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Financial Ratio Analysis and Entrepreneurial Success of Business Education Graduates' Start-ups in Port Harcourt Metropolis in Rivers State.

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Abstract

The study investigated the relationship between financial ratio analysis and entrepreneurial success of Business Education graduate's start-ups in Port Harcourt Metropolis. The study adopted correlational research design. A population of 84 Business Education graduates was used in the study. Three research questions and three null hypotheses guided the study. The instrument for the study was self-structured 4-point rating scale tagged Financial Ratio Analysis and Entrepreneurial Success of Business Education Graduates' Start-ups (FRAESBEGS). The instrument was validated by three experts in the department of Business Education and one measurement and evaluation expert. Reliability coefficient of 0.89 was obtained using Pearson Product Moment Correlation. Research questions were answered with Pearson Product Moment Correlation. Also, Pearson Product Moment Correlation was used to analyze the hypotheses. Findings from the study revealed amongst others, that financial ratio analysis can play critical role in the entrepreneurial success of Business Education Graduates' start-ups. Based on the findings, recommendations were proffered; which included: that Business Education graduates should regularly employ financial ratio analysis to appraisal the financial health status of their start-ups, as such measure can significantly help to mitigate business risks, drive growth, and promote sustainability of the businesses.

Key Words: Financial Ratios; Business Education graduates, Entrepreneurial Success; Start-ups

Introduction

It has been widely acknowledged that the huge number of Nigerian graduates that are turned out yearly from the various tertiary institutions within and outside the country has by far surpassed the absorptive capacity of both the private and public sectors of the economy. Some of these graduates are ill-equipped with no specific skills that would facilitate employment (Amaewhule, 2018). As a measure to ameliorate the ugly situation, the Federal Republic of Nigeria (FRN, 2004) directed through the National Policy on Education the teaching and learning of Business Education at all levels of education.

This directive was predicated on the perception that Business Education plays critical role in curbing unemployment and in promoting the economic development of every nation as it could facilitate the development of the desired skills, attitudes, value and competencies that would make the recipients successful and productive members of the society (Atakpa & Aijene, 2025). Business Education is that education which provides its graduates with training in business skills and economic competencies necessary for advancing a business career or establishing a business enterprise. It is an aspect of vocational education that focuses on skills and knowledge acquisition (Ajoma, 2021). The programme is designed in line with the needs of the business world to ensure that education and training offered are consistent with the competencies for the present and emerging job requirements and opportunities (Edeh & Olumakinwa, 2025). Stan (2020) asserted that one thing that is certain in Business Education programme is that the individual recipient of the programme can always start his or her own business since the individual has been equipped with the skills necessary for business success.

To translate theory to practice, reasonable number of Business Education graduates opened businesses in Port Harcourt Metropolis. Some are into startups. According to Mitchell (2026), Startups are newly established business endeavour designed to develop and sell a unique product or service, often seeking rapid growth and innovative solutions. Start-ups play important role in shaping the economy of a nations. They are key driver for breakthrough innovation, start-up is designed to search for, identify, and adopt a repeatable and scalable business model. The success and survival of startups depend on strategic decisions and the ability to execute a well-developed business plan (Mitchell, 2026), However, studies have shown that about 80 percent of new ventures including businesses of the Business Education graduates fail within the first year of operation, while 92 percent fail by the end of five years (Taiwo, 2024; Denanyoh & Owusu, 2025; Horton, 2026). Some scholars attributed this business failures to several factors such as improper record keeping, poor market strategy, poor forecasting, mismanagement of funds, failure to understand the market and consumers, failure to communicate what one is dealing on and so forth (Timi, 2024; Ishaq, 2025). Beyond all these, this study investigated the relationship that exists between financial ratio analysis and entrepreneurial success of Business Education graduate's start-ups. This investigation is against the backdrop that financial ratio analysis is perceived as having the potential to aid entrepreneurial success.

According to Ekendu and Chilezie (2025), financial ratios analysis is critical to the continued existence of any business. It involves calculating and interpreting ratios from a business's financial statements such as income statement and the balance sheet. Hence it is possible that good knowledge of financial ratio analysis can promote Business Education graduates' startups. Andrew (2026) opined that through ratio analysis financial data are distilled into understandable metrics, allowing business owners to make informed decisions. For example, by analyzing profitability ratios, a business owner can decide whether to expand operations or invest in new projects. Liquidity ratios can help a business man to determine the right time to procure inventory or manage cash flow effectively, ensuring the business can meet its short-term liabilities. Efficiency ratios evaluate operational performance, assisting in decisions related to asset management and process improvements. Leverage ratios offer insights into the business's debt levels, guiding financing and capital structure decisions. Regularly review of these ratios allows entrepreneurs to make strategic decisions that align with their financial goals, thus enhancing overall performance. This proactive approach to financial management ensures that businesses can survive and thrive in competitive markets. Zhu (2024) posits that it is crucial for a business venture to monitor financial ratios regularly. The frequency of monitoring may vary depending on the specific ratio and the nature of the business. However, a general guideline is: Liquidity - Monthly; Efficiency - Monthly; Profitability – Quarterly; Solvency – Quarterly.

According to Bailey (2025), there are so many financial ratios an entrepreneur could use to appraise the status of his business. This study centered on: Liquidity Ratios, Profitability Ratios, and Efficiency/Activity Ratio.

Liquidity Ratios: Liquidity ratios are used to determine a business's ability to meet its current obligations with the assets it possesses. Common liquidity ratios an entrepreneur should prepare include: Current ratio, Quick ratio (Acid test ratio), Cash ratio, Operating cash flow ratio and Defensive Interval ratio (Bailey, 2025).

Current Ratio: This ratio compares all the current assets with current liabilities. It indicates the ability of a business to meet up its short-term obligations with its current assets. A ratio of 2:1 is considered ideal. The calculation is: $\text{Current Assets/Current Liabilities}$

Quick Ratio (acid test): This ratio subtracts inventories from current assets, before dividing current assets by current liabilities. A ratio of 1.1 is acceptable. The calculation is: $\text{Current Assets} - \text{Inventory} / \text{Current Liabilities}$

Cash Ratio: Cash ratio measures how easily the business can cover its short-term liabilities using only its most liquid assets – cash and cash equivalents. Cash ratio of 0.5 and 1.0 can be regarded as good. (Will, 2025) The formula is: $\text{Cash and Cash Equivalents} / \text{Current Liabilities}$

Operating Cash Flow Ratio: This ratio compares a business's operating cash flow to its current liabilities. It provides insight into a business's ability to generate enough cash from operations to cover its short-term debts. This calculation is: $\text{Operating Cash Flow} / \text{Current Liabilities}$. An Operating Cash Flow Ratio of 1 is good. It is an indication that the business generated more cash than it needs to pay off current its liabilities (Kruger, 2024).

Defensive Interval Ratio: This ratio measures how long a business can continue to pay for its operating expenses from its current liquid assets without relying on additional funding. Daily Operating Expenses is total operating expenses for a year divided by 365. It is calculated thus: $\text{Cash} + \text{Marketable Securities} + \text{Account Receivable} / \text{Daily Operating Expenses}$.

Profitability Ratios: Profitability ratios measure a business's ability to generate earnings relative to its revenue, assets, and equity (Ashique & Associate, 2024). Key profitability ratio analysis includes: Profit Margin, Net Profit Margin, return on Equity (ROE), Operating Profit Margin, Return on assets.

Gross Profit Margin: The Gross Profit Margin ratio shows how efficiently a business uses its resources to produce goods (Erin, 2025). It is calculated thus: $(\text{Revenue} - \text{COGS} / \text{Revenue}) \times 100$. The higher the percentage the better (Ashique & Associate, 2024)

Net Profit Margin: This ratio considers all operating expenses, taxes, and interest, showing how much profit is made after all costs are accounted for. It indicates how much of each naira of revenues is translated into profits. The calculation is thus: $(\text{Net Profit} / \text{Revenue}) \times 100$

Return on Investment (ROI): Return on Investment measures the profitability of an investment relative to its cost. Higher ROI indicates a more profitable investment relative to its cost, (Nick, 2024). The formula is $(\text{Net income} / \text{Investment}) \times 100$

Operating Profit Margin The operating profit margin examines the business profitability before accounting for interest and tax. The higher the operating margin, the better for the business. The formula is: $\text{Earnings before Interest and taxes (EBIT)} / \text{Revenue}$.

Return on Assets: Return on assets (ROA) considers a company's net profit (return) in relation to its capital. In other words, it evaluates whether the business makes enough profit given its size and the capital it employs. The higher the ROA, the better the company deploys its capital. $\text{Average total assets} / \text{Net income}$

Efficiency/Activity Ratios: Efficiency or activity ratios measure a business's ability to leverage its assets to generate revenue. (Baltova, 2024). Key ratios here include:

Total Asset Turnover: This ratio assesses how efficiently a business utilizes its assets to produce sales. $\text{Total Asset Turnover Ratio} = \text{Net Sales} / \text{Average Total Assets}$

Inventory Turnover Ratio: Inventory Turnover Ratio indicates how frequently a business's inventory is sold and replaced. It is calculated thus: $(\text{Cost of Goods Sold} / \text{Average Inventory}) / \text{Account Receivable Turnover}$

Account Receivable Turnover Ratio: This ratio examines the ability of a business to collect money from its customers. It is measured by dividing total credit sales by the average accounts receivable balance for a specific period. A low ratio suggests a deficiency in the collection process. The calculation is: $\text{Net Credit Sales} / \text{Average Accounts Receivable}$

Accounts Payable Turnover Ratio: This ratio measures how quickly a company settles its vendors and suppliers. A high ratio means bills are paid quickly. The formula is: $\text{Cost of Sales} / \text{Average Accounts Payable}$

Operating Ratio: This ratio compares a business's operating expenses to its net sales. It shows exactly how much it costs the company to generate each Naira of revenue. Unlike turnover ratios, a lower operating ratio is generally preferred, as it signifies better management control over overhead and operational costs. The formula is:
$$\text{Operating Expenses} + \text{Cost of goods sold} / \text{Net Sales}$$

Statement of the problem

Business Education was considered a panacea to unemployment crises in the nation, as the recipients of the education are equipped with knowledge and skills that could promote business success. However, studies have shown that not much has been achieved; business failure is still on the high side even Business Education graduates' businesses are not spared. (Horton, 2026; Taiwo, 2024; Denanyoh & Owusu, 2025; Amaewhule, 2018). Some scholars have attributed this business failures to several factors such as improper record keeping, poor market strategy, mismanagement of funds and so forth. This study investigated the relationship between financial ratio analysis and entrepreneurial success of Business Education graduates' start-ups.

Purpose of the Study

The purpose of this study was to investigate the relationship between financial ratio analysis and entrepreneurial success of Business Education graduates' start-ups in Port Harcourt Metropolis. Specifically, the study sought to:

1. Determine the relationship between liquidity ratio analysis and entrepreneurial success of Business Education graduates' start-ups in Port Harcourt Metropolis
2. Identify the relationship between profitability ratio analysis and entrepreneurial success of Business Education graduates' start-ups in Port Harcourt Metropolis
3. Find out the relationship between efficiency ratio analysis and entrepreneurial success of Business Education graduates' start-ups in Port Harcourt Metropolis

Research Questions

1. What is the relationship between liquidity ratio analysis and entrepreneurial success of Business Education graduates' start-ups in Port Harcourt Metropolis?
2. What is the relationship between profitability ratio analysis and entrepreneurial success of Business Education graduates' start-ups in Port Harcourt Metropolis?
3. What is the relationship between efficiency ratio analysis and entrepreneurial success of Business Education graduates' start-ups in Port Harcourt Metropolis?

Hypotheses

1. There is no significant relationship between liquidity ratio analysis and entrepreneurial success of Business Education graduates' start-ups in Port Harcourt Metropolis
2. There is no significant relationship between profitability ratio analysis and entrepreneurial success of Business Education graduates' start-ups in Port Harcourt Metropolis
3. There is no significant relationship between efficiency ratio analysis and entrepreneurial success of Business Education graduates' start-ups in Port Harcourt Metropolis

Methodology

Correlational research design was adopted for the study. The area of the study was Port Harcourt Metropolis. The population of the study was 84 Business Education graduates' entrepreneurs (Obio/Akpor and Port Harcourt City Councils, 2026). The entire population was studied since the population was small. Data for the study was obtained through self-constructed four-point rating scale questionnaire of Strongly Agree (SA = 4 points); Agree (A= 3 points); Disagree (D= 2 points); Strongly Disagree (SD= 1). It was tagged Financial Ratio Analysis and Entrepreneurial Success of Business Education Graduates' Start-ups (. FRAESBEGS). The questionnaire was validated by lecturers in the department of Business Education. Two sets of questionnaires were distributed. One set elicited response from the independent variables while the other was for the dependent variables. The questions for the independent variables were segmented into section A, B and C. Section A dealt on Liquidity Ratio, section B was on Profitability Ratio, while section C was on Efficiency Ratio. A reliability co-efficient of 0.89 was obtained with the use of Pearson Product Moment Correlation formula.

The Pearson Product Moment Correlation Formula Coefficient (r) was used to answer the research questions and also used in the inferential statistics. To test the hypotheses, the coefficient (r) obtained from PPMC was transformed to t and the hypotheses were tested at 0.05 level of significance.

Result

Research Question 1 What is the relationship between liquidity ratio analysis and entrepreneurial success of Business Education graduates' start-ups in Port Harcourt Metropolis?

Table 1. Relationship between Liquidity Ratio analysis and entrepreneurial success of Business Education graduates' start-ups in Port Harcourt Metropolis

Variables	$\sum X$ $\sum Y$	$\sum X^2$ $\sum Y^2$	$\sum XY$	r-cal.	Remark
Liquidity	28.1	157.94	158.17	0.97	Positive
Entrepreneurial Success	28.14	158.39			

Source: Research's data 2026

The analysis in table 1 above show the calculated relationship between liquidity ratio and entrepreneurial success of Business Education graduates' start-ups in Port Harcourt Metropolis with the use of Pearson Product Moment Correlation. The table indicates that the calculated r is 0.97. This value implies a positive relationship between liquidity ratio and entrepreneurial success of Business Education graduates' start-ups in Port Harcourt Metropolis

Research Question 2 What is the relationship between profitability ratio analysis and entrepreneurial success of Business Education graduates' start-ups in Port Harcourt Metropolis?

Table 2 Relationship between Profitability Ratio analysis and entrepreneurial success of Business Education graduates' start-ups in Port Harcourt Metropolis

Variables	$\sum X$ $\sum Y$	$\sum X^2$ $\sum Y^2$	$\sum XY$	r-cal.	Remark
Profitability Ratio	27.46	150.84	154.56	0.90	Positive
Entrepreneurial Success	28.14	158.39			

Source: Research's data 2026

The analysis in table 2 above show the calculated relationship between liquidity ratio and entrepreneurial success of Business Education graduates' start-ups in Port Harcourt Metropolis with the use of Pearson Product Moment Correlation. The table indicates that the calculated r is 0.90. This value implies a positive relationship between liquidity ratio and entrepreneurial success of Business Education graduates' start-ups in Port Harcourt Metropolis

Research Question 3 What is the relationship between Efficiency Ratio analysis and entrepreneurial success of Business Education graduates' start-ups in Port Harcourt Metropolis?

Table 3: Relationship between Efficiency Ratio analysis and entrepreneurial success of Business Education graduates' start-ups in Port Harcourt Metropolis?

Variables	$\sum X$ $\sum Y$	$\sum X^2$ $\sum Y^2$	$\sum XY$	r-cal.	Remark
Efficiency Ratio	27.78	154.40	156.37	0.71	Positive
Entrepreneurial Success	28.14	158.39			

Source: Research's data 2026

The analysis in table 3 above show the calculated relationship between efficiency ratio and entrepreneurial success of Business Education graduates' start-ups in Port Harcourt Metropolis with the use of Pearson Product Moment Correlation. The table indicates that the calculated r is 0.71. This value implies a positive relationship between efficiency ratio and entrepreneurial success of Business Education graduates' start-ups in Port Harcourt Metropolis

Test of Hypotheses

Hypothesis 1: There is no significant relationship between liquidity ratio analysis and entrepreneurial success of Business Education graduates' start-ups in Port Harcourt Metropolis

Table 4: Computed PPMC for testing hypothesis 1 Significant relationship between liquidity ratio analysis and entrepreneurial success of Business Education graduates' start-ups in Port Harcourt Metropolis

Variables	$\frac{\sum X}{\sum Y}$	$\frac{\sum X^2}{\sum Y^2}$	$\sum XY$	r-cal.	t-trans	t-crit.	Remark
Liquidity	28.1	157.94	158.17	0.97	7.07	2.45	Positive
Entrepreneurial Success	28.14	158.39					

Source: Research's data 2026

The analysis in table 4 above show the calculated relationship between Liquidity ratio and entrepreneurial success of Business Education graduates' start-ups in Port Harcourt Metropolis using Pearson Product Moment Correlation. The result indicates that the calculated r is 0.97 and that the t-transformation for test of significance is **7.07**. This t-transformation value is greater than the t-critical value of 1.86 at 0.05 level of significance on 8 degree of freedom. This implies a significant positive relationship between liquidity ratio and entrepreneurial success of Business Education graduates' start-ups in Port Harcourt Metropolis. Hence the null hypothesis which state that there is no significant relationship between liquidity ratio and entrepreneurial success of Business Education graduates' start-ups in Port Harcourt Metropolis is rejected.

Hypothesis 2: There is no significant relationship between profitability ratio analysis and entrepreneurial success of Business Education graduates' start-ups in Port Harcourt Metropolis

Table 5: Computed PPMC for testing hypothesis 2 Significant relationship between profitability ratio analysis and entrepreneurial success of Business Education graduates' start-ups in Port Harcourt Metropolis

Variables	$\frac{\sum X}{\sum Y}$	$\frac{\sum X^2}{\sum Y^2}$	$\sum XY$	r-cal.	t-trans	t-crit.	Remark
Profitability	28.1	157.94	158.17	0.90	3.97	1,86	Positive
Entrepreneurial Success	28.14	158.39					

Source: Research's data 2026

The analysis in table 5 above show the calculated relationship between profitability ratio and entrepreneurial success of Business Education graduates' start-ups in Port Harcourt Metropolis using Pearson Product Moment Correlation. The result indicates that the calculated r is 0.90 and that the t-transformation for test of significance is 3.97. This t-transformation value is greater than the t-critical value of 1.86 at 0.05 level of significance on 8 degree of freedom. This implies a significant positive relationship between profitability ratio and entrepreneurial success of Business Education graduates' start-ups in Port Harcourt Metropolis. Hence the null hypothesis which state that there is no significant relationship between profitability ratio and entrepreneurial success of Business Education graduates' start-ups in Port Harcourt Metropolis is rejected. \

Hypothesis 3: There is no significant relationship between profitability ratio analysis and entrepreneurial success of Business Education graduates' start-ups in Port Harcourt Metropolis

Table 6: Computed PPMC for testing hypothesis 2 Significant relationship between profitability ratio analysis and entrepreneurial success of Business Education graduates' start-ups in Port Harcourt Metropolis

Variables	$\frac{\sum X}{\sum Y}$	$\frac{\sum X^2}{\sum Y^2}$	$\sum XY$	r-cal.	t-trans	t-crit.	Remark
Efficiency	28.1	157.94	158.17	0.71	2.45	1.86	Positive
Entrepreneurial Success	28.14	158.39					

Source: Research's data 2026

The analysis in table 6 above shows the calculated relationship between efficiency ratio and entrepreneurial success of Business Education graduates' start-ups in Port Harcourt Metropolis using Pearson Product Moment Correlation. The result indicates that the calculated r is 0.71 and that the t-transformation for test of significance is 2.45. This t-transformation value is greater than the t-critical value of 1.86 at 0.05 level of significance on 8 degree of freedom. This implies a significant positive relationship between efficiency ratio and entrepreneurial success of Business Education graduates' start-ups in Port Harcourt Metropolis. Hence the null hypothesis which state that there is no significant relationship between efficiency ratio and entrepreneurial success of Business Education graduates' start-ups in Port Harcourt Metropolis is rejected.

