table 5: Model: Summary For Hypothesis Test

Model	R	R squared	Adjusted R squared	Std. Error of the Estimate	F	t	Sig.
1	.8849[a]	.7831	.7779	0.5140	150.58	17.872	.000[b]

*Predictors: (Constant), Sales Trend Forecasting

Table 5 shows hypothesis testing using regression analysis, shows he relationship between the sales trend forecasting and customer retention. The R value of 0.8849 shows a very high positive correlation while the R^2 value of 0.7831 means that about 78.31% of the variation in the dependent variable is explained by the model. Moreover, the Adjusted R^2 (77.79%) confirms this with minor adjustment for the number of predictors. The F-value (150.58) and its significance level (Sig. = .000) indicate that the model is statistically significant and the predictor has a meaningful impact on the outcome variable. This implies that the model is a good fit and sales trend forecasting significantly predict customer retention, therefore the alternate hypothesis is accepted.

4. Conclusion

Small and Medium Scale Enterprises are crucial to the growth and development of nations, hence, the importance of studies that seek their sustained performance and existence. Important in the whole discourse of their survival is customers and their retention techniques. To appropriately deal and handle customers needs, choices and decisions, businesses need to be able to preempt and predict their actions and inaction, which is where predictive analytics comes in. the study examined how predictive analytics could play a role in sales forecasting and by extension, help to retain customers. The study, after the analysis concludes that Sales Trend Forecasting significantly and positively influences overall business growth through customer retention.

Recommendation

Sequel to the findings of the study, the following are recommended:

- That small business should learn to leverage data analytics, and by extension, sales trend forecasting, so as to be able to predict customer behavior and track it, in order to follow-up and ensure repeat purchase and build loyalty among customers.
- Given the role SMEs play in economic development, the government and its support agencies need to organize trainings and hands-on workshops for these SMEs so as to keep up with developmental trends in marketing and customer retention dynamics.
- Collaboration should be encouraged among SMEs so as to teach, and help themselves, and if possible leverage shared infrastructure and subscriptions for some of the software needed for optimum predictive analytics

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