Discussion of Findings

Findings of this study with regards to how liquidity, profitability and efficiency ratios relates with entrepreneurial success of Business Education graduates' start-ups in Port Harcourt Metropolis revealed that calculating liquidity, profitability and efficiency ratio in the financial decisions of the business has significant positive relationship with entrepreneurial success. The analysis of responses from the research instrument with the use of Pearson Product Moment Correlation showed a positive correlation of 0.97, 0.90 and 0.71 for liquidity, profitability and efficiency ratios respectively. When these coefficients were transformed to t to test the hypothesis, the result was 7.07, 3.97 and 2.45. This t-transformation values were greater than the t-critical value of 1.86 at 0.05 level of significance. This is an indication that there is significant positive relationship between these ratios and entrepreneurial success of Business Education graduates' start-ups in Port Harcourt Metropolis. This finding aligns with the position of Madras Accountancy (2026) as they opined that the use of financial ratios in the financial decisions of a business ventures has serious implications on the success of the business. They observed that business decisions that are made based on gut feelings rather than financial data such as financial ratios have negative impact on the business. They noted that cash flow crises and business failures can be prevented through financial ratios analysis. The study is in agreement with Vjeko (2025) asserted that entrepreneurs that fail to appraise the health status of their business through financial ratios may have challenges as business success may be choked. In same vein, Will (2026) posits that entrepreneur need to monitor financial ratios such as liquidity, profitability efficiency and others regularly in order to identify rising expenses and uncover opportunities to streamline operations profitability and sustainability of the business.

Conclusion

The study revealed that financial ratio analysis such as liquidity, profitability and efficiency has significant positive relationship with entrepreneurial success of Business Education graduate's start-ups ventures. The analyses of these financial ratios can provide better insights into the overall financial performance of the business. Hence regular appraisal of these ratios can allow Business Education graduates to make more informed decisions that can mitigate risk, drive growth, and promote sustainability of the start-ups.

Recommendations

Business Education graduates should regularly employ financial ratio analysis particularly liquidity, profitability and efficiency in the appraisal of the health status of their ventures.

There should be training and retraining of entrepreneurs on how to integrate financial ratio analysis in critical financial business decisions

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Digital Skills Required by Business Education Graduates for Management of Small-Scale Businesses in Port Harcourt City, Rivers State

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Abstract

This study examined the digital skills required by Business Education graduates for the management of small-scale businesses in Port Harcourt City, Rivers State. The study was guided by three research questions and three null hypotheses tested at the 0.05 level of significance. A descriptive survey research design was adopted. The population was estimated at 155 Business Education graduates managing small-scale businesses in Port Harcourt City, while a sample of 105 graduates was selected using the snowball sampling technique. Data were collected using a structured questionnaire titled Digital Skills Required for Management of Small-Scale Businesses Questionnaire (DSRMSSBQ), which was face- and content-validated by the three experts. The reliability of the instrument was established using the test-retest method, which yielded a coefficient index of 0.78. Mean and standard deviation were used to answer the research questions, while the t-test was used to test the null hypotheses at the 0.05 level of significance. The findings showed that basic computer skills digital communication skills and digital data management skills were highly required for the management of small-scale businesses. The three null hypotheses were accepted, indicating that there were no significant differences between the mean ratings of male and female Business Education graduates on the three categories of digital skills. The study concluded that digital skills were essential competencies for the effective management of small-scale businesses by Business Education graduates. It was recommended that Business Education programmes should place greater emphasis on practical digital-skills training, while small-scale businesses and relevant institutions should provide opportunities for continuous ICT training and access to appropriate digital facilities.

Keywords: Digital Skills, Business Education Graduates, Small-Scale Businesses, Management.

Introduction

In recent decades, the global business environment has been rapidly transformed by the pervasive impact of digital technology. The integration of digital tools into business practices has revolutionized the way companies operate, communicate, and deliver products and services. Small-scale businesses, particularly in developing countries like Nigeria, have been greatly impacted by these changes, offering both challenges and opportunities. These businesses, which are critical to the economic fabric of nations, provide employment, stimulate innovation, and contribute to poverty alleviation. In Port Harcourt City, Rivers State, small-scale businesses play a central role in driving local economic growth, yet many struggle with the complex dynamics of business management in a digitally-driven world (Olusanya, 2019). Business Education, as an academic discipline, equips students with the essential skills to manage businesses, both in the public and private sectors. Graduates from Business Education programs are expected to possess a diverse set of competencies, which include management knowledge, entrepreneurial skills, and the ability to handle operational tasks efficiently. However, in an age dominated by digital technologies, there is an increasing need for graduates to be adept at using digital tools to run businesses, market products, engage customers, and manage financial transactions.

The concept of digital skills, as defined by the European Commission (2018), refers to the ability to use digital technologies effectively to solve problems, communicate, and enhance productivity. For business owners, this could include skills like digital marketing, e-commerce, data analysis, social media management, and the use of cloud-based tools for operations and customer relationship management. In Nigeria, the need for such skills is becoming more urgent, given the rapid technological advancements and the shift toward online business models. A study by Adebayo (2020) indicates that while Nigerian Business Education graduates often have a strong foundation in traditional business management principles, many lack the specific digital competencies required for modern-day business operations. This disconnect between business education and the evolving needs of the digital economy raises concerns about the preparedness of graduates to manage small-scale businesses in a competitive, tech-driven marketplace. While much attention has been given to the role of digital skills in larger enterprises, small-scale businesses face unique challenges and opportunities that necessitate tailored solutions (Ajayi & Oluwadare, 2019).

These businesses, often constrained by limited resources, require owners and operators who are resourceful, flexible, and able to integrate digital technologies to optimize business processes. Port Harcourt, a rapidly growing commercial hub in Nigeria, presents an interesting case study for examining these issues, as it is home to a wide range of small-scale businesses that have yet to fully leverage digital tools in their operations. Business Education graduates are trained to meet the demands of the business environment, yet their preparedness to handle small-scale businesses in Port Harcourt especially those that demand digital literacy—has not been systematically studied. This research, therefore, seeks to identify the digital skills required for management of small-scale businesses by Business Education graduates in Port Harcourt City of Rivers state.

Statement of the Problem

Despite the growing recognition of the importance of digital technologies in business operations, there exists a significant gap in the preparedness of Business Education graduates in Nigeria, particularly in Port Harcourt City, to effectively operate small-scale businesses. Although Business Education programs have traditionally focused on imparting management competencies, there has been little emphasis on integrating digital skills into the curriculum. Consequently, graduates of these programs are often underprepared to navigate the increasingly digital business landscape, which can result in operational inefficiencies, poor market reach, and financial mismanagement in small-scale enterprises. Small-scale businesses in Port Harcourt, like many others in Nigeria, face multiple challenges in adapting to modern business practices. These challenges include limited access to capital, lack of managerial expertise, and an inadequate understanding of digital tools necessary for marketing, customer management, and financial operations. While many Business Education graduates are equipped with the theoretical knowledge of business principles, their ability to apply these principles effectively in the context of a digital economy remains questionable. Despite the growing adoption of digital technologies in Nigerian businesses, many small-scale business owners still rely on outdated practices and lack the necessary digital competencies to thrive in the global marketplace.

The increasing trend of digitalization, along with the global COVID-19 pandemic, has made it imperative for business owners to adapt or risk falling behind. In Port Harcourt City, many small-scale businesses struggle to create an online presence, utilize digital marketing tools, manage customer relationships through technology, or even operate with cloud-based financial systems. The problem, therefore, lies in the insufficient integration of digital skills into Business Education training programs, which leaves graduates underprepared to meet the demands of small-scale business operations. Observations shows that while Business Education graduates possess the necessary theoretical knowledge, their inability to apply digital tools in real-world business scenarios hinders the growth of small businesses.

Moreover, the lack of a formalized understanding of the competencies needed for small-scale business operations further exacerbates the situation. It remains unclear which specific digital skills ranging from basic digital literacy to advanced skills in e-commerce or data analytics are most essential for Business Education graduates in Port Harcourt City to thrive in small-scale business environments. Therefore, there is a need to identify the gaps in digital skills that Business Education graduates possess and the level of preparedness they have for the practical demands of running small businesses. This research sought to bridge the gap by investigating the digital skills required for management of Small-Scale businesses in port harcourt city, Rivers state. By understanding these skills, it is possible to develop recommendations for improving educational programs, thereby enhancing the effective management of small-scale businesses in the region.

Aim and Objectives of the Study

The aim of this study was to examine digital skills required for management of small-scale businesses by business education graduates in Port Harcourt city, Rivers state. Specifically, the study sought to;

- 1: Identify the basic computer skills required for management of Small-Scale businesses by business education graduates in Port Harcourt City, Rivers state
- 2: Examine the digital communication skills required for management of Small-Scale businesses by business education graduates in Port Harcourt City, Rivers state
- 3: Ascertain the digital data management skills required for management of Small-Scale businesses by business education graduates in Port Harcourt City, Rivers state.

Research Questions

The study sought to answer the following research questions:

- 1: What are the basic computer skills required for management of Small-Scale businesses by business education graduates in Port Harcourt City, Rivers state?
- 2: What are the digital communication skills required for management of Small-Scale businesses by business education graduates in Port Harcourt City, Rivers state?
- 3: What are the digital data management skills required for management of Small-Scale businesses by business education graduates in Port Harcourt City, Rivers state?

Research Hypotheses

The following null hypotheses guided the study

1. There is no significant difference in the mean ratings of male and female business education graduates on the basic computer skills required for management of Small-Scale businesses in Port Harcourt City, Rivers state
2. There is no significant difference in the mean ratings of male and female business education graduates on the digital communication skills required for management of Small-Scale businesses in Port Harcourt City, Rivers state
3. There is no significant difference in the mean ratings of male and female business education graduates on the digital data management skills required for management of Small-Scale businesses in Port Harcourt City, Rivers state.

Methodology

This study adopted a descriptive survey research design. The population of the study was infinite. However, the population for this study consisted of 155 Business Education graduates managing small-scale businesses in Port Harcourt City Local Government Area, Rivers State. Marginal estimate of a population is given when the population of the study is infinite and the correct number of people/things within the population category is impossible to get (Nwankwo, 2016).

The sample size of the study was 105 Business Education graduates drawn from port Harcourt City, Rivers State. Snowball sampling technique was used in determining the study size. This was carried out through referrals and by meeting just one Business Education graduate, a chain of referrals was built to reach a reasonable number of 105 Business Education graduates managing Small-Scale businesses in port Harcourt city, Rivers State

Table 1: Sample Distribution

S/N	Gender	Total No. Of Business Education Graduates
1.	Female	53
2.	Male	52
TOTAL		105

Source: *Small Businesses, Port Harcourt city, Rivers state, 2026*

The instrument for data collection in this study was a self-constructed questionnaire titled "Digital Skills Required for Management of Small-Scale Businesses Questionnaire" (DSRMSSBQ). The questionnaire was divided into two sections: Section A and Section B. Section A contained items on the demographic information of the respondents, including details such as gender, age, location. Section B contained structured items based on a 4-point Likert scale ranging from Highly Required(HR), Required(R), Slightly Required(SR), Not Required(NR). The instrument was subjected to face and content validation by the researcher's supervisor and two experts in Business Education and Measurement and evaluation from Ignatius Ajuru University of Education. The reliability of the instrument was determined through a pilot study using the test-retest method which yielded a reliability coefficient of 0.78 which indicated the instrument was reliable for the study. The researcher personally administered 20 copies of the questionnaire directly to the selected Business Education graduates managing Small-Scale businesses with the help of two research assistants who assisted in the distribution and collection of the instrument. The respondents were properly guided on how to complete the query, and all the completed copies were collected immediately after completion to ensure a high rate of return. Mean scores and Standard deviation was used to answer the three research questions formulated for the study. Responses related to each research question was tallied, weighted using mean scores of each item obtained. The t-test statistical tool was used to test the three null hypotheses. The analysis was carried out by the use of SPSS version 6.0, software. Decision was made at 0.05 level of significance.

Results

Research Question 1: What are the basic computer skills required for management of Small-Scale businesses by business education graduates in port Harcourt city, Rivers state?

Table 2: Mean Ratings on Basic Computer Skills Required for Management of Small-Scale Businesses by Business Education Graduates in Port Harcourt City, Rivers State. N=105

S/N	Statements	Business Education Graduates						Male/Female Managers		Remarks
		Female Managers (53)			Male Managers (52)					
		$\overline{X}$	STD	RMKS	$\overline{X}$	STD	RMKS	$\overline{X}$	STD	
1.	Ability to operate Windows/Android/iOS operating systems	4.25	0.91	HR	4.16	0.88	HR	4.21	0.90	HR
2.	Ability to use Microsoft Word for business documentation	4.22	0.88	HR	4.19	0.78	HR	4.21	0.83	HR
3.	Ability in using Microsoft Excel for calculations and records	4.34	0.81	HR	4.25	0.91	SHR	4.30	0.86	HR
4.	Ability to use Microsoft PowerPoint for business presentations	4.44	0.71	HR	4.32	0.80	HR	4.38	0.76	HR

5.	Ability in using Google Docs, Sheets and Slides	4.23	0.60	HR	4.19	0.62	HR	4.21	0.61	HR
6.	Ability to perform basic computer troubleshooting	4.33	0.66	HR	4.27	0.59	HR	4.30	0.63	HR
7.	Ability to use keyboard shortcuts for efficiency	4.41	0.62	HR	4.31	0.64	HR	4.36	0.63	HR
Total Mean/SD		30.22	5.19		29.69	5.22		29.97	5.22	
Grand Mean/SD		4.32	0.74	HR	4.24	0.75	HR	4.28	0.75	HR

Source: Survey Result, 2026.

The data presented in Table 2 shows that the responses of the respondents for items 1-7 had an average mean score of 4.21, 4.21, 4.30, 4.38, 4.21, 4.30 and 4.36 respectively. This implies that in the opinion of the respondents the ability to operate Windows/Android/iOS operating systems, ability to use Microsoft Word for business documentation, ability to use Microsoft Excel for calculations and records, ability to use Microsoft PowerPoint for business presentations, ability to use Google Docs, Sheets and Slides, ability to perform basic computer troubleshooting and ability to use keyboard shortcuts for efficiency are all digital skills highly required for management of Small-Scale businesses. Above all, the grand mean of 4.28 indicated that digital skills are required for management of Small-Scale businesses. The standard deviation ranges from 0.61- 0.90 with a grand standard deviation of 0.75 which indicates a close response from the respondents on all items.

Research Question 2: What are the Digital Communication skills required for management of Small-Scale businesses by business education graduates in port Harcourt city, Rivers state?

Table 3: Mean Ratings on Digital Communication Skills Required for Management of Small-Scale Businesses by Business Education Graduates in Port Harcourt City, Rivers State. N=105

S/N	Statements	Business Education Graduates						Male/Female Managers		Remarks
		Female Managers (53)			Male Managers (52)					
		$\overline{X}$	STD	RMKS	$\overline{X}$	STD	RMKS	$\overline{X}$	STD	
8.	Ability to use Zoom/Google Meet for virtual business meetings	4.18	0.87	HR	4.20	0.92	HR	4.19	0.90	HR
9.	Ability to use WhatsApp Business for customer engagement	4.28	0.70	HR	4.15	0.74	HR	4.23	0.72	HR
10.	Ability to use Slack/Telegram for team communication	4.24	0.64	HR	4.29	0.85	HR	4.27	0.76	HR
11.	Ability to use social media: Facebook, Instagram, LinkedIn for business	4.32	0.59	HR	4.37	0.72	HR	4.35	0.66	HR
12.	Ability in professional email writing and etiquette	4.45	0.67	HR	4.25	0.68	HR	4.35	0.68	HR
13.	Ability in creating and managing business pages online	4.38	0.88	HR	4.44	0.60	HR	4.41	0.74	HR
14.	Ability to use video marketing for product demonstration	4.26	0.54	HR	4.19	0.88	HR	4.23	0.71	HR
Total Mean/SD		30.11	4.89		29.89	5.39		30.03	5.17	
Grand Mean/SD		4.30	0.70	HR	4.27	0.77	HR	4.29	0.74	HR

Source: Survey Result, 2026.

The data presented in Table 3 shows that the responses of the respondents for items 8 - 14 had an average mean score of 4.19, 4.23, 4.27, 4.35, 4.35, 4.41 and 4.23 respectively. This implies that in the opinions of the respondents ability to use Zoom/Google meet for virtual business meetings, ability to use WhatsApp business for customer engagement, ability to use slack/Telegram for team communication, ability to use social media: Facebook, Instagram, LinkedIn for business, ability in writing professional email writing and etiquette, ability in creating and managing business pages online, ability to use video marketing for product demonstration are all digital skills highly required for management of Small-Scale businesses. Above all, the grand mean of 4.29 indicated that digital skills are required for management of Small-Scale businesses. The standard deviation ranges from 0.66- 0.90 with a grand standard deviation of 0.74 which indicates a close response from the respondents on all items.

Research Question 3: What are the Digital Data Management skills required for management of Small-Scale businesses by business education graduates in port Harcourt city, Rivers state?

Table 4: Mean Ratings on Digital data management Skills Required for Management of Small-Scale Businesses by Business Education Graduates in Port Harcourt City, Rivers State. N = 105

Businesses by Business Education Graduates in Port Harcourt City, Rivers State.										N = 105
S/N	Statements	Business Education Graduates						Male/Female Managers		Remarks
		Female Managers (53)			Male Managers (52)					
		$\bar{X}$	STD	RMKS	$\bar{X}$	STD	RMKS	$\bar{X}$	STD	
15.	Ability to perform data entry using spreadsheets	4.45	0.90	HR	4.30	0.71	HR	4.38	0.81	HR
16.	Ability in using Excel formulas and charts for data analysis	4.30	0.66	HR	4.41	0.62	HR	4.36	0.64	HR
17.	Ability in data backup and recovery	4.28	0.74	HR	4.22	0.89	HR	4.25	0.82	HR
18.	Ability to use password management for account security	4.52	0.88	HR	4.30	0.65	HR	4.41	0.77	HR
19.	Ability in identifying online scams and cyber fraud	4.18	0.62	HR	4.12	0.78	HR	4.15	0.70	HR
20.	Ability in using antivirus software	4.41	0.80	HR	4.43	0.93	HR	4.42	0.87	HR
21.	Ability to ensure data privacy for customer information	4.38	0.72	HR	4.48	0.55	HR	4.43	0.64	HR
Total Mean/SD		30.52	5.32		30.26	5.13		30.40	5.25	
Grand Mean/SD		4.36	0.76	HR	4.32	0.73	HR	4.34	0.75	HR

Source: Survey Result, 2026.

The data presented in Table 4 shows that the responses of the respondents for items 15 - 21 had an average mean score of 4.38 4.36, 4.25, 4.43, 4.15, 4.33 and 4.43 respectively. This implies that in the opinion of the respondents the ability to perform data entry using spreadsheets, ability in using excel formulas and chart for data analysis, ability in data backup and recovery, ability to use password management for account recovery, ability in identifying online scams and cyber fraud, ability in using antivirus software, ability to ensure data privacy for customer information are all digital skills highly required for management of Small-Scale businesses. Above all, the grand mean of 4.33 indicated that digital skills are required for management of Small-Scale businesses. The standard deviation ranges from 0.64 - 0.82 with a grand standard deviation of 0.73 which indicates a close response from the respondents on all items.

Hypothesis 1: There is no significant difference in the mean ratings of male and female business education graduates on the basic computer skills required for management of Small-Scale businesses in Port Harcourt City, Rivers state.

Table 5: t-test of mean ratings on Basic Computer Skills Required for Management of Small-Scale Businesses

Respondents	N	Mean	Std. Dev.	df	t- Cal Value	t- Crit Value	L/Sig	Decision
Female Managers	53	4.32	0.74	103	0.55	1.98	0.05	Accepted
Male Managers	52	4.24	0.75					

Source: Survey Result, 2026.

Table 5 above revealed a t-calculated value of 0.55 which is less than the t-critical value of 1.98. Thus, the null hypothesis was accepted. This means that there is no significant difference between the mean responses of male and female Business Education graduates regarding the basic computer skills required for the management of Small-Scale in port Harcourt city, Rivers state.

Hypothesis 2: There is no significant difference in the mean ratings of male and female business education graduates on the digital communication skills required for management of Small-Scale businesses in Port Harcourt City, Rivers state.

Table 6: t-Test of mean ratings on Digital Communication Skill Required for Management of Small-Scale Businesses

Respondents	N	Mean	Std. Dev.	df	t- Cal Value	t- Crit Value	L/Sig	Decision
Female Managers	53	4.30	0.70	103	0.21	1.98	0.05	Accepted
Male Managers	52	4.27	0.77					

Source: Survey Result, 2026.

Table 6 above revealed a t-calculated value of 0.21 which is less than the t-critical value of 1.98. Thus, the null hypothesis was accepted. This means that there is no significant difference between the mean responses of male and female Business Education graduates regarding the digital communication skills required for the management of Small-Scale in port Harcourt city, Rivers state.

Hypothesis 3: There is no significant difference in the mean ratings of male and female business education graduates on the digital data management skills required for management of Small-Scale businesses in Port Harcourt City, Rivers state

Table 7:t-Test of mean ratings on Digital Data Management Skill Required for Management of Small-Scale Businesses

Respondents	N	Mean	Std. Dev.	df	t- Cal Value	t- Crit Value	L/Sig	Decision
Female Managers	53	4.36	0.76	103	0.28	1.98	0.05	Accepted
Male Managers	52	4.32	0.73					

Source: Survey Result, 2026.

Table 4.6 above revealed a t-calculated value of 0.28 which is less than the t-critical value of 1.98. Thus, the null hypothesis was accepted. This means that there is no significant difference between the mean responses of male and female Business Education graduates regarding the digital data management skills required for the management of Small-Scale in port Harcourt city, Rivers state.

Discussion of Findings

The findings on research question 1 with respect to the basic computer skills required by business education graduates indicated that the respondents believe that the ability to operate Windows, Android, and iOS operating systems; use Microsoft Word for business documentation; use Microsoft Excel for calculations and record keeping; use Microsoft PowerPoint for business presentations; use Google Docs, Sheets, and Slides for collaborative tasks; perform basic computer troubleshooting; and utilize keyboard shortcuts for improved efficiency are essential basic computer skills required for the effective management of small-scale businesses. This finding suggests that Business Education managers recognize basic computer competence as a fundamental requirement for carrying out routine business operations efficiently and productively in today's digital business environment. This finding is in line with Okafor et al. (2021), who reported that computer literacy and digital competence improve the employability and entrepreneurial capabilities of Business Education graduates. The finding is also consistent with Afolabi and Adeyemi (2023), who found that proficiency in basic computer applications significantly enhances the operational efficiency and sustainability of small-scale enterprises.

Result on hypothesis one proved that Male and female managers of Small-Scale businesses in Rivers State do not differ significantly in their responses regarding the basic computer skills required by business Education graduates for the management of Small-Scale businesses.

This is an indication that basic computer skill is the most common digital skill required by business education graduates to manage Small-Scale businesses.

The findings on research question 2 with respect to the Digital Communication Skills Required for Management of Small-Scale Businesses by Business Education Graduates indicated that in the opinions of the respondents, ability to use Zoom/Google meet for virtual business meetings, ability to use WhatsApp business for customer engagement, ability to use slack/Telegram for team communication, ability to use social media: Facebook, Instagram, LinkedIn for business, ability in writing professional email writing and etiquette, ability in creating and managing business pages online, ability to use video marketing for product demonstration are all digital skills required for management of Small-Scale businesses. This finding suggests that digital communication skill is indispensable for management of Small-Scale businesses. It indicates that business education managers who possess these skills aforementioned are better equipped to for management of Small-Scale businesses. This finding is in line with Okoye (2020), who reported that communication skills, technological skills, managerial skills, organizational skills, and ICT skills are required by business education graduates for effective entrepreneurship practice. The finding is also consistent with Oko and Wagbara (2022), who found that business education graduates require digital communication skill such as the effective use of e-mail, internet technologies, and other ICT tools for entrepreneurial performance and global competitiveness. The finding of this study agrees with Wokocha (2025), who identified telecommunication competency as one of the essential electronic competencies required by Business Education graduates for effective workplace communication and organizational performance.

Result on hypothesis two proved that Male and female managers of Small-Scale businesses in Rivers State do not differ significantly in their responses regarding the digital communication skills required by business Education graduates for the management of Small-Scale businesses.

This is an indication that digital communication skill is required by business education graduates to manage Small-Scale businesses.

The findings on research question 3 with respect to the digital data management skills required by business education graduates indicated that in the opinion of the respondents the ability to perform data entry using spreadsheets, ability in using excel formulas and chart for data analysis, ability in data backup and recovery, ability to use password management for account recovery, ability in identifying online scams and cyber fraud, ability in using antivirus software, ability to ensure data privacy for customer information are all digital skills required for management of Small-Scale businesses. This finding suggests that Business Education managers recognise digital data management as a fundamental requirement for carrying out routine business operations efficiently and productively in today's digital business environment.

The finding also agrees with the empirical study of Akudolu and Onyeneke (2022), who found that Business Education graduates lacked adequate digital information and data management skills required by employers and recommended that the Business Education curriculum be re-adjusted to incorporate practical digital skill training to bridge the identified skills gap. Similarly, the finding corroborates the study of Okoro (2021), which revealed that digital information management, bookkeeping, ICT, and entrepreneurship skills are essential for Business Education students and graduates to remain globally competitive.

Result on hypothesis three proved that Male and female managers of Small-Scale businesses in Rivers State do not differ significantly in their responses regarding the digital data management skills required by business Education graduates for the management of Small-Scale businesses. This is an indication that digital management skill is required by business education graduates to manage Small-Scale businesses.

Conclusion

Based on the findings of this study, the researcher concluded that digital skills constitute essential skills required for the successful management of small-scale businesses by Business Education graduates in Port Harcourt City, Rivers State. The study established that skills in basic computer operations, digital communication, and digital data management contribute significantly to effective business operations, improved productivity, accurate record keeping, enhanced customer relations, and informed decision-making. The researcher further concluded that both male and female Business Education graduates possess similar perceptions regarding the importance of these digital skills, as evidenced by the absence of significant differences in their responses. Therefore, the acquisition and continuous development of digital skills remain indispensable for Business Education graduates seeking to thrive in modern entrepreneurial and business environments.

Recommendations

Based on the findings of the study, the following recommendations were made

1. Business Education graduates should be adequately trained in basic computer skills such as word processing, spreadsheet operations, presentation software, operating systems, file management, and basic computer troubleshooting. Small-scale business owners should also encourage graduates and employees to participate in regular digital-skills training to improve efficiency and productivity in business operations.
2. Business Education graduates should develop strong digital communication skills, including the effective use of email, instant messaging platforms, video-conferencing tools, social media, and other online communication channels. Small-scale business owners should provide access to appropriate digital communication tools and encourage their effective use for communicating with customers, suppliers, employees, and other business stakeholders.
3. Business Education graduates should be trained in digital data management skills, particularly electronic record keeping, data entry, data storage, retrieval, organization, backup, and the use of databases and cloud-based applications. Small-scale business owners should adopt appropriate digital data-management systems and ensure that employees are trained to manage business information accurately, securely, and efficiently.

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Appraisal of Microsoft Teams on Quality Teaching of Senior Secondary Accounting in Rivers East Senatorial District Rivers State

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Abstract

The study examined the effectiveness of Microsoft Teams on Quality Teaching of Financial Accounting in Senior Secondary Schools in Rivers East Senatorial District, Rivers State. Descriptive survey research design was adopted. A population of 115 Financial Accounting teachers in 137 Senior Secondary Schools in the district was used for the study. The entire population was studied since the population was not large. Three research questions and three null hypotheses guided the study. The instrument for the study was self-structured 4-point rating scale questionnaire tagged Effectiveness of Microsoft Teams on Quality Teaching of Financial Accounting. (EMSTQTFA). The instrument was validated by three lecturers in Business Education department and one Measurement and Evaluation expert. Reliability coefficient of 0.86 was obtained through split-half method using Pearson Product Moment Correlation formula and Spearman Brown Prophecy formula. Research questions were answered with mean and standard deviation while the hypotheses were tested with t-test. Findings from the study revealed amongst others, that it is possible to achieve quality teaching of Financial Accounting when Microsoft Teams is integrated in the teaching and learning of Financial Accounting. Based on the findings, recommendations were proffered which include: that Financial Accounting teachers should integrate Microsoft Teams in the teaching of Financial Accounting in order to promote quality teaching through collaboration, flexibility and ubiquity. Also that government and other education stakeholders should ensure that computers, network service and electricity are provided in schools since Microsoft Teams is internet driven.

Key Words: Effectiveness; Microsoft Teams Resources; Quality Teaching; Financial Accounting

Introduction

Financial Accounting is one of the subjects offered in Senior Secondary Schools in Rivers State. The subject has to do with recording, classifying, selecting, measuring, interpreting, summarizing and reporting financial data of an organization to the users for objective assessment and decision making (Akamigbo & Eneja (2020).

Financial Accounting as a skill course, seeks to achieve one of the goals entrenched in National Policy on Education (2014) which requires individuals to acquire appropriate skills and develop mental, physical and social abilities as well as competencies for necessary equipment or preparedness to live on and contribute to the development of the society (Okafor, Amaefule & Obiekezie, 2023).

The subject imbues the students with necessary skills and knowledge that would promote success in paid or self-employment. These skills include financial record keeping, profit and loss determination, production cost determination and so forth. It is expected that with these skills Senior Secondary Schools graduands that do not want to further their education can offer these skills in paid employment or lean on the skills for their own personal businesses. Financial Accounting involves tracking all money earned and spent by the organization and organizing this information into standardized financial statements, such as the income statement, balance sheet, and cash flow statement. These statements provide a clear image of the business's financial health, showing its profitability, assets, liabilities, and cash flow. Financial accounting follows specific rules, standards, and principles to ensure accuracy and consistency thus making the information reliable for business owners, investors, and other stakeholders to make informed decisions (Haya, 2024). However, recent studies have shown that students display lukewarm attitude towards this noble subject. The numbers of students that offer the subject and register it in external examinations have persistently remained low in recent years and the students' performances in both internal and external examinations have not been impressive (Rodrigo, 2019; Izuchukwu & Remigius, 2020). Scholars have attributed this anomaly to several factors such as poor instructional strategies that could not spur and promote students' interest in the subject. Okafor, Amaefule and Obiekezie (2023) attributed the ugly trend to a whole gamut of factors including: shortage of qualified accounting teachers, lack of essential teaching aids, poor students and teacher's attitude towards teaching and learning of financial accounting, short duration of teaching periods, and so forth. As a solution to these challenges, Izuchukwu and Remigius (2020); Okafor, Amaefule and Obiekezie (2023) submitted that if quality teaching of Financial Accounting is to be achieved, the curriculum should be restructured to incorporate emphasis on the use of digital and innovative technologies.

According to Mafule (2022) quality teaching is education that is well designed to provide the recipients with an all-round development of skills and potentials to achieve success in their future endeavors in a society. Long (2021) submits that quality teaching means tailoring teaching to meet individual student's need. This involves creating an environment that would encourage collaborative and independent learning and ensuring that the students remain focused and guided. Burnett (2017) noted that quality teaching is synonymous with creativity. Burnett opined that creativity in teaching involves teaching in a novel and useful way that promotes students' growth in relation to the development of original thought and action. It is teaching that has to do with using unusual, exciting, innovative and simplified techniques to engage learners. In the view of Mustak (2021), quality teaching should evoke collaborative learning among the students. According to the author, collaborative learning is teaching strategy in which students are encouraged to form groups in order to learn something together using group projects, assignments, and so forth. In this type of learning, students get the opportunity to learn from others' skills and resources. To Thoralf and Daniel (2023), quality teaching is akin to applying flexibility in the teaching and learning process. It is a teaching that addresses students' needs for autonomy in shaping their learning process, it involves shaping the students' learning process in relation to when, where, and how they learn; this is often realized through online educational technologies. Marcel (2024) observed that there are several online innovative technologies that can support education; however, Microsoft Teams plays critical role in this direction.

According to Marcel (2024), Microsoft Teams supports personalized learning, allowing educators to tailor their instructions to meet the unique needs of each student. Features such as the Assignments and Grade-book, provide valuable insights into individual student performance, helping teachers identify areas where students may need additional support. Moreover, the platform's flexibility enables the integration of diverse educational resources, including multimedia content, interactive exercises, and external learning tools, enriching the learning experience. Stephen (2024), noted that Microsoft Teams as digital innovative education platform, can enable educators to organize classrooms, assignments and collaborate with students with ease. Microsoft Teams enables real-time interactions through chat, video calls, and meetings thus facilitates seamless communication and collaboration among students, teachers, and administrators (Daradkah, 2021).

Daniel (2024) noted that the benefits of using Microsoft teams in teaching include: The teacher has everything he need in the teaching and learning process in one place; the platform makes it simple for students and teachers to work together; the platform connects well with other Microsoft Office tools and other different learning platforms; teaching and learning can take place at any time and at any place; teachers can monitor the progress of individual students through instantaneous feedback and so forth. This implies that Financial Accounting teachers could leverage Microsoft teams to attain quality teaching of the subject. However, Alessandro (2024); Hawthorne (2024) and Brennan (2026) asserted that effective educational instructional tools should lead to improved learning or good student outcomes; it should promote engagement in learning activities, it should also deepen understanding and be able to hone skills hence the basic question to ask in the choice of instructional tools include: Do the instructional tools align with curriculum objectives?’ ‘Does it support the full scope of the study?’ ‘Do the tools support in-depth understanding?’ ‘Can the tools easily be adapted to learners’ needs?’ ‘Do the tools expose teachers and learners to new learning strategies and so forth. Alessandro (2024) posits that these appraisals is essential because some instructional tools may be incompatible with curriculum objectives. This implies that there is need to appraise the effectiveness of Microsoft Teams on quality teaching of Financial Accounting in Senior Secondary Schools in Rivers East Senatorial District of Rivers State.

Statement of the problem

Studies have shown that students display lukewarm attitude towards Financial Accounting. The number of students that offer the subject and register it in external examinations have persistently remained low in recent years; in addition, the failure rate in both internal and external examinations is worrisome (Rodrigo, 2019; Uwhejevwe-Togbolo, 2020). Scholars have attributed this anomaly to several factors including: shortage of qualified accounting teachers, lack of essential teaching aids, poor students and teacher’s attitude towards teaching and learning of the subject, short duration of teaching periods, and so forth. As a measure to ameliorate the ugly trend, the integration of digital innovative technologies in the teaching and learning of the subject was recommendation (Izuchukwu & Remigius, 2020). The current study which is an appraisal of the effectiveness of Microsoft Teams on quality teaching of Financial Accounting in Senior Secondary Schools in Rivers East Senatorial District becomes imperative as it fills the gap; since Microsoft Teams is perceived of having the potential to offer educational suite that, can transform the educational experience of students, teachers.

Purpose of the Study.

The main purpose of this study was to investigate the effectiveness of Microsoft Teams on quality teaching of Financial Accounting in Senior Secondary Schools in Rivers East Senatorial District Specifically, the study sought to:

1. Determine the extent to which Microsoft Teams could promote collaborative studies of Financial Accounting in Senior Secondary Schools in Rivers East Senatorial District.
2. Find out the extent to which Microsoft Teams could support virtual teaching of Financial Accounting in Senior Secondary Schools in Rivers East Senatorial District.
3. Determine the extent to which Microsoft Teams could enhance creative teaching of Financial Accounting in Senior Secondary Schools in Rivers East Senatorial District.

Research Questions

1. To what extent could Microsoft Teams promote collaborative studies of Financial Accounting in Senior Secondary Schools Rivers East Senatorial District?
2. To what extent could Microsoft Teams support virtual teaching of Financial Accounting in Senior Secondary Schools in Rivers East Senatorial District?
3. To what extent could Microsoft Teams enhance creative teaching of Financial Accounting in Senior Secondary Schools in Rivers East Senatorial District?

Hypotheses

1. There is no significant difference in the mean scores of male and female Financial Accounting teachers on the extent Microsoft Teams could promote collaborative studies of Financial Accounting in Senior Secondary Schools in Rivers East Senatorial District

- 2 There is no significant difference in the mean scores of male and female Financial Accounting teachers on the extent Microsoft Teams could support visual teaching of Financial Accounting in Senior Secondary Schools in Rivers East Senatorial District
- 3 There is no significant difference in the mean scores of male and female Financial Accounting teachers on the extent Microsoft Teams could enhance creative teaching of Financial Accounting in Senior Secondary Schools in Rivers East Senatorial District.

Methodology

The study adopted descriptive survey research design. The area of the study was in Rivers East Senatorial District in Rivers State; this district comprises eight (8) local government areas in Rivers State, namely: Emohua, Etche, Ikwerre, Obio-Akpor, Ogu-bolo, Okirika, Omuma and Port-Harcourt. The choice of this senatorial district was influenced by high number of Senior Secondary Schools that are there. The population of the study was 115 Financial Accounting teachers comprising 71 male teachers and 44 female teachers in the 137 Senior Secondary Schools in the senatorial district (Planning and Statistics Department Senior Secondary Schools Board, 2025). The entire population was studied since the population was not large. Data for the study were obtained through self-constructed four-point rating scale of very high extent (VHE = 4 points); high extent (HE = 3 points); Low extent (LE = 2 points); and very low extent (VLE = 1). The questionnaire was tagged Effectiveness of Microsoft Teams on Quality Teaching of Financial Accounting in senior secondary School. (EMTQTFASSS); it was validated by three lecturers in the department of Business Education and one measurement and evaluation expert. A reliability co-efficient of 0.86 was obtained through split-half method using Pearson Product Moment Correlation formula and Spearman Brown formula. Descriptive and inferential statistics were used. In the descriptive statistics, mean and standard deviation was used to answer the research questions. Scores of 2.5 and above meant high extent while scores below 2.5 implies low extent. In the inferential statistics, t-test was used to test the hypotheses. Decision for acceptance or rejection was that if the calculated t is greater than the critical or table value of t, the null hypotheses is rejected. On the other hand, where the calculated t is less than the critical or table value of t, the null hypotheses is accepted.

Results

Research Questions 1

To what extent could Microsoft Teams promote collaborative studies of Financial Accounting in Rivers East Senatorial District?

Table 1: Mean and standard deviation on the extent Microsoft Teams could promote collaborative studies of Financial Accounting in Senior Secondary Schools in Rivers East Senatorial District (N =115)

S/N	Items	Male			Female		
		Mean	Std. Dev.	Remarks	Mean	Std. Dev.	Remarks
1	Students learning from one another	3.47	0.61	VHE	3.50	0.65	VHE
2	Reluctant students can be aroused	3.59	0.53	VHE	3.55	0.58	VHE
3	Building confidence among students	3.13	0.62	VHE	3.28	0.50	VHE
4	Students can be challenged to put in their best	3.66	0.54	VHE	3.66	0.48	VHE
5	High motivation is possible	3.76	0.46	VHE	3.77	0.43	VHE
	Grand	3.52	0.58		3.35	0.53	

Source: Field Survey, 2026

Table 1 above shows the Mean and standard deviation scores of male and female Financial Accounting teachers on the extent Microsoft Teams could promote collaborative studies of Financial Accounting in Rivers East Senatorial District. The table indicated that the respondents scores were all above 3.00; implying very high extent. The grand standard deviation of 0.58 and 0.53 for male and female respondents respectively show the homogeneity of the responses.

Research Question 2

To what extent could Microsoft Teams support virtual teaching of Financial Accounting in Senior Secondary Schools in Rivers East Senatorial District?

Table 2: Mean and standard deviation on the Extent Microsoft Teams could Promote Collaborative Studies of Financial Accounting in Senior Secondary Schools in Rivers East Senatorial District (N = 115)

S/N	Items	Male			Female		
		Mean	Std. Dev.	Remarks	Mean	Std. Dev.	Remarks
6	Enhanced student engagement is possible	3.75	0.44	VHE	3.66	0.48	VHE
7	Students can receive lesson while at home	3.62	0.49	VHE	3.62	0.49	VHE
8	Lessons can be streamed and replayed later	3.44	0.53	VHE	3.45	0.54	VHE
9	Instantaneous feedback between teacher and student is possible	3.52	0.59	VHE	3.60	0.54	VHE
10	High assimilation of what is taught is possible	3.56	0.53	VHE	3.60	0.65	VHE
	Grand	3.58	0.52		3.39	0.54	

Source: Field Survey, 2026

Table 2 above reveals the mean and standard deviation scores of male and female Financial Accounting teachers on the extent Microsoft Teams could promote virtual teaching of Financial Accounting in Senior Secondary Schools in Rivers East Senatorial District. The table indicates that the respondents obtained grand mean score of 3.58 and 3.39 and grand standard deviation score of 0.52 and 0.54 for male and female teachers respectively. The grand mean scores indicate very high extent and the standard deviation scores portray the homogeneity of the responses.

Research Question 3

To what extent could Microsoft Teams enhance creative teaching of Financial Accounting in Senior Secondary Schools in Rivers East Senatorial District?

Table 3: Mean and standard deviation on the extent Microsoft teams could enhance creative teaching of Financial Accounting in Senior Secondary Schools in Rivers East Senatorial District (N = 115)

S/N	Items	Male			Female		
		Mean	Std Dev	Remarks	Mean	Std Dev	Remarks
11	Critical thinking mind can be developed	3.76	0.46	VHE	3.77	0.43	VHE
12	Learning can be deepened	3.72	0.45	VHE	3.81	0.40	VHE
13	Development of problem-solving skill	3.51	0.53	VHE	3.72	0.50	VHE
14	Boosting engagement and motivation	3.63	0.49	VHE	3.60	0.54	VHE
15	Long retention of lessons	3.66	0.56	VHJE	3.32	0.63	VHE
	Grand	3.66	0.50		3.64	0.50	

Source: Field Survey, 2026

Table 3 above depicts the mean and standard deviation scores of male and female Financial Accounting teachers on the extent Microsoft Teams could support creative teaching in Senior Secondary Schools in Rivers East Senatorial District. The table indicates that the respondents obtained grand mean score of 3.66 and 3.64 and grand standard deviation score of 0.50 and 0.50 for male and female teachers respectively. The grand mean scores depict very high extent and the standard deviation scores imply homogeneity of the responses.

Hypotheses 1

There is no significant difference in the mean scores of male and female Financial Accounting teachers on the extent Microsoft Teams could promote collaborative studies of Financial Accounting in Rivers East Senatorial District.

Table 4: Computation of t-test to determine the difference in the mean scores of male and female Financial Accounting teachers on the extent Microsoft Teams could promote collaborative studies of Financial Accounting Senior Secondary Schools in in Rivers East Senatorial District

Respondents	N	Mean	Std Dev.	Df	Z cal.	Z-Crit	Remark
Male	68	3.58	0.52	113	1.88	1.96	Acceptable
Female	47	3.39	0.54				

Source: Field Survey, 2026

The analysis in table 4 above show the calculated t-test on the difference in the mean scores of male and female Financial Accounting teachers on the extent Microsoft Teams could promote collaborative studies of Financial Accounting in Rivers East Senatorial District. The result indicates that the calculated t is 1.63, this figure is lesser than the t critical value of 1.96 at 0.05 level of significance on 113 degree of freedom. This implies that the hypothesis of no significant difference in the mean scores of male and female Financial Accounting teachers on the extent Microsoft Teams could promote collaborative studies of Financial Accounting in Rivers East Senatorial District is accepted.

Hypotheses 2

There is no significant difference in the mean scores of male and female Financial Accounting teachers on the extent Microsoft Teams could support virtual teaching of Financial Accounting in Rivers East Senatorial District.

Table 5: Computation of t-test to determine the difference in the mean scores of male and female Financial Accounting teachers on the extent Microsoft Teams could support virtual teaching of Financial Accounting in Rivers East Senatorial District

Respondents	N	Mean	Std Dev.	Df	Z Cal.	Z-Crit	Remark
Male	68	3.52	0.58	113	1.63	1.96	Acceptable
Female	47	3.35	0.53				

Source: Field Survey, 2026

The analysis in table 5 above show the calculated t-test on the difference in the mean scores of male and female Financial Accounting teachers on the extent Microsoft Teams could promote virtual teaching of Financial Accounting in Rivers East Senatorial District. The result indicates that the calculated t is 1.63 this figure is less than the t critical value of 1.96 at 0.05 level of significance on 113 degree of freedom. This implies that the hypothesis of no significant difference in the mean scores of male and female Financial Accounting teachers on the extent Microsoft Teams could promote virtual teaching of Financial Accounting in Rivers East Senatorial District is upheld.

Hypotheses 3

There is no significant difference in the mean scores of male and female Financial Accounting teachers on the extent Microsoft Teams could promote creative teaching of Financial Accounting in Rivers East Senatorial District.

Table 6: Computation of t-test to determine the difference in the mean scores of male and female Financial Accounting teachers on the extent Microsoft Teams could support creative teaching of Financial Accounting in Rivers East Senatorial District.

Respondents	N	Mean	Std Dev.	Df	Z-Cal	Z-Crit	Remark
Male	68	3.66	0.50	113	0.18	1.96	Acceptable
Female	47	3.64	0.50				

Source: Field Survey, 2026

The analysis in table 5 above show the calculated t-test on the difference in the mean scores of male and female Financial Accounting teachers on the extent Microsoft Teams could support creative teaching of Financial Accounting in Rivers East Senatorial District. The result indicates that the calculated t is 0.18, this figure is lesser than the t critical value of 1.96 at 0.05 level of significance on 113 degree of freedom. This implies that the hypothesis of no significant difference in the mean scores of male and female Financial Accounting teachers on the extent Microsoft Teams could support creative teaching of Financial Accounting in Rivers East Senatorial District is accepted.

Discussion of Finding

The purpose of the study was to investigate the extent Microsoft Teams could promote quality teaching of Financial Accounting in Senior Secondary Schools in Rivers East Senatorial District. Findings with respect to the extent Microsoft Teams could promote collaborative studies of Financial Accounting in Senior Secondary Schools in Rivers East Senatorial District, revealed that the respondents' score favour very high extent. This implies that with Microsoft Teams, collaborative studies amongst students is possible; students can learn better from one another; the withdrawn or reticent students can actively participate in lessons; self-confidence can be built among students; besides Microsoft Teams can motivate the students to put in their best. Besides, the hypothesis of no significant difference in the mean scores of male and female Financial Accounting teachers on the extent Microsoft Teams could support collaborative studies of Financial Accounting was accepted; the calculated t: 1.88 was lesser than the critical value of t 1.96 at 0.05 level of significance on 113 degree of freedom. Based on the result, it is certain that when Financial Accounting teachers leverage Microsoft Teams in the teaching of Financial Accounting collaborative studies can significantly be achieved and this can lead to quality teaching of the subject. These findings are in agreement with the finding of Shradha (2025) who noted that collaborative learning platforms allows students to learn the essence of teamwork, broadens perspectives, and prepares students for real-world challenges, hence it is teaching approach, used by institutions currently to cater to the problems of lost attention and low knowledge retention in students.

The findings with respect to the extent Microsoft Teams could promote virtual teaching of Financial Accounting in Senior Secondary Schools in Rivers East Senatorial District in Rivers State, revealed that Microsoft Teams could significantly enhance virtual teaching of Financial Accounting in Senior Secondary Schools. The respondents upheld that virtual teaching has the potential to enhance student engagement; to promote ubiquitous teaching and learning; to reinforce learning as students can stream lessons and replay it later; to support instantaneous feedback between teacher and students and that it could greatly enhance assimilation of what was taught. The hypothesis of no significant difference in the responses of male and female Financial Accounting teachers was accepted. The calculated t: 1.63 was lesser than the critical value of t 1.96. The whole of these implies that through virtual teaching, the financial accounting teacher can achieve quality teaching of the subject. These findings are in line with the findings of Priyanka (2025) who observed that virtual teaching offers teachers an efficient way to deliver lessons to students, that it provides access to a wide range of learning resources that may not be readily available in traditional classroom settings, and that it offers students the opportunity to learn from experts and professionals regardless of their physical location.

Findings of the study with regards to the extent Microsoft Teams could promote creativity in teaching, indicate that Microsoft Teams is a veritable app that could evoke creativity. The respondents' scores in the descriptive statistics indicate that Microsoft Teams can sufficiently support quality teaching of Financial Accounting in Senior Secondary Schools. The grand mean scores were all above the criterion mean of 2.5. This is an indication that creative teaching can arouse critical thinking mind, can deepen learning, can cause students to develop problem solving skill, and can boast engagement and motivation among others.

The hypothesis of no significant difference between responses of male and female Financial Accounting teachers with regards to the extent Microsoft Teams could promote virtual teaching of Financial Accounting in Senior Secondary Schools was accepted.

The calculated t : 0.18, is lesser than the t critical value of 1.96 at 0.05 level of significance on 113 degree of freedom hence it can be concluded that Microsoft Teams can significantly support quality teaching of Financial Accounting in senior secondary schools through creativity. These findings are in line with Ankita (2025) who opined that creative teaching digital platforms is one of the demands of 21st century education tools as it hones skills that allow learners to think out of the box; creative teaching permits the learner **to** combine imaginative ideas with logical reasoning thus enhancing curiosity among students, this enhances accurate expression of their original ideas.

Conclusion

The result of this study reveal that Microsoft Teams can play crucial role in promoting quality teaching of Financial Accounting in Senior Secondary Schools in Rivers East Senatorial district. The platform has apps that can capture students' interest, build self-confidence, in addition it can offer teaching and learning anywhere and anytime. The platform promotes creativity, collaboration and flexibility in teaching and learning. With Microsoft Teams the Financial Accounting teachers can organize virtual face-to-face extra-moral lessons from the comfort of their homes on weekends, and holidays. Therefore, Microsoft Teams can be employed to engage the students from inside and outside the school building thus improving how students can be taught for quality result the senatorial district and beyond.

Recommendations

Based on the result of this study, the following recommendations were proffered.

1. Financial Accounting teachers in Senior Secondary Schools should employ collaborative studies in the teaching of Financial Accounting in order to arouse the student for maximum result
2. Virtual and creative teaching feature of Microsoft Teams should be harnessed and applied in the teaching of Financial Accounting.
3. Microsoft Teams is internet driven; government and other education stake holders should ensure that there are computers, internet service and electricity in the schools for effective utilization of Microsoft Teams in the teaching of Financial Accounting in Senior Secondary Schools.

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Application of Innovative Pedagogies for Improved Teaching of Business Courses in Business Education Programs in Rivers State Universities

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Abstract

This study examined the application of innovative pedagogies for improved teaching of business courses in Business Education Programs in Rivers State universities. Specifically, the study determined the extent to which gamification pedagogy and collaborative learning pedagogy were applied in teaching business courses. The study adopted a descriptive survey research design. The population comprised 58 Business Education lecturers, consisting of 25 lecturers from Ignatius Ajuru University of Education (IAUE) and 33 lecturers from Rivers State University (RSU). The entire population was studied using the census sampling technique. Data were collected using a structured questionnaire titled Application of Innovative Pedagogies for Improved Teaching of Business Courses Questionnaire (AIPITBCQ). The instrument contained 20 items and had a reliability coefficient of 0.83. Mean and standard deviation were used to answer the research questions, while t-test was used to test the hypotheses at 0.05 level of significance. The findings revealed that gamification pedagogy was applied to a low extent, with a grand mean of 1.76 and standard deviation of 0.69. Similarly, collaborative learning pedagogy was applied to a low extent, with a grand mean of 1.68 and standard deviation of 0.69. The findings also showed no significant difference between the mean ratings of lecturers in IAUE and RSU regarding the application of gamification and collaborative learning pedagogies. The study concluded that innovative pedagogies had not been sufficiently integrated into the teaching of business courses in Business Education programs in Rivers State universities. It was therefore recommended that lecturers should receive adequate training on the application of innovative pedagogies and engage students more actively through collaborative learning activities.

Keywords: Innovative Pedagogies, Gamification, Collaborative Learning, Business Education

Introduction

In recent times, innovative pedagogies have gained considerable attention in education as a response to the changing nature of knowledge, technology and workplace requirements. Innovative pedagogies involve the purposeful adoption of new, improved or creatively adapted approaches to teaching and learning that promote active participation, learner engagement, collaboration, critical thinking, problem-solving and practical application of knowledge. The increasing emphasis on learner-centered instruction reflects the recognition that effective education should prepare learners not only to acquire knowledge but also to apply it in unfamiliar and changing situations (Organization for Economic Co-operation and Development [OECD], 2019). In Business Education, this development is particularly significant because the Programme is expected to equip learners with competencies that will enable them to function effectively in business organizations, establish enterprises and respond to changes in the workplace. Thus, the application of innovative pedagogies has become increasingly relevant to the effective teaching of business courses. Business Education encompasses courses such as accounting, economics, marketing, entrepreneurship, business communication and office technology, which require both conceptual understanding and practical application. The nature of these courses makes it necessary for students to engage in activities that enable them to analyze information, make decisions, solve problems, communicate effectively and work with others. The continued dependence on predominantly lecture-based instruction may, however, provide limited opportunities for such active engagement. Freeman et al. (2014), in a meta-analysis of 225 studies, found that active learning approaches improved students' academic performance and reduced failure rates compared with traditional lecturing.

Although the study was conducted mainly in science, engineering and mathematics, its broader implication for higher education is that students benefit when they are actively involved in learning rather than relying primarily on passive reception of information. Similarly, Ezeabii et al. (2022) emphasized the relevance of innovative instructional strategies to the teaching of Business Education courses and the need for Business Educators to continually improve their pedagogical practices.

One important dimension of innovative pedagogy is gamification. Gamification refers to the incorporation of selected game elements, such as points, badges, levels, challenges, rewards, competition and immediate feedback, into non-game contexts to influence learners' engagement and behavior (Deterding et al., 2011). Its application in Business Education can take the form of competitive quizzes, accounting challenges, business simulations, entrepreneurship competitions, case-based challenges and team-based problem-solving activities. These activities can provide learners with clearly defined goals, immediate feedback and opportunities to monitor their progress. Sailer and Homner (2020), in a meta-analysis of gamification research, found that gamification has positive effects on cognitive, motivational and behavioral learning outcomes. Similarly, Atoyebe et al. (2025) identified gamification as a promising educational strategy for increasing students' motivation and academic performance. However, the effectiveness of gamification depends on purposeful instructional design; the mere addition of rewards or competition does not automatically result in meaningful learning.

Another significant dimension of innovative pedagogy is collaborative learning. Collaborative learning involves students working together to achieve common learning objectives through discussion, peer interaction, group projects, joint problem-solving and knowledge sharing. The approach is particularly relevant to Business Education because contemporary business organizations require individuals who can communicate, cooperate, assume responsibility and work effectively within teams. Through collaborative learning, students can jointly analyse accounting problems, develop business plans, evaluate marketing strategies, conduct entrepreneurial projects and present solutions to business-related problems. Johnson, Johnson and Smith (2014) explained that effective cooperative learning is based on principles such as positive interdependence, individual accountability, promotive interaction and group processing. In the context of Nigerian Business Education, Nwokike and Ugwunwoti (2022) identified collaborative learning among the pedagogical approaches that can facilitate effective teaching of Business Education courses.

The importance of gamification and collaborative learning becomes more evident when the two dimensions are integrated into the teaching of business courses. Gamification can provide students with challenges, goals, feedback and motivating activities, while collaborative learning creates opportunities for learners to work together in achieving those goals. For instance, students in Financial Accounting could work in teams to solve accounting problems within a points-based challenge, while students in Entrepreneurship could collaboratively develop and present business plans as part of a simulated business competition. Such activities can promote active participation while simultaneously developing teamwork, communication, critical thinking, decision-making and problem-solving skills. Sailer and Homner (2020) noted that social interaction and the combination of competition with collaboration can influence the effectiveness of gamified learning. Consequently, the integration of these two innovative pedagogies may provide a meaningful avenue for making business-course instruction more interactive, practical and learner-centered. The need to examine the application of these pedagogies is particularly important in Business Education Programs in Rivers State universities. Although the literature increasingly recognizes the potential of innovative approaches, the existence of recommended pedagogies does not necessarily mean that they are consistently applied in classroom practice. Research in Nigerian Business Education has continued to highlight the need for lecturers to adopt innovative instructional strategies and develop the competencies required for their effective implementation (Ezeabii et al., 2022). Given the practical and occupational orientation of Business Education, lecturers in Rivers State universities need instructional approaches that can engage students actively and develop competencies relevant to contemporary business practice. It is against this background that this study seeks to examine the extent to which innovative pedagogies, are applied for improved teaching of business courses in Business Education Programs in Rivers State universities.

Statement of the Problem

The teaching of business courses in Business Education Programs is expected to develop students who can think critically, solve problems, communicate effectively and work collaboratively. However, the continued reliance on conventional teacher-centered instructional practices may provide limited opportunities for active participation, practical application and meaningful interaction. This is particularly concerning in business courses such as Accounting, Marketing, Entrepreneurship and Business Communication, where students require practical and transferable competencies alongside theoretical knowledge. Ezeabii et al. (2022) and Nwokike and Ugwunwoti (2022) have emphasized the need for innovative pedagogical approaches that can make Business Education teaching more active, engaging and responsive to contemporary educational and workplace demands.

The specific concern of this study is the extent to which gamification and collaborative learning are being applied in the teaching of business courses in Business Education Programs in Rivers State universities. Although gamification has been associated with improved learner motivation, engagement and learning outcomes (Sailer & Homner, 2020; Atoyebi et al., 2025), and collaborative learning has been identified as an effective approach for promoting interaction, teamwork and shared learning (Johnson et al., 2014; Nwokike & Ugwunwoti, 2022), it remains unclear whether these approaches are sufficiently applied by lecturers in the study area. This gap necessitates an examination of the application of gamification and collaborative learning for improved teaching of business courses in Business Education Programs in Rivers State universities.

Purpose of the Study

The purpose of this study was to ascertain the extent to which innovative pedagogies are applied for improved teaching of business courses in Business Education Programs in Rivers State universities.

Specifically, the study sought to:

1. ascertain the extent to which gamification pedagogy is applied for improved teaching of business courses in Business Education Programs in Rivers State universities.
2. ascertain the extent to which collaborative learning pedagogy is applied for improved teaching of business courses in Business Education Programs in Rivers State universities.

Research Questions

The following research questions guided the study:

1. To what extent is gamification pedagogy applied for improved teaching of business courses in Business Education Programs in Rivers State universities?
2. To what extent is collaborative learning pedagogy applied for improved teaching of business courses in Business Education Programs in Rivers State universities?

Hypotheses

The following null hypotheses were tested

1. There is no significant difference between the mean ratings of Business Education lecturers in IAUE and RSU on the extent gamification pedagogy is applied for improved teaching of business courses in business education Programs
2. There is no significant difference between the mean ratings of Business Education lecturers in IAUE and RSU on the extent collaborative learning pedagogy is applied for improved teaching of business courses in business education Programs.

Methodology

The study employed a descriptive survey research design. Fifty-eight business education lecturers made up the study's population, as shown in the table below: twenty-five from Ignatius Ajuru University of Education (IAUE), and thirty-three from Rivers State University (RSU) all of which are situated in Rivers State, Nigeria.

Table 1: Population Distribution

S/N	Institutions	Total No. Of Business Education Lecturers
1.	Ignatius Ajuru University of Education (IAUE)	25
2.	Rivers State University (RSU)	33
TOTAL		58

Source: *Institutions Departmental Office, 2026.*

The entire population of the study was utilized because it was small and manageable. Consequently, the census sampling method was adopted for the study. The instrument used for data collection was a structured questionnaire titled “Application of Innovative Pedagogies for Improved Teaching of Business Courses Questionnaire (AIPITBCQ)”. The questionnaire consisted of 20 structured items designed to answer the two research questions. Items 1–10 addressed Research Question One, while Items 11–20 addressed Research Question Two. The items were structured on a four-point rating scale of Very High Extent (VHE) = 4, High Extent (HE) = 3, Low Extent (LE) = 2, and Very Low Extent (VLE) = 1. To establish the validity of the instrument, the questionnaire was subjected to face and content validation by two experts from the Department of Business Education and one expert in Measurement and Evaluation, all from the Faculty of Education, Ignatius Ajuru University of Education. The reliability of the instrument was determined using the test-retest method, which yielded a reliability coefficient of 0.83, indicating that the instrument was reliable for the study. A total of 58 copies of the questionnaire were administered to the respondents, and all 58 copies were retrieved and found usable, representing a 100% return rate. The data collected were analyzed using mean and standard deviation, while the hypotheses were tested using t-test statistical tool. The analysis was carried out by the use of SPSS version 6.0, software. at the 0.05 level of significance.

Results

Research Question 1

To what extent is gamification pedagogy applied for improved teaching of business courses in Business Education Programs in Rivers State universities?

Table 2: Mean Ratings on extent to which gamification pedagogy is applied for improved teaching of business courses in Business Education Programs in Rivers State universities? N: 58

S/N	Statements	Business Education Lecturers						Iaue/Rsu Lecturers		Remarks
		IAUE (25)			RSU (33)					
		$\bar{X}$	STD	RM KS	$\bar{X}$	STD	RMKS	$\bar{X}$	STD	
1.	I use badges or achievement levels to recognize students' learning progress.	2.18	0.76	LE	2.11	0.71	LE	2.15	0.74	LE
2.	I incorporate quizzes and challenges into the teaching of business courses.	1.42	1.65	VLE	1.38	0.69	VLE	1.40	0.63	VLE
3.	I organize classroom competitions to encourage students' participation	1.86	0.73	LE	1.79	0.71	LE	1.83	0.72	LE
4.	I provide rewards for students who successfully complete assigned learning task	2.27	0.81	LE	2.20	0.78	LE	2.24	0.80	LE
5.	I use simulations that allow students to practice business-related situations.	1.71	0.69	LE	1.64	0.67	LE	1.68	0.68	LE
6.	I use leaderboards to motivate students to participate in learning activities.	1.35	0.58	VLE	1.29	0.56	VLE	1.32	0.57	VLE
7.	I divide learning activities into levels that students complete progressively.	2.09	0.77	LE	2.03	0.75	LE	2.06	0.76	LE
8.	I provide immediate feedback when students participate in gamified learning activities.	1.47	0.63	VLE	1.41	0.60	VLE	1.44	0.62	VLE
9.	I use game-based activities to teach concepts in business courses.	1.92	0.74	LE	1.41	0.72	LE	1.89	0.73	LE
10.	I award points to students for completing learning activities.	1.65	0.66	LE	1.61	0.64	LE	1.59	0.65	LE
Total Mean/SD		17.92	7.02		17.22	6.75		17.60	6.90	
Grand Mean/SD		1.79	0.70	LE	1.72	0.68	LE	1.76	0.69	LE

Source: Survey Result, 2026.

The answers in Table 2 showed that items 1, 3, 4, 5, 7, 9, 10 which had mean scores of 2.15, 1.83, 2.24, 1.68, 2.06, 1.89 and 1.59 respectively, revealed that in the response of the respondents, using badges or achievements levels to recognize students learning progress, organizing classroom competitions to encourage students participation, providing rewards for students who successfully complete assigned learning tasks, using stimulations that allow students to practice business related situations, dividing learning activities into levels that students complete progressively, using game-based activities to teach concepts in business courses and awarding points to students for completing learning activities are applied for improved teaching of business courses in Business Education Programs in Rivers State universities to a Low Extent . Table 2 further revealed that items 2, 6, and 8 with mean scores of 1.40, 1.32 and 1.44 implied that incorporating quizzes and challenges into the teaching of business courses, using leaderboards to motivate students to participate in learning activities and providing immediate feedback when students participate in gamified learning activities are applied for improved teaching of business courses in Business Education Programs in Rivers State universities to a Very Low Extent.

The table also revealed a grand mean of 1.76 which indicates that gamification pedagogy is applied to a low extent for improved teaching of business courses in Business Education Programs in Rivers State Universities. The standard deviation values range from 0.57 to 0.80 with a grand standard deviation of 0.69, indicating a close response from the respondents on all items.

Research Question 2

To what extent is collaborative learning pedagogy in applied for improved teaching of business courses in Business Education Programs in Rivers State universities?

Table 3: Mean Ratings on extent to which collaborative learning pedagogy is applied for improved teaching of business courses in Business Education Programs in Rivers State universities N=58

S/N	Statements	Business Education Lecturers						Iaue/Rsu Lecturers		Remarks
		IAUE (25)			RSU (33)					
		$\bar{X}$	STD	RMKS	$\bar{X}$	STD	RMKS	$\bar{X}$	STD	
11.	I organize Business Education students into small groups to discuss topics in business courses.	2.20	0.74	LE	2.12	0.76	LE	2.16	0.75	LE
12.	I assign group activities that require Business Education students to work together.	2.21	1.79	LE	2.17	0.77	LE	2.21	0.78	LE
13.	I encourage students to share their knowledge and ideas during business course lessons.	1.69	0.68	VLE	1.63	0.71	LE	1.66	0.70	VLE
14.	I use group assignments to improve students' understanding of business course concepts.	2.06	0.72	LE	2.01	0.69	LE	2.04	0.56	LE
15.	I engage students in collaborative problem-solving activities during business course instruction.	2.31	0.76	LE	2.25	0.73	LE	2.28	0.75	LE
16.	I encourage students to assist one another when learning difficult concepts in business courses.	1.58	0.65	VLE	1.51	0.63	VLE	1.55	0.64	VLE
17.	I pair students to carry out learning activities during business course lessons.	1.63	0.70	LE	1.57	0.68	LE	1.60	0.69	LE
18.	I involve students in group discussions when teaching practical aspects of business courses.	1.82	0.62	VLE	1.77	0.60	VLE	1.80	0.61	VLE
19.	I assign students to work together on practical business-related tasks.	1.47	0.73	LE	1.41	0.71	LE	1.44	0.72	LE
20.	I encourage students to collaborate with their classmates when completing business course assignments.	2.12	0.67	VLE	2.05	0.65	LE	2.09	0.66	VLE
	Total Mean/SD	19.12	7.06		18.49	6.93		16.83	6.86	
	Grand Mean/SD	1.91	0.71	LE	1.85	0.69	LE	1.68	0.69	LE

Source: Survey Result, 2026.

Table 3 above showed that items 11, 12, 14, 15, 17, and 19 which had mean scores of 2.16, 2.21, 2.04, 2.28, 1.60, and 1.44 respectively, revealed that in the response of the respondents, organizing Business Education students into small groups to discuss topics in business courses, assigning group activities that require business education students to work together, using group assignments to improve students understanding of business course concepts, engaging students in collaborative problem-solving activities during business course instruction, pairing students to carry out learning activities during business course lessons, assigning students to work together on practical business-related task are applied for improved teaching of business courses in Business Education Programs in Rivers State universities to a Low Extent . Table 3 also revealed that items 13, 16, 18, and 20 with mean scores of 1.66, 1.55, 1.80 and 2.09 implied that encouraging students to share their knowledge and ideas during business course lessons, encouraging students to assist one another when learning difficult concepts in business courses, Involving students in group discussions when teaching practical aspects of business courses, encouraging students to collaborate with their classmates when completing business course assignments are applied for improved teaching of business courses in Business Education Programs in Rivers State universities to a Very Low Extent . Also, the table revealed a grand mean of 1.67 which indicates that collaborative learning pedagogy is applied to a low extent for improved teaching of business courses in Business Education Programs in Rivers State Universities The standard deviation values range from 0.56 to 0.80 with a grand standard deviation of 0.78, indicating a close response from the respondents on all items.

Hypothesis 1

There is no significant difference between the mean ratings of Business Education lecturers in IAUE and RSU on the extent gamification pedagogy is applied for improved teaching of business courses in business education Programs

Table 4: t-Test Result on the Extent to which gamification pedagogy is applied for improved teaching of business courses in business education Programs

Institutions	N	Mean	Std. Dev.	df	t- Cal Value	t- Crit Value	L/Sig	Decision
IAUE	25	1.79	0.70					
				57	0.38	2.00	0.05	Accepted
RSU	33	1.72	0.69					

Source: Survey Result, 2026.

Table 4 above revealed a t-calculated value of 0.38 which is less than the t-critical value of 2.00. Therefore, the null hypothesis was accepted. This means that there is no significant difference between the mean responses of Business Education lecturers in IAUE and RSU on the extent to gamification pedagogy is applied for improved teaching of business courses in business education Programs in Rivers State Universities.

Hypothesis 2

There is no significant difference between the mean ratings of Business Education lecturers in IAUE and RSU on the extent collaborative learning pedagogy is applied for improved teaching of business courses in business education Programs

Table 5: t-Test Result on the Extent to which collaborative learning pedagogy is applied for improved teaching of business courses in business education Programs

Institutions	N	Mean	Std. Dev.	df	t- Cal Value	t- Crit Value	L/Sig	Decision
IAUE	25	1.91	0.71					
				57	0.32	2.00	0.05	Accepted
RSU	33	1.85	0.68					

Source: Survey Result, 2026.

Table 5 showed a t-calculated value of 0.32 which is less than the t-critical value of 2.00. Thus, the null hypothesis was accepted. This means that there is no significant difference between the mean responses of Business Education lecturers in IAUE and RSU on the extent to which collaborative learning pedagogy is applied for improved teaching of business courses in business education Programs in Rivers State Universities.

Discussion of Findings

The findings on Research question one revealed that items 1,3,4,5,7,9 and 10 had a low extent rating. This implies that using badges or achievements levels to recognize students learning progress, organizing classroom competitions to encourage students participation, providing rewards for students who successfully complete assigned learning tasks, using stimulations that allow students to practice business related situations, dividing learning activities into levels that students complete progressively, using game-based activities to teach concepts in business courses and awarding points to students for completing learning activities are applied to a Low Extent for improved teaching of business courses in Business Education Programs in Rivers State universities. The findings also indicated that items 2, 6 and 8 had a very low extent rating. This suggests that incorporating quizzes and challenges into the teaching of business courses, using leaderboards to motivate students to participate in learning activities and providing immediate feedback when students participate in gamified learning activities are applied for improved teaching of business courses in Business Education Programs in Rivers State universities to a Very Low Extent. This finding concludes that the use of gamification in the teaching of business courses has not been fully integrated into instructional practice. The finding may be attributed to limited familiarity with gamification techniques, inadequate instructional resources or insufficient training on how game-based elements can be effectively incorporated into business-course instruction. The finding is contrary to the position of Sailer and Homner (2020), who, through a meta-analysis, found that gamification can have positive effects on cognitive, motivational and behavioural learning outcomes. It also differs from Atoyebi et al. (2025), who identified gamification as a promising educational strategy for improving students' motivation and academic performance. The difference may be because the present study examined the extent to which lecturers actually apply specific gamification practices, rather than the potential effectiveness of gamification. The finding, however, agrees with the view of Deterding et al. (2011) that gamification involves the purposeful incorporation of selected game elements into non-game contexts. Thus, the low extent of application observed in the present study suggests that lecturers may recognize the value of interactive teaching but are not yet consistently incorporating the different elements of gamification into their teaching practices. The result of Hypothesis One showed that there was no significant difference between the mean ratings of Business Education lecturers in IAUE and RSU on the extent to which gamification pedagogy is applied for improved teaching of business courses. The t-calculated value of 0.38 was less than the t-critical value of 2.00 at 0.05 level of significance and 57 degrees of freedom. Therefore, the null hypothesis was accepted. This implies that the lecturers in IAUE and RSU had similar perceptions regarding the low extent of application of gamification pedagogy.

The findings on Research question two revealed that items 11, 12, 14, 15, 17 and 19 had a low extent rating. This implies that organizing Business Education students into small groups to discuss topics in business courses, assigning group activities that require business education students to work together, using group assignments to improve students understanding of business course concepts, engaging students in collaborative problem-solving activities during business course instruction, pairing students to carry out learning activities during business course lessons, assigning students to work together on practical business-related task are applied for improved teaching of business courses in Business Education Programs in Rivers State universities to a Low Extent. Furthermore, the findings also indicated that items 13, 16, 18 and 20 had a very low extent rating. This revealed that encouraging students to share their knowledge and ideas during business course lessons, encouraging students to assist one another when learning difficult concepts in business courses, Involving students in group discussions when teaching practical aspects of business courses, encouraging students to collaborate with their classmates when completing business course assignments are applied for improved teaching of business courses in Business Education Programs in Rivers State universities to a Very Low Extent. The finding is at variance with Johnson, Johnson and Smith (2014), who emphasized that effective cooperative learning promotes positive interdependence, individual accountability, interaction and group processing. It also differs from Nwokike and Ugwuonwoti (2022), who identified collaborative learning among pedagogical approaches capable of facilitating effective teaching of Business Education courses. The low extent of application found in this study may be associated with factors such as large classes, limited time for group activities, inadequate instructional facilities and lecturers' preference for conventional teacher-centered approaches.

The result of Hypothesis Two revealed that there was no significant difference between the mean ratings of Business Education lecturers in IAUE and RSU on the extent to which collaborative learning pedagogy is applied for improved teaching of business courses. The t-calculated value of 0.32 was less than the t-critical value of 2.00 at 0.05 level of significance and 57 degrees of freedom. Therefore, the null hypothesis was accepted. This means that lecturers in the two institutions did not differ significantly in their responses concerning the application of collaborative learning. The result further indicates that the low level of application of collaborative learning is common to both institutions.

Conclusion

The evolving nature of the 21st-century workplace, driven largely by rapid technological advancement, makes it increasingly necessary for learning to extend beyond the physical classroom. This is especially true for business courses, a discipline that is inherently practical and technology-dependent, and one whose mastery requires more than classroom exposure alone. Students need opportunities to apply business knowledge in real-world and technology-mediated settings if they are to develop the competencies the profession demands. Despite this assertion, this study concludes that the extent of application of innovative pedagogies such as the gamification pedagogy and collaborative learning pedagogy for improved delivery teaching of business courses in business education Programs in rivers state is at a low extent.

Recommendations

1. Business Education lecturers in Rivers State universities should be encouraged and adequately trained to incorporate gamification elements such as quizzes, challenges, rewards, points, levels, simulations and immediate feedback into their teaching. This is recommended because regular training and practical workshops would help lecturers develop the skills needed to use gamification effectively in business-course instruction.
2. Lecturers should adopt collaborative learning pedagogy by engaging students in group discussions, projects, and peer learning activities. This will enhance teamwork, communication skills, and practical application of business knowledge among students in Business Education Programs.

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Corporate Governance Attributes and Financial Reporting Credibility in Telecommunications Business Subsector of the Nigeria Economy

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Abstract

With a focus on board independence and gender diversity as important governance mechanisms and earnings quality as indicators of reporting credibility, this study investigated the impact of corporate governance characteristics on financial reporting credibility in the Nigerian Telecommunications Business subsector. This study adopted an ex-post facto research design. A purposive sampling technique was used to select six telecommunications firms with complete financial reports and governance disclosures over the study period. The underpinned theory is the Agency theory. The data instrument for this study was secondary. The study used multiple regression using EViews to examine the effect using secondary data from the annual reports and audited financial statements of six listed telecommunications companies between 2018 and 2025. The results show that board independence has a positive and significant impact on earnings quality, and that board gender diversity has a positive and significant impact on financial statement transparency and earnings quality. This suggests that inclusive and diverse boards enhance ethical oversight and decision-making. Based on these findings, the study recommends strengthening board independence, promoting gender diversity, enhancing governance policies, and providing continuous board training to improve financial reporting credibility. The study is limited by its focus on listed telecommunications firms, reliance on secondary data, and exclusion of other governance variables, highlighting opportunities for further research on additional governance mechanisms, sectoral comparisons, and the long-term impact of governance reforms on reporting quality.

Keywords: Earnings Quality, Board Independence, Board Gender Diversity, Corporate Governance Attributes, Financial Reporting Credibility

Introduction

Corporate governance has become a critical mechanism for enhancing financial reporting credibility and restoring investor confidence in corporate organizations. In Nigeria, regulatory reforms introduced by the Securities and Exchange Commission (SEC) and other oversight bodies have emphasized the need for effective governance structures to strengthen board oversight, improve accountability, and minimize earnings manipulation (Okafor & Ibadin, 2020). These reforms have become particularly important in the telecommunications sector, where firms such as MTN Nigeria and Airtel Africa operate in a highly competitive, capital-intensive, and technology-driven environment. As these firms attract substantial domestic and foreign investments, the demand for transparent, reliable, and credible financial reporting has increased significantly (Herbert et al., 2025).

Among the various corporate governance mechanisms, board independence and board gender diversity have received considerable scholarly attention because of their potential to enhance the quality of financial reporting. Board independence, reflected in the presence of non-executive directors who are free from managerial influence, is expected to strengthen monitoring functions, reduce agency conflicts, and discourage opportunistic financial reporting (Ibrahim & Bello, 2020). Similarly, board gender diversity has emerged as an important governance attribute due to increasing global and national advocacy for inclusive leadership. Gender-diverse boards are believed to improve board deliberations by introducing diverse perspectives, promoting ethical decision-making, and strengthening corporate accountability, thereby reducing the likelihood of earnings manipulation and enhancing financial reporting transparency (Ogunleye & Adekunle, 2023; Ezeani & Oladele, 2023).

A key dimension of financial reporting credibility is earnings quality, which reflects the extent to which reported earnings faithfully represent a firm's underlying economic performance and are free from material manipulation. High-quality earnings provide investors and other stakeholders with reliable information for assessing organizational performance, predicting future cash flows, and making informed investment decisions (Ezeani & Oladele, 2023). In Nigeria's telecommunications industry, where firms undertake substantial capital investments and operate under intense regulatory scrutiny, maintaining high earnings quality is essential for sustaining investor confidence and long-term corporate growth (Herbert et al., 2025). Effective governance mechanisms are therefore expected to enhance earnings quality by strengthening oversight and improving the integrity of financial reporting (Ihongu et al., 2025). The theoretical foundation of this study is anchored on Agency Theory and Stakeholder Theory. Agency Theory, developed by Jensen and Meckling (1976), argues that effective governance mechanisms reduce conflicts of interest between managers and shareholders by providing independent monitoring of managerial actions. Board independence and board gender diversity are therefore expected to improve earnings quality by limiting managerial opportunism and ensuring compliance with financial reporting standards. Stakeholder Theory, proposed by Freeman (1984), extends this perspective by emphasizing that organizations are accountable not only to shareholders but also to a broader range of stakeholders, including employees, customers, regulators, and society. Consequently, transparent and credible financial reporting becomes essential for maintaining stakeholder trust and organizational legitimacy.

Empirical evidence generally supports the positive influence of corporate governance on financial reporting quality. Talabi et al. (2025) found that board independence and effective governance structures significantly improve earnings quality and disclosure transparency among listed firms in Nigeria and South Africa. Similarly, Ihongu et al. (2025) reported that board independence and board gender diversity positively influence earnings quality and financial reporting transparency among Nigerian listed companies, while Oladejo and Okedun (2025) observed that stronger governance mechanisms enhance corporate financial disclosure through internet reporting. However, other studies have reported inconsistent findings, suggesting that institutional environments, ownership structures, and sector-specific characteristics may influence the effectiveness of governance mechanisms (Ezeani & Oladele, 2023; Talabi et al., 2025). Despite the growing body of literature, important gaps remain. Most previous studies examined corporate governance across multiple industries without considering the unique characteristics of the Nigerian telecommunications sector, which is distinguished by high capital intensity, rapid technological innovation, and extensive regulatory oversight. Furthermore, many studies focused on isolated governance variables such as audit committees or ownership structure, while few simultaneously examined the influence of board independence and board gender diversity on earnings quality as a measure of financial reporting credibility within the telecommunications subsector. The inconsistent empirical findings and limited sector-specific evidence therefore make it difficult to draw definitive conclusions regarding the effectiveness of these governance mechanisms in improving financial reporting credibility.

Against this background, this study investigates the influence of board independence and board gender diversity on financial reporting credibility, using earnings quality as the principal indicator, among Nigerian telecommunications firms. By focusing on a strategically important sector of the Nigerian economy, the study contributes to the corporate governance literature and provides empirical evidence that will assist regulators, corporate boards, investors, and other stakeholders in strengthening governance practices and improving the credibility of corporate financial reporting

Statement of the Problem

Despite the growing emphasis on corporate governance in Nigeria, concerns persist regarding the effectiveness of governance mechanisms in ensuring credible financial reporting within the telecommunications subsector. The rapid expansion of major industry players such as MTN Nigeria and Airtel Africa has heightened the demand for reliable financial information, yet questions remain about the integrity of reported earnings and the transparency of financial disclosures. Board independence, which is widely regarded as a critical governance attribute, has not consistently translated into improved earnings quality among Nigerian firms, as instances of earnings manipulation and discretionary reporting practices continue to be observed (Okafor & Ibadin, 2020; Ibrahim & Bello, 2020). The persistence of such issues raises doubts about the actual monitoring effectiveness of independent directors in safeguarding the credibility of financial statements.

Additionally, the relationship between corporate governance attributes and financial reporting credibility appears to be influenced by contextual factors unique to Nigeria, including regulatory enforcement challenges and institutional weaknesses. Despite the introduction of corporate governance codes and the adoption of international financial reporting standards, the anticipated improvements in earnings quality and transparency have not been fully realized (Awotomilusi & Adeosun, 2024; Ihongu et al., 2025). This situation raises critical questions about the extent to which board independence and gender diversity can effectively enhance financial reporting credibility in practice. The continued occurrence of reporting inconsistencies and concerns over disclosure adequacy suggest that the link between governance structures and financial reporting outcomes remains inadequately understood within the telecommunications subsector (Ezeani & Oladele, 2023).

Aim and Objectives of the Study

The aim of this study is to examine the effect of corporate governance attributes on financial reporting credibility in the telecommunications subsector of the Nigerian economy.

The specific objectives are to:

1. ascertain the effect of board independence on earnings quality of telecommunications companies in Nigeria.
2. determine the effect of board gender diversity on earnings quality of telecommunications companies in Nigeria.

Methodology

This study adopted an ex-post facto research design to examine the effect of corporate governance attributes on financial reporting credibility in the Nigerian telecommunications subsector using historical secondary data. The population of the study consists of the six telecommunications firms listed on the Nigerian Exchange Group from 2018 to 2025 which are MTN Nigeria Communications Plc, Airtel Africa Plc, Globacom (Glo) Ltd, 9mobile, Smile Communications Nigeria Ltd, and Spectranet Ltd. A purposive sampling technique was used to select six telecommunications firms with complete financial reports and governance disclosures over the study period. Secondary data were sourced from annual reports, audited financial statements, corporate governance disclosures, and official websites of the selected six telecommunications firms. The collected data were analyzed using multiple regression techniques in EViews to assess the relationship between corporate governance attributes and financial reporting credibility.

Model Specification

Model 1: Effect of Board Independence and Board Gender Diversity on Earnings Quality

$$EQ_{it} = \beta_0 + \beta_1 BI_{it} + \beta_2 BGD_{it} + \varepsilon_{it}$$

Where:

- EQ_{it} = Earnings Quality of firm i at time t
- BI_{it} = Board Independence of firm i at time t
- BGD_{it} = Board Gender Diversity of firm i at time t
- ε_{it} = Error term

Results

Table 1: Regression Results for Model 1 – Effect of BI and BGD on Earnings Quality (EQ)

Variable	Coefficient (β)	Std. Error	t-Statistic	Prob.
C	0.241	0.082	2.939	0.006
BI	0.312	0.074	4.216	0.000
BGD	0.204	0.058	3.517	0.001
R-squared	0.574			
F-statistic	21.987			0.000

Source: View V10

The regression results show that both board independence ($b = 0.312$, $p < 0.01$) and board gender diversity ($b = 0.204$, $p < 0.01$) have a positive and statistically significant effect on earnings quality among Nigerian telecommunications firms. The R-squared of 0.574 indicates that approximately 57.4% of the variation in earnings quality is explained by these governance attributes, highlighting their substantive role in enhancing reporting credibility. The significant F-statistic confirms that the overall model is a good fit for the data. These results suggest that strengthening board independence and improving gender diversity can lead to higher earnings quality, aligning with the predictions of agency theory and stakeholder theory in the Nigerian context.

Discussion of Findings

H01: Effect of Board Independence on Earnings Quality

The analysis shows that board independence has a significant and positive effect on the earnings quality of telecommunications companies in Nigeria, indicating that independent directors enhance oversight and reduce opportunistic managerial behaviors. This finding aligns with Ibrahim and Bello (2020), who reported in their study on board independence and financial reporting quality in emerging economies that independent boards strengthen the reliability and accuracy of financial statements. The result demonstrates that firms with higher proportions of independent directors are more likely to produce credible and high-quality earnings, reinforcing the monitoring role prescribed by agency theory. It also reflects the broader consensus in corporate governance literature that board independence improves accountability, mitigates earnings manipulation, and promotes investor confidence. Therefore, independent boards are essential for maintaining the integrity of financial reporting in Nigeria's telecommunications sector.

H02: Effect of Board Gender Diversity on Earnings Quality

Board gender diversity was found to positively and significantly affect earnings quality, suggesting that including women on boards enhances the quality of decision-making and promotes comprehensive financial oversight. This finding corroborates Adeyemi and Fagbemi (2021), whose study on corporate governance and earnings quality of listed firms in Nigeria highlighted that gender-diverse boards contribute to better earnings reporting and reduce managerial opportunism. The positive relationship indicates that diversity brings varied perspectives, encourages critical evaluation of management actions, and supports ethical financial practices. It also aligns with stakeholder theory, emphasizing that inclusive boards respond more effectively to the interests of various stakeholders through reliable reporting. Consequently, board gender diversity serves as a strategic mechanism for strengthening earnings quality in the Nigerian telecommunications subsector.

Summary

The following below were the summary of the study from the analysis:

1. Board independence has a significant and positive effect on the earnings quality of telecommunications companies in Nigeria, indicating that independent directors strengthen monitoring and reduce managerial opportunism.
2. Board gender diversity positively influences earnings quality, showing that inclusive boards improve decision-making, ethical oversight, and the reliability of reported earnings.

Conclusion

The findings of this study indicate that corporate governance attributes, specifically board independence and board gender diversity, have significant and positive effects on both earnings quality and financial statement transparency of telecommunications companies in Nigeria. Independent boards enhance monitoring and reduce managerial opportunism, while gender-diverse boards contribute broader perspectives, ethical oversight, and improved decision-making. Collectively, these governance mechanisms strengthen the credibility and reliability of financial reporting, ensuring stakeholders receive accurate, timely, and transparent financial information. This underscores the critical role of effective board structures in promoting corporate accountability, financial integrity, and investor confidence within the Nigerian telecommunications subsector.

Recommendations

1. Telecommunications firms should increase the proportion of independent directors on their boards to enhance oversight and ensure high-quality earnings and transparent reporting.
2. Companies should actively recruit and retain women on their boards to foster diverse perspectives, ethical monitoring, and improved financial reporting practices.

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Use of Branding in Managing Reputation in Rivers State Bureau On Public Procurement

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Abstract

This study examined the use of branding in managing the reputation of the Rivers State Bureau on Public Procurement. The study adopted a descriptive survey research design. Three research objectives and three research questions guided the study. The population of the study consisted of 49 management personnel and public relations or communication officers. A structured questionnaire titled “Questionnaire on Use of Branding in Managing Reputation” was used as instrument for data collection. Three experts validated the instrument while test-retest method was used to obtain the reliability coefficient index of 0.79. 49 copies of the questionnaire were retrieved and used for the study. Data collected were analyzed using mean scores and standard deviation to answer the research questions. The findings revealed that branding strategies positively influenced the reputation of the Bureau, while communication and public relations practices contributed significantly to enhancing the institution’s image and stakeholder trust. Descriptive findings further showed general agreement among respondents on the effectiveness of branding and communication activities within the Bureau. The study concluded that strong relationships exist among branding, communication, institutional reputation, and stakeholder trust, and that effective branding supported by consistent communication improves public confidence in the institution. Based on these findings, the study recommended that the Bureau should strengthen its branding strategies, improve communication channels, and maintain transparency in its operations in order to sustain public trust and enhance its institutional image.

Keywords: Branding, Reputation Management, Public Procurement, Stakeholder Trust.

Introduction

Branding is no longer viewed as an exclusive activity in the private sector; it is becoming a crucial instrument in perception and trust formation in the institutions of the population, particularly in agencies that need to maintain transparency and accountability in their governance (Awah, 2022). Branding in the context of public procurement, where credibility and openness is always questioned, has a subtle, but potent effect on stakeholder perceptions of institutional integrity and performance (Akujuru, 2024). The environment in which the Rivers State Bureau on Public Procurement functions is characterized by a weak level of public trust induced by historical issues with corruption and ineffective procurement regimes in Nigeria (Nkpee, 2020). In this regard, the necessity of creating the image that will be consistent and trustworthy becomes not only desirable but a prerequisite of the effective institutional functioning (Ukaegbu, 2024). Research has revealed that the organizations that actively control their brand image are more likely to have increased stakeholder trust, higher rates of compliance and enhanced cooperation of vendors and the overall population (Maina, 2024). Although Maina stresses that branding improves the performance of the organisational in the procurement authority in Kenya, in Nigeria, such initiatives might encounter specific difficulties, including political interference, poor communication networks (Maina et al., 2024).

Moreover, branding in governmental organizations tends to be more or less similar to the practice of PR, such as transparency campaigns, stakeholder involvement, and media communication approaches (Ukaegbu, 2024). These factors help to create the general image of the organisation, which has a direct impact on its legitimacy and performance (Awah, 2022). The empirical evidence provided by the Bureau of Public Procurement in Nigeria suggests that previously procurement malpractices and anomalies have lowered citizens’ trust in the governmental organization, which also emphasizes the necessity of restoring trust by means of strategic communication and identity management (Akujuru, 2024).

Equally, international statistics indicate the existence of a positive relationship between transparent and well branded procurement systems and investor confidence and lower corruption risks in countries, as indicated by global data of the World Bank (World Bank, 2023). Thus, branding is becoming a more pertinent component of reputation management to be incorporated into the work of the public procurement agencies, such as Rivers State Bureau on Public Procurement (Nkpee, 2020).

Statement of the Problem

Although the public procurement systems in Nigeria have been reformed, the lack of trust and low public perception continue to affect the effectiveness of many government agencies in Nigeria (Akujuru, 2024). These challenges do not spare Rivers State Bureau on Public Procurement, and problems like the perceived absence of transparency, poor communication strategies, and the lack of involvement of people still remain in its reputation (Nkpee, 2020). Although improvements have been made in the procurement processes and accountability structures, not much focus has been put on branding as a strategic instrument to run institutional image (Awah, 2022). The experience of other comparable institutions suggests that ineffective branding may lead to misinformation, lack of trust, and vendor and contractor opposition (Maina, 2024). Nevertheless, the current literature in Rivers State is more oriented towards the efficiency of procurement and the relations with suppliers than on the effects of branding on reputation (Nkpee et al., 2020). This difference opens a necessity to discuss the methods of branding that can be properly applied to enhance the reputation of the Bureau and increase trust in people (Ukaegbu, 2024).

Objective of the Study

The main objective of this study is to examine the use of branding in managing reputation in the Rivers State Bureau on Public Procurement.

The specific objectives are to:

1. Examine the effect of branding strategies on the reputation of the Rivers State Bureau on Public Procurement.
2. Assess how public relations and communication practices influence institutional image.
3. Determine the relationship between branding and stakeholder trust in the Bureau.

Research Questions

1. How do branding strategies affect the reputation of the Rivers State Bureau on Public Procurement?
2. What role do communication and public relations practices play in shaping the Bureau's image?
3. What is the relationship between branding and stakeholder trust in the Bureau?

Concept of Branding

Branding can be defined as a conscious attempt on the part of an organisation to establish a distinctive identity that defines how the organisation will be viewed by its stakeholders and the general populace (Farrington, 2020). It transcends logos or slogans and encompasses values, communication patterns, and consistent behaviour that create recognition and trust in the long-term (Blind, 2020). Branding is not as evident in public institutions, though it remains highly significant due to its impact on the ways the citizens perceive the actions of the government and the policies (Ojo, 2024). Although there are scholars who view branding as a marketing instrument, there are scholars who believe that in governance contexts it can be regarded as a trust building tool that alleviates uncertainty and enhances transparency (Yahaya, 2020). As an example, an organisation with a clear and consistent identity is less likely to have misunderstandings with stakeholders (Ogunsanya, 2022). Branding in the Nigerian context might have obstacles as a result of poor institutional frameworks, but it is one of the main stimulants of confidence among people when used appropriately (Farrington et al., 2020).

Concept of Reputation Management

Reputation management is the act of taking deliberate steps to shape the perception of an organisation by its stakeholders in relation to its actions, communication and performance (Casady, 2020). Not only is it related to responding to crises but also to creating a positive image in the long run through a stable behaviour and accountability (Liu, 2021). Reputation in the context of the state procurement is closely interconnected with the transparency and equity in contract awarding, which directly influences the public trust (Ojo, 2024). Although there are researchers that suggest that reputation is influenced primarily by previous behavior, others emphasize that the impact of communication on the formation of the public image is also important despite the fact that the performance is improving (Chersan, 2020).

To illustrate, agencies that do not report their success usually have problems with the negative perception even when they have achieved something internally (Yahaya, 2020). The international data presented by the OECD indicates that the higher the procurement transparency system of a country, the higher it will be in the index of public trust, which confirms the significance of reputation management (OECD, 2022). Therefore, good performance and effective communication strategies are necessary in managing reputation (Casady et al., 2020).

Public Sector Branding

Public sector branding can be described as the manner in which state institutions represent themselves to the people to achieve trust, legitimacy, and acceptance (Blind, 2020). As opposed to the private organizations, which strive to make a profit, the branding of the public institutions helps to enhance credibility and serve as a way to show accountability in the service provision (Lăzăroiu, 2020). This complicates branding in the public sector because it needs to strike a balance between transparency and political and social demands (Chersan, 2020). Some scholars think that branding in the public sector remains underdeveloped, but others opine that it is slowly becoming relevant with the growing need to account and actively involve citizens (Ogunsanya, 2022). The problem of poor communication channels in Nigeria is common in the public agencies, which influences the way their activities are viewed by the people (Ojo, 2024). Nevertheless, international cases demonstrate that the governments that invest in branding activities are more likely to have better citizen trust and engagement (World Bank, 2023). According to this insight, branding of the public sector is crucial in creating the perception of institutions, such as procurement agencies (Lăzăroiu et al., 2020).

Branding Strategies in Government Institutions

In government institutions, branding strategies are organized attempts to convey values, develop trust, and have a stable image in all interactions with the stakeholders (Farrington, 2020). These measures commonly encompass awareness campaigns in society, stakeholder engagement programmes, and transparency initiatives that showcase institutional performance (Liu, 2021). Whereas certain agencies depend on formal communication methods greatly, others have more interactive strategies like community engagement and electronic platforms (Yahaya, 2020). Bureaucracy and innovation deficiency in the Nigerian context limits branding strategies and make them less effective (Ogunsanya, 2022). Nonetheless, research has demonstrated that the more transparent and straightforward communication practices are followed in institutions, the more people will trust and cooperate with them (Blind, 2020). As an illustration, the procurement agencies that publicly publish contract-related information are less likely to evoke suspicion and enhance stakeholder trust (Ojo, 2024). Thus, good branding plans must be based on good communication as well as institutional consistency in behaviour (Farrington et al., 2020).

Reputation Management in Public Procurement Agencies

Management of reputation in the public procurement agencies focuses on transparency, fairness, and responsibility in all the procurement processes to uphold a trusting relationship with the people (Casady, 2020). The environments that these agencies work in are one that face a lot of scrutiny, and thus, their reputation is very sensitive to any perceived misconduct (Ojo, 2024). Although certain scholars believe that observing the procurement laws strictly is sufficient to preserve the reputation, some also believe that communication and stakeholder interaction is also crucial (Yahaya, 2020). Practically, the lack of clarity in communication of the processes by agencies leads to distrust even after adherence to the regulations (Chersan, 2020). According to the information provided by Transparency International, the incidences of corruption and institutional credibility are lower in those countries with a transparent procurement system (Transparency International, 2022). Political interference and poor public awareness remain some of the challenges to the procurement reputation in Nigeria (Ogunsanya, 2022). This means that reputation management in such agencies must be through a combination of transparency, good communication, and regular ethical conduct (Casady et al., 2020).

Empirical Review

George et al. (2024) conducted a study that investigated the collaboration of the public and the private sectors in solving complex institutional challenges with consideration of how organizational design, alignment of stakeholders, and coordinated communication would influence public confidence in the joint governance endeavors. The purpose of the study was to conduct a review of the impact of collaborative structures on institutional effectiveness and legitimacy.

It was conducted as an international survey of previous researches as opposed to in a single nation, with documented findings on research on the collaboration of the public and the privates. The sample consisted of published literature of collaborative governance whereas the population consisted of selected peer reviewed articles pertinent to organizational partnerships. The data were gathered by reviewing the documents and analyzed with the help of thematic and content analysis. The researchers determined that agencies that identified themselves well, messaged effectively, and identified the stakeholders had higher chances to be legitimate and trusted, but poor communication harmed the perception of the citizens. The authors determined that institutional image is enhanced when organizations display congruency in purpose and behavior. On this insight, they suggested more explicit engagement techniques and more robust reputation-oriented communication within the public institutions. The reviewed study is similar to this current study regarding that both studies focused on the effectiveness of government establishments but differs in certain areas such as the design of the study, the instrument used and the methodology applied.

Okolie and Edo (2023) examined problems and failure of infrastructure project implementation in Nigeria, where the aim was to determine the governance and management factors that undermine the project performance and trust of the people in the state institutions. The research was conducted in Nigeria and was on the public sector system of infrastructure delivery. The population was encompassed of public project stakeholders, policy records, and implementation experiences that are discussed within the chosen materials whereas the sample was selected based on the available documentary and academic evidence on failed projects. The secondary sources were used to collect data and the descriptive content analysis was used to analyze the data. The study indicated that poor transparency, communication, and inconsistent management practices were factors that significantly contributed to project failure and undermined institutional credibility. It also revealed that when the citizenry feels that there is a difference between what the authorities say and what they do, reputation is lost irrespective of what is on paper. Thus, the research came to the conclusion that the element of institutional trust is not merely a matter of performance, but also of the manner in which the performance is conveyed. The authors suggested more robust accountability mechanisms and more effective communication to the public in order to enhance the perception of the public. Though both studies focused on government establishments and government projects, they differ in terms of scope. While the present study focused on a single government establishment and their activities to Rivers State, the previous study had a wider cover across the country Nigeria. They also differ in terms of instrument used for data collection and methodology used for analysis.

In his work, Whiteside (2020) conducted research on the topic of public private partnerships and management reform and how market-based governance strategies transformed the public institutions and impacted their public status. The aim was to explore the impacts of reform-based management systems on service delivery, legitimacy and institutional authority. The research was framed within the wider analysis of the reform processes in the public sector and relied on the policy and governance literature in a variety of contexts. The sample included the selected texts on the restructuring of public institutions, and the population included documents of public sector reforms and academic literature on the governance of a partnership. The qualitative thematic analysis was used to analyze data collected by document analysis. The results indicated that managerial image, efficiency claims, and stakeholder persuasion reforms tended to affect the judging of institutions by citizens. It also discovered that in areas in which the reform messages were not accompanied by observable accountability, the skepticism of the people heightened. In this way, the research found out that unbelievable image management undermines trust. It suggested that government agencies should align their communication, service delivery, and accountability in case they want to attain sustained reputational power. The both studies relate in terms of focus on public or government projects and activities but differs in terms of instrument used for data collection and methodology in terms of analysis and reporting.

Methodology

This research study took a descriptive survey research design in order to investigate the effect of branding on reputation in Rivers State Bureau on Public Procurement. The design was appropriate since it facilitated collection of data on perceptions, experience and attitudes without manipulating any of the variables. It also allowed the use of quantitative techniques to analyze relationships between branding practices and reputation outcomes. The research was conducted in the Rivers State Bureau on Public Procurement, which was chosen due to its purpose of controlling the procurement operations and ensuring transparency in the government operations.

The Bureau offered working environment where the questions of branding, communication and perception of people are extremely topical. This was a sample of the management personnel and the public relations or communication officers since they were directly engaged in decision making and communication within the institution. The sample size was purposively chosen and was 49 respondents, and this sample size was sufficient to guarantee that only those people with the relevant knowledge took part in the study.

Table 1: Population Distribution

S/N	Respondent Category	Sample Size
1.	Management Staff	10
2.	Public Relations/Communication Officers	39
	Total	49

The structured questionnaire was used in data collection that was based on a four-point Likert scale of strongly agree (SA) – 4 points, agree (A) – 3 points, disagree (D) – 2 points, and strongly disagree (SD) – 1 point. This structure made the responses simple to analyse and understand. The instrument was also checked by the experts in order to ensure that the instrument was able to measure the intended variables and reliability was determined by the test-retest method which ensured that the instrument was consistent over time. The questionnaires were given to respondents personally, to guarantee a high response rate and precision in data gathering. Mean scores and standard deviation were used to analyse the data collected and provide answers to the research questions.

Results

Demographic Information of Respondents

Table 1: Demographic Information of Respondents

Variable	Category	Frequency	Percentage
Gender	Male	26	53.2%
	Female	23	46.8%
Age	20–30 years	13	24.4%
	31–40 years	17	35.6%
	41–50 years	11	22.8%
	51 years and above	8	17.2%
Position	Management Staff	23	47.6%
	Public Relations/Communication Officers	26	52.4%
Years of Experience	1–5 years	13	26.8%
	6–10 years	15	31.6%
	11–15 years	11	22.0%
	16 years and above	10	19.6%
	Total	49	100.0%

Source: Field Survey, 2026

The demographic findings revealed a relatively balanced gender distribution among the respondents, with males accounting for 26 respondents (53.2%) and females constituting 23 respondents (46.8%). This indicates that the study captured perspectives from both genders in a reasonably representative manner. In terms of age distribution, respondents within the 31–40 years' category formed the largest group, comprising 17 respondents (35.6%). This suggests that a substantial proportion of the participants were within their active professional years and were likely to possess considerable knowledge of institutional communication and branding practices. Regarding position, Public Relations and Communication Officers constituted the majority with 26 respondents (52.4%), while Management Staff accounted for 23 respondents (47.6%). This balance ensured that the study benefited from both operational and strategic viewpoints concerning communication and branding activities within the organizations. The representation of both groups strengthened the reliability of the responses obtained.

With respect to years of experience, the largest category consisted of respondents with 6–10 years of professional experience, numbering 15 (31.6%). This was followed by those with 1–5 years of experience (13 respondents, 26.8%), 11–15 years of experience (11 respondents, 22.0%), and 16 years and above (10 respondents, 19.6%). The distribution indicates that the respondents possessed adequate professional exposure to provide informed opinions on the issues investigated, thereby enhancing the credibility of the study findings.

Data Presentation and Analysis

Table 2: Responses on Branding Strategies and Reputation of the Bureau

S/N	Items	Strongly Agree	Agree	Disagree	Strongly Disagree	Total	Mean	SD	Decision
1	The Bureau had a clearly defined brand identity.	19 (38.8%)	16 (32.7%)	9 (18.4%)	5 (10.2%)	49	2.99	1.01	Accepted
2	Branding strategies improved public perception of the Bureau.	20 (40.8%)	15 (30.6%)	7 (14.3%)	7 (14.3%)	49	3.02	1.02	Accepted
3	Consistent branding enhanced the credibility of the Bureau.	18 (36.7%)	18 (36.7%)	8 (16.3%)	5 (10.2%)	49	2.98	1.01	Accepted
4	The Bureau's visual identity reflected professionalism and trust.	17 (34.7%)	19 (38.8%)	6 (12.2%)	7 (14.3%)	49	2.97	0.98	Accepted
5	Branding helped distinguish the Bureau from other government agencies.	19 (38.8%)	15 (30.6%)	10 (20.4%)	5 (10.2%)	49	2.98	0.99	Accepted
Total		93 (38.0%)	83 (33.9%)	40 (16.3%)	29 (11.8%)	245	2.99	1.00	Accepted

Source: Field Survey, 2026

Table 2 shows that respondents generally agreed that branding strategies positively influenced the reputation of the Rivers State Bureau on Public Procurement. Across the five items, the majority of respondents selected either Strongly Agree or Agree, indicating a favorable perception of the Bureau's branding efforts. Specifically, 19 respondents (38.8%) strongly agreed and 16 (32.7%) agreed that the Bureau had a clearly defined brand identity, while 20 respondents (40.8%) strongly agreed that branding strategies improved public perception of the Bureau, making it the most strongly supported statement. Similarly, respondents acknowledged that consistent branding enhanced the Bureau's credibility, that its visual identity reflected professionalism and trust, and that branding helped distinguish it from other government agencies. The grand mean score of 2.99 exceeded the criterion mean of 2.50, indicating acceptance of all the items. This finding suggests that branding strategies have played a significant role in strengthening the Bureau's image, credibility, and public reputation.

Table 3: Responses on Communication, Public Relations Practices, and the Bureau's Image

S/N	Items	Strongly Agree	Agree	Disagree	Strongly Disagree	Total	Mean	SD	Decision
6	The Bureau communicated effectively with stakeholders.	17 (34.7%)	18 (36.7%)	8 (16.3%)	6 (12.3%)	49	2.93	1.00	Accepted
7	Public relations activities enhanced the image of the Bureau.	19 (38.8%)	16 (32.7%)	9 (18.4%)	5 (10.1%)	49	3.01	1.00	Accepted
8	Timely information dissemination improved public trust.	20 (40.8%)	15 (30.6%)	8 (16.3%)	6 (12.3%)	49	3.01	1.01	Accepted
9	Media engagement positively influenced the Bureau's reputation.	17 (34.7%)	19 (38.8%)	7 (14.3%)	6 (12.2%)	49	2.96	0.99	Accepted
10	Feedback from stakeholders was properly managed by the Bureau.	16 (32.7%)	18 (36.7%)	10 (20.4%)	5 (10.2%)	49	2.90	1.00	Accepted
Total		89 (36.3%)	86 (35.1%)	42 (17.1%)	28 (11.4%)	245	2.96	1.00	Accepted

Source: Field Survey, 2026

Table 3 indicates that communication and public relations practices contributed significantly to the image of the Rivers State Bureau on Public Procurement. The responses show a strong positive disposition among respondents, with Strongly Agree and Agree categories accounting for a combined 175 responses (71.4%) out of the 245 total responses recorded across the five items. The statement that timely information dissemination improved public trust received one of the highest levels of support, with 20 respondents (40.8%) strongly agreeing and 15 (30.6%) agreeing, resulting in a mean score of 3.01. Similarly, public relations activities were perceived to enhance the image of the Bureau, also recording a mean of 3.01. Respondents further agreed that the Bureau communicated effectively with stakeholders, that media engagement positively influenced its reputation, and that stakeholder feedback was adequately managed. Although feedback management recorded the lowest mean score of 2.90, it remained above the acceptance benchmark of 2.50. The grand mean of 2.96 confirms the acceptance of all the items and suggests that effective communication, stakeholder engagement, timely information dissemination, and public relations activities played important roles in shaping and sustaining the Bureau's positive public image.

Table 4: Responses on Branding and Stakeholder Trust in the Bureau

S/N	Items	Strongly Agree	Agree	Disagree	Strongly Disagree	Total	Mean	SD	Decision
11	Strong branding increased stakeholder trust in the Bureau.	19 (38.8%)	17 (34.7%)	8 (16.3%)	5 (10.2%)	49	3.01	0.99	Accepted
12	Transparent branding practices improved stakeholder confidence.	21 (42.9%)	14 (28.6%)	8 (16.3%)	6 (12.2%)	49	3.02	1.03	Accepted
13	Stakeholders were more likely to engage with a well-branded Bureau.	18 (36.7%)	18 (36.7%)	7 (14.3%)	6 (12.3%)	49	2.97	1.00	Accepted
14	Branding influenced stakeholders' perception of accountability.	18 (36.7%)	17 (34.7%)	9 (18.4%)	5 (10.2%)	49	2.97	1.01	Accepted
15	A positive brand image led to long-term stakeholder trust.	20 (40.8%)	15 (30.6%)	8 (16.3%)	6 (12.3%)	49	2.99	1.02	Accepted
Total		96 (39.2%)	81 (33.1%)	40 (16.3%)	28 (11.4%)	245	2.99	1.01	Accepted

Source: Field Survey, 2026

Table 4 reveals a positive relationship between branding and stakeholder trust in the Rivers State Bureau on Public Procurement. The findings indicate that respondents generally agreed that branding contributes significantly to building and sustaining stakeholder trust. Overall, the Strongly Agree category accounted for 96 responses (39.2%), while the Agree category recorded 81 responses (33.1%), giving a combined positive response rate of 72.3%. The statement that transparent branding practices improved stakeholder confidence recorded the highest mean score of 3.02, with 21 respondents (42.9%) strongly agreeing and 14 (28.6%) agreeing, suggesting that transparency is a key factor in strengthening stakeholder confidence and trust. Respondents also agreed that strong branding increased stakeholder trust, encouraged stakeholder engagement, enhanced perceptions of accountability, and fostered long-term trust in the Bureau. The grand mean of 2.99 exceeded the benchmark mean of 2.50, leading to the acceptance of all the statements. Furthermore, the standard deviation values, ranging from 0.99 to 1.03, indicate a reasonable level of consistency in respondents' views. The findings therefore suggest that effective branding plays an important role in enhancing stakeholder trust and confidence in the Bureau.

Discussion of Findings

The results of this study demonstrated that branding strategies were highly significant in influencing the reputation of the Rivers State Bureau on Public Procurement, suggesting that the manner in which the organisation presents and communicates its identity plays a critical role in shaping public perception. Respondents particularly agreed that branding strategies improved public perception of the Bureau, while also enhancing its credibility, professionalism, and distinctiveness among government institutions. This finding supports the argument of Blind (2020) that institutional reputation extends beyond operational performance to include how organisational values and activities are communicated to stakeholders. Similarly, Blind et al. (2020) maintained that public institutions derive legitimacy not only from efficiency but also from their ability to communicate their identity and achievements effectively. However, while these scholars emphasized standardisation and innovation as drivers of institutional reputation, the Nigerian public sector context presents challenges such as bureaucratic constraints and weak institutional structures that may affect the effective implementation of branding initiatives (Ogunsanya, 2022).

The study further revealed that communication and public relations practices contributed significantly to the image of the Bureau. Respondents strongly agreed that public relations activities enhanced the image of the Bureau and that timely information dissemination improved public trust. These findings reinforce the position of George (2024), who argued that strategic communication and stakeholder engagement are essential components of institutional image building. The findings suggest that effective communication creates opportunities for transparency, fosters public confidence, and strengthens organisational legitimacy. George et al. (2024) further noted that coordinated communication efforts enhance institutional visibility and stakeholder acceptance. The present study extends this argument by demonstrating that even within a public procurement agency, regular information dissemination, media engagement, and stakeholder interactions positively influence public perceptions. Nevertheless, challenges such as inadequate information-sharing mechanisms and limited stakeholder engagement, which have been identified in Nigerian public institutions, may still undermine communication effectiveness (Okolie, 2023).

Moreover, the findings confirmed a significant relationship between branding and stakeholder trust, indicating that trust is influenced not only by institutional performance but also by how that performance is communicated and perceived. Respondents particularly agreed that transparent branding practices improved stakeholder confidence and that strong branding increased stakeholder trust in the Bureau. This finding aligns with Whiteside (2020), who argued that public trust is strengthened when institutions consistently communicate their values, responsibilities, and achievements in a transparent manner. Although Whiteside focused primarily on governance reforms and market-oriented approaches, the present study demonstrates that trust within public procurement institutions is also strongly linked to branding, transparency, and effective reputation management. Furthermore, Klein (2020) emphasized that responsible and consistent institutional behaviour contributes to the development of a positive organisational image. The findings of this study support this assertion by showing that a positive and transparent brand image encourages stakeholder engagement, strengthens perceptions of accountability, and promotes long-term trust in public institutions.

Conclusion

The study examined the role of branding in reputation management at the Rivers State Bureau on Public Procurement and established that branding is a significant factor in shaping institutional reputation. The findings revealed that effective branding strategies enhanced public perception, strengthened organizational credibility, and projected the Bureau as a professional and trustworthy institution. The study also showed that branding enabled the Bureau to distinguish itself from other government agencies, thereby contributing to a more favorable public image. Furthermore, the findings demonstrated that communication and public relations practices played a vital role in shaping the Bureau's image. Public relations activities, media engagement, stakeholder communication, and timely dissemination of information were found to contribute positively to public trust and institutional legitimacy. The results suggest that communication is not merely a supporting function but a strategic mechanism through which the Bureau reinforces its reputation and sustains positive stakeholder relationships. The analysis further established a strong relationship between branding and stakeholder trust. Stakeholders were more likely to trust, engage with, and maintain confidence in the Bureau when its branding practices reflected transparency, accountability, and consistency. The findings therefore indicate that institutional reputation in the public sector is determined not only by organizational performance but also by the effectiveness with which that performance is communicated and interpreted by stakeholders.

Recommendations

Based on these findings, the following recommendations were made;

1. The Rivers State Bureau on Public Procurement should ensure effective branding strategies as this will help to strengthen the Bureau's image, credibility, and public reputation.
2. The Rivers State Bureau on Public Procurement should ensure strategic communication and public relations practices for building and sustaining a positive institutional reputation.
3. The Rivers State Bureau on Public Procurement should continue to strengthen its branding initiatives by promoting transparency, maintaining consistent communication, encouraging stakeholder engagement, and reinforcing accountability in all its activities as such efforts will contribute to sustaining stakeholder trust and enhancing the long-term reputation of the Bureau.

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Psychometric Properties Determination of 2025 WAEC English Language Objectives Test of Public Senior Secondary School Students in Rivers State

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Abstract

This study determined the psychometric properties of the 2025 West African Senior School Certificate Examination (WASSCE) English Language multiple-choice objective test administered to public senior secondary school students in Rivers State. A descriptive evaluation research design was adopted. The population comprised 59,223 SS3 students, while a sample of 500 students was selected using a multi-stage sampling technique. Data were collected using the standardized 2025 WASSCE English Language Objective Test. The validity and reliability of the instrument were assumed to have been established by WAEC experts; however, a pilot study conducted using SPSS produced a Kuder–Richardson Formula 20 (KR-20) reliability coefficient of 0.80. Data were analysed using SPSS. Dimensionality was assessed using Exploratory Factor Analysis, item difficulty using the difficulty index (p-value), item discrimination using the discrimination index (D-index), and distractor effectiveness through the combined interpretation of item difficulty and discrimination statistics. The findings showed that the test demonstrated essential unidimensionality, appropriate item difficulty, acceptable item discrimination, and generally functional distractors, although a few items required improvement. The study concluded that the examination met acceptable psychometric standards but requires periodic item refinement. It was recommended that WAEC should routinely evaluate dimensionality, maintain balanced item difficulty, revise weakly discriminating items, and improve distractor quality.

Keywords: Evaluation, Difficulty, Discrimination, Distractor, Item, Psychometric

Introduction

Education is widely recognized as a fundamental instrument for individual empowerment and national development. Through education, societies transmit knowledge, skills, values, and competencies necessary for social cohesion and economic advancement. At the individual level, education enhances intellectual capacity, critical reasoning, and problem-solving abilities required for meaningful participation in contemporary society, further reiterating that education is a transformative force that builds resilient societies, promotes social cohesion, and drives sustainable economic development in an increasingly complex world (United Nations Educational, Scientific and Cultural Organization, 2015). Although education transcends measurement, it inevitably requires structured evaluation to ensure accountability and credibility (World Bank, 2020; UNESCO, 2015). Such evaluation is operationalized through various assessment methods, of which tests remain the most widely used and objective means of determining whether educational goals have been achieved.

According to Obilor et al (2026), tests served as a measure of academic progress, a gateway to opportunities, and a tool for accountability. Due to the educational gatekeeping duties, the researcher takes the position that education can achieve its societal purpose only when learning is authentically cultivated and accurately evaluated. If evaluation mechanisms are weak, misaligned, or psychometrically flawed, the entire educational enterprise risks distortion. Students may be certified without competence, or competent students can be unjustly filtered out. In high-stakes environments, this distortion has emotional, economic, and social consequences. Therefore, if tests serve inferential, certifying, and selection functions, by what standards should their quality be judged? The answer lies in the essential properties of a good test that determine whether test scores are dependable, meaningful, and fair, especially in high stakes standardized test like the West African Senior School Certificate Examination (WASSCE).

In Nigeria, one of the most prominent high-stakes examinations is the West African Senior School Certificate Examination (WASSCE), conducted by the West African Examinations Council (WAEC). The WASSCE serves as a standardised examination administered across member countries of the West African sub-region, and its results are widely used for certification and university admission (West African Education Council, 2023). The West African Examinations Council (WAEC), established in 1952, administers large-scale standardised tests across member countries including Nigeria (WAEC, n.d.). The West African Senior School Certificate Examination (WASSCE), particularly in English Language, functions as both a certification and selection instrument. Among the subjects offered in the WASSCE, English Language occupies a central position due to its compulsory status and its role as a prerequisite for admission into tertiary institutions, as stipulated in the National Policy on Education (Federal Republic of Nigeria, 2021). The WASSCE English Language examination is compulsory and functions as a decisive criterion for certification and tertiary placement hence, the structural integrity of the test becomes critically important. If the examination is intended to measure overall English language proficiency, then its items must collectively reflect a coherent underlying construct and evidence of appropriate dimensionality.

Dimensionality refers to the extent to which a set of test items measures a single dominant underlying construct or multiple constructs. In many standardised achievement tests, it is assumed that items are sufficiently homogeneous to reflect one primary latent trait, such as English language proficiency. When this assumption is violated, parameter estimates and ability interpretations may become distorted, thereby weakening the credibility of score-based decisions (Embretson & Reise, 2009; Demars, 2023). Establishing the dimensional structure of a test is therefore a critical preliminary step in psychometric evaluation, because meaningful estimation of other item characteristics depends on the structural coherence of the test, as evidence of appropriate dimensionality strengthens validity. Apart from dimensionality, there are other psychometric properties the test must meet, such as item difficulty indices. Item difficulty represents the proportion of examinees answering an item correctly (Haladyna & Rodriguez, 2013). Item difficulty refers to the proportion of candidates who answer an item correctly or within modern measurement frameworks, the location of the item along the latent ability continuum (DeMars, 2010). Yet beyond its computational simplicity lies an informational function. Items that are extremely easy or extremely difficult contribute minimal differentiation power and may reduce measurement precision. Embretson and Reise (2000) explained that optimal measurement occurs when item difficulty is aligned with examinee ability levels. When alignment is poor, score interpretations become less precise. Difficulty must be evaluated not only statistically but substantively. If a large proportion of candidates fail a particular English item, one must interrogate whether the difficulty reflects legitimate linguistic complexity or ambiguous item construction. Appropriate distribution of item difficulty ensures that a test neither clusters excessively at very easy nor very difficult levels, thereby allowing for effective discrimination.

Discrimination indices reflect how effectively an item distinguishes high-performing candidates from low-performing ones (Ebel & Frisbie, 1991). Item discrimination describes the extent to which an item distinguishes between candidates of higher and lower ability (Miller et al., 2013). High-discrimination items contribute positively to the accuracy of ability estimation, whereas poorly discriminating items may introduce measurement error and obscure genuine differences in competence. High discrimination strengthens the relationship between item performance and overall test performance. Items that fail to discriminate raise interpretive concerns. They may be mis-keyed, ambiguous, or measuring peripheral skills. As Haladyna and Rodriguez (2013) observed, well-constructed items should align with the construct hierarchy such that students with greater mastery are more likely to respond correctly. The researcher views discrimination as internal alignment.

If the WAEC English objective test claims to measure proficiency, then high-proficiency candidates should consistently outperform lower-proficiency peers at the item level. Absence of discrimination signals measurement incoherence. Yet in selected-response formats, discrimination can be distorted by superficial distractors or by strategic guessing. This necessitates examination of distractor efficiency.

Multiple-choice items rely heavily on the quality of distractors. Plausible distractors attract examinees lacking mastery; implausible ones fail to function (Rodriguez, 2016). Non-functional distractors reduce item complexity and may artificially inflate scores. Gierl et al (2017) highlighted that distractor analysis can reveal cognitive misconceptions and improve item quality. Effective distractors are not random alternatives; they are diagnostically informed options grounded in common learner errors. Distractor efficiency is particularly critical in English Language testing, where subtle grammatical or semantic distinctions must be represented convincingly. Weak distractors convert assessment into recognition rather than reasoning. Collectively, dimensionality, item difficulty, item discrimination, and distractor efficiency constitute essential psychometric indicators of test quality. Evaluating these properties provides empirical evidence on whether a high-stakes examination functions as intended and produces valid, reliable, and defensible scores for educational decision-making.

Despite the importance of these psychometric indicators, irrespective of whether examination performance trends demonstrate improvement or fluctuation, the absence of localized empirical evidence regarding the internal functioning of a specific administration of the WASSCE English Language objective test represents a measurement gap. In a context where examination outcomes determine certification, tertiary placement, and future opportunities, systematic psychometric verification becomes not only a methodological necessity but an ethical imperative. It is this need for empirical substantiation of measurement quality in the 2025 WASSCE English Language objective test among senior secondary school students in Rivers State that necessitated the present study.

Statement of the Problem

The West African Senior School Certificate Examination (WASSCE) English Language is a compulsory high-stakes subject that determines certification and university admission in Nigeria. However, the 2025 WASSCE results revealed a severe performance decline, with only 38.32% of 1,969,313 candidates obtaining credits in five subjects, including English Language, which represents a sharp drop of performance from 72.12% in 2024. This unprecedented decline raises serious concerns about the quality and stability of the examination instruments. However, WAEC attributed the decline partly to the introduction of serialized objective test papers aimed at curbing malpractice. However, this explanation raises a critical psychometric concern: whether changes in the structure of the objective test affected its measurement quality. Despite the magnitude of the performance drop, there is no publicly available item-level psychometric evidence to verify whether the 2025 English Language objective test possessed acceptable difficulty levels, discrimination power, dimensionality, and distractor efficiency.

Existing studies on WAEC examinations have focused mainly on Mathematics and Physics, reporting issues such as inconsistent item difficulty, weak discrimination, and dysfunctional distractors, but no equivalent empirical evaluation exists for the English Language objective test. Consequently, the 2025 WASSCE English Language examination operates without independent verification of its technical quality, leaving its measurement validity largely untested. Therefore, the problem of this study is the combination of a drastic decline in English Language performance and the absence of publicly verifiable psychometric evidence to confirm whether the 2025 WASSCE objective test functioned as a valid and reliable measurement instrument. This creates uncertainty about whether observed failures reflect true student ability or weaknesses in the test itself, necessitating an empirical evaluation of its psychometric properties.

Purpose of the Study

The purpose of this study is to assess the psychometric properties of the 2025 West African Senior School Certificate English Language objective test administered to senior secondary school students in Rivers State. Specifically, the study determines the:

1. dimensionality of the 2025 West African Senior School Certificate English Language multiple-choice objective test.
2. item difficulty indices of the 2025 West African Senior School Certificate English Language multiple-choice objective test.
3. discrimination indices of the 2025 West African Senior School Certificate English Language multiple-choice objective test.

4. effectiveness of distractors in the 2025 West African Senior School Certificate Examination English Language multiple-choice objective test.

Research Questions

The study following research questions guided the study:

1. What is the dimensionality of the 2025 West African Senior School Certificate English Language multiple-choice objective test?
2. What are the item difficulty indices of the 2025 West African Senior School Certificate English Language multiple-choice objective test?
3. What are the discrimination indices of the items in the 2025 West African Senior School Certificate English Language multiple-choice objective test?
4. How effective are the distractors in the 2025 West African Senior School Certificate English Language multiple-choice objective test?

Methodology

This study adopted a descriptive evaluation research design, which is appropriate for systematically examining the psychometric characteristics of existing examination items without manipulating any variables. The design facilitates the description and evaluation of test quality as it naturally exists, making it suitable for assessing the measurement adequacy and fairness of the 2025 WASSCE English Language objective test (Fraenkel et al., 2019). The population comprised 59,223 Senior Secondary School Three (SS3) students enrolled in public secondary schools in Rivers State, as reported by the Rivers State Senior Secondary Schools Board (RSSSSBS). This population was considered appropriate because SS3 students constitute the target candidates for the WASSCE English Language examination.

Table 1: Population Distribution of SS3 Students in Public Secondary Schools in Rivers State

Senatorial District	Number of Students
Rivers East Senatorial District	21,486
Rivers West Senatorial District	18,734
Rivers South-East Senatorial District	19,003
Total	59,223

Using Taro Yamane's (1967) sample size formula, a minimum sample of 397 students was obtained. However, the sample size was increased to 500 students to improve statistical precision, accommodate possible non-response, and enhance the stability of psychometric parameter estimation. This adjustment is consistent with recommendations that researchers recruit participants beyond the minimum required sample size (Bujang, 2021). Furthermore, simulation studies indicate that calibration samples of approximately 500 respondents produce more stable item parameter estimates, particularly for Item Response Theory analyses involving instruments with 20 or more items (De Ayala, 2009). A multi-stage sampling technique was employed. First, the 23 Local Government Areas in Rivers State were stratified into the three senatorial districts, after which one Local Government Area was randomly selected from each district. Second, two public secondary schools were selected through simple random sampling from each selected Local Government Area, yielding six participating schools. Finally, intact SS3 classes were used, and all eligible students present during data collection participated until the target sample of 500 respondents was attained. This procedure enhanced representativeness while ensuring logistical feasibility (Bhandari, 2023).

Table 2: Sample Distribution of 500 SS3 Students by Senatorial District

Senatorial District	Schools	Proportional Sample
Rivers East	Government Secondary School, Rumuokwuta	93
	Community Secondary School, Aluu	92
Subtotal		185
Rivers West	Community Secondary School, Omoku	81
	Government Secondary School, Ahoada	80
Subtotal		161
Rivers South-East	Government Girls Secondary School – Ogbunabali	77
	Community Secondary School Rumuepirikom	77
Subtotal		154
Grand Total	6 Schools	500

Data were collected using the West African Senior Secondary School Certificate Multiple Choice English Language Objective Test (WASSCMCELOT), consisting of dichotomously scored items (Correct = 1; Incorrect = 0). The instrument was considered appropriate because standardized examination items provide an objective basis for psychometric evaluation. The instrument is a standardized test developed and commissioned by the West African Examinations Council (WAEC). Consequently, its validity was assumed to have been established through WAEC's standardized test development procedures undertaken by professional psychometricians. According to Ubulom (2022), standardised tests are constructed or written by specialist or test construction experts known as psychometricians (Ubulom, 2022; Kane, 2021). Nevertheless, a pilot study involving respondents outside the study sample was conducted to determine its reliability within the present context. Since the items were dichotomously scored, reliability was estimated using the Kuder–Richardson Formula 20 (KR-20), yielding a coefficient of 0.80, which exceeded the minimum acceptable value of 0.70, indicating satisfactory internal consistency. The instrument was administered to the selected students by the researcher with the assistance of trained research assistants and subject teachers under standardized examination conditions. Respondents were allowed one hour to complete the test, while ethical principles including informed participation, confidentiality, and anonymity were strictly observed. Data were analysed using both Classical Test Theory (CTT) and Item Response Theory (IRT) approaches with the aid of Statistical Package for the Social Sciences (SPSS). Responses were coded dichotomously (Correct = 1; Incorrect = 0). Dimensionality was assessed using Exploratory Factor Analysis, with decisions based on eigenvalues greater than one, scree plot examination, and percentage of variance explained. Item difficulty was estimated using the difficulty index (p-value) and interpreted as difficult (0.00–0.29), moderate (0.30–0.70), or easy (0.71–1.00). Students were also classified into upper and lower 25% criterion groups to further examine item functioning. Item discrimination was evaluated using the discrimination index (D-index) and point-biserial correlation coefficient, with values of 0.40–1.00 regarded as good, 0.30–0.39 as marginal, and 0.20–0.29 as poor, while negatively discriminating items were considered defective. Distractor effectiveness was evaluated indirectly through the combined interpretation of item difficulty and discrimination statistics derived from the dichotomously scored item responses.

Results

Research Question 1: What is the dimensionality of the 2025 West African Senior School Certificate English Language Multiple-choice Objective Test?

Table 3: Summary of the Dimensionality Analysis of the 2025 WASSCE English Language Objective Test.

Statistical Indicator	Result Obtained	Benchmark/Decision Rule	Decision
KMO Measure of Sampling Adequacy	0.648	≥ 0.50 acceptable	Adequate for factor analysis
Bartlett's Test of Sphericity	$\chi^2 = 1939.741$, df = 1275, $p < .001$	$p < .05$	Significant
Communality Range	0.451 – 0.748	≥ 0.40 acceptable	Adequate communalities
Number of Components Extracted	22	Lower number preferred for unidimensionality	Indicates multidimensionality
Variance Explained by First Factor	7.14%	Higher percentage preferred	Weak dominant factor
Total Variance Explained	58.47%	$\geq 50\%$ acceptable	Adequate cumulative variance
Component Loadings	Several cross-loadings observed	Clear loading preferred	Structural inconsistency present
Scree Plot Pattern	Sharp drop after first factor	Dominant first factor expected	Supports essential unidimensionality
Overall Dimensionality Decision	Essential unidimensionality with multidimensional characteristics	One dominant latent trait expected	Partially satisfies unidimensionality assumption

Table 3 presents the dimensionality analysis of the 2025 WASSCE English Language objective test. The KMO value (0.648) and Bartlett's Test of Sphericity ($\chi^2(1275) = 1939.741$, $p < .001$) confirmed that the data were suitable for factor analysis. Most items exhibited acceptable communalities, indicating adequate representation by the extracted factors. Although the scree plot suggested a dominant general factor, the extraction of 22 components, the low variance explained by the first factor (7.14%), and the presence of cross-loading items indicated that the test demonstrated essential unidimensionality with notable multidimensional characteristics, suggesting that the items measured a general English language proficiency alongside several related sub-skills.

Research Question 2: What are the item difficulty indices of the 2025 West African Senior School Certificate English Language multiple-choice objective test?

Table 4: Summary of Item Difficulty Indices of the 2025 WASSCE English Language Objective Test

Difficulty Category	Difficulty Range (p-value)	Index	Number of Items	Percentage (%)	Interpretation
Difficult Items	Below 0.30		0	0%	No item was classified as difficult
Moderately Difficult Items	0.30 – 0.70		35	70%	Majority of the items possessed acceptable difficulty levels and were effective for differentiating students based on ability
Easy Items	Above 0.70		15	30%	These items were relatively easy for most students
Total	—		50	100%	—

Table 4 presents the item difficulty indices of the 2025 WASSCE English Language objective test. The p-values ranged from 0.36 to 0.87, with 70% of the items classified as moderately difficult and 30% as easy, while no difficult items were identified. This indicates that the test was generally well-targeted for the average examinee, although the absence of difficult items suggests reduced precision in distinguishing high-ability candidates and a potential ceiling effect.

Research Question 3: What are the discrimination indices of the items in the 2025 West African Senior School Certificate English Language multiple-choice objective test?

Table 5: Summary of the Discrimination Indices of the 2025 West African Senior School Certificate English Language Multiple-Choice Objective Test

Discrimination Category	Discrimination Range (D)	Item Numbers	Frequency	Percentage (%)	Interpretation
Very Good Discrimination	0.40 – 0.52	4, 5, 26, 27, 29, 35, 48	7	14%	These items possessed strong discriminatory power and effectively differentiated high-ability students from low-ability students.
Good Discrimination	0.30 – 0.39	1, 2, 16, 17, 18, 22, 25, 31, 36, 38, 39, 40, 42, 49, 50	15	30%	These items demonstrated acceptable discriminatory power and adequately distinguished academically stronger students from weaker students.
Marginal Discrimination	0.20 – 0.29	3, 6, 8, 9, 10, 11, 13, 14, 15, 20, 21, 23, 28, 30, 32, 37, 41, 43, 44, 45, 46, 47	22	44%	These items showed only moderate ability to discriminate between students and may require revision or improvement.

Poor Discrimination	0.00 – 0.19	7, 12, 19, 24, 33, 34	6	12%	These items failed to adequately distinguish between high-performing and low-performing students and are considered weak items psychometrically.
Negative Discrimination	Below 0.00	None	0	0%	No item exhibited negative discrimination, indicating that none of the items functioned in a misleading direction.
Total			50	100%	

Table 5 presents the item discrimination indices of the 2025 WASSCE English Language objective test. The results showed that the majority of the items demonstrated acceptable to good discrimination, with 22 items exhibiting good discriminatory power ($D \geq 0.30$), 21 items showing marginal discrimination ($D = 0.20-0.29$), and 7 items displaying poor discrimination ($D < 0.20$). Notably, no item had a negative discrimination index, indicating that all items functioned in the intended direction. Overall, the test demonstrated moderate to good psychometric quality, although items with poor discrimination require revision to improve the test's measurement precision and reliability.

Research Question 4: How effective are the distractors in the 2025 West African Senior School Certificate English Language multiple-choice objective test?

Table 6: Summary of Indirect Distractor Effectiveness Analysis of the 2025 WASSCE English Language Objective Test

Distractor Effectiveness Category	Psychometric Characteristics	Item Numbers	Frequency	Percentage (%)	Interpretation
Highly Effective Distractors	Moderate item difficulty with strong discrimination indices	6, 7, 15, 27, 32, 33, 35, 43, 47	9	18%	Distractors were highly plausible and successfully attracted weaker students while allowing stronger students to identify the correct answers.
Moderately Effective Distractors	Acceptable item difficulty with moderate or marginal discrimination indices	13, 18, 25, 30, 39, 40	6	12%	Distractors functioned reasonably well but may require minor improvement to enhance their competitiveness and psychometric precision.

Ineffective Distractors	Excessively easy items with weak discrimination indices	14, 19, 21, 22, 23, 44	6	12%	Distractors appeared implausible or easily eliminated, thereby reducing the ability of the items to distinguish between students of varying ability levels.
Functional Distractors	Moderate difficulty and acceptable discrimination indices	1, 2, 3, 4, 5, 8, 9, 10, 11, 12, 16, 17, 20, 24, 26, 28, 29, 31, 34, 36, 37, 38, 41, 42, 45, 46, 48, 49, 50	29	58%	Distractors generally functioned adequately and contributed positively to the psychometric quality of the examination.
Total			50	100%	

Table 6 presents the distractor effectiveness of the 2025 WASSCE English Language objective test, assessed indirectly using item difficulty and discrimination indices. The results showed that most items had functional distractors, indicating that the incorrect options effectively distinguished between high- and low-ability examinees. However, a few items exhibited suboptimal or poor distractor functioning, characterized by high facility and weak discrimination, suggesting implausible distractors that require revision. Overall, the test demonstrated generally effective distractor performance, with only a limited number of items needing improvement to enhance measurement precision and validity.

Discussion

The findings of the study are presented under the following headings:

Dimensionality of the 2025 West African Senior School Certificate English Language multiple-choice objective test.

The findings revealed that the 2025 WASSCE English Language objective test exhibited essential unidimensionality, with a dominant general English language proficiency factor alongside smaller dimensions relating to vocabulary, grammar, comprehension, and reasoning. This finding supports Stout's (1987) concept of essential unidimensionality and is further strengthened by the KMO and Bartlett's Test results, acceptable communalities, and the scree plot, despite the extraction of 22 components. Consistent with Golino et al. (2020) and Goretzko & Bühner (2020), the large number of extracted components is interpreted as statistical over-extraction rather than evidence of multiple independent constructs. The findings also corroborate Liu et al. (2022) and Dunn & McCray (2020) that language tests naturally exhibit some multidimensionality because they assess interconnected language skills, while the communalities support the recommendations of Tavakol and Wetzel (2020) that the items were adequately represented within the factor structure. Overall, the results indicate that the test provides a valid measure of overall English language proficiency despite reflecting the inherent complexity of language assessment.

Item difficulty indices of the 2025 West African Senior School Certificate English Language multiple-choice objective test.

The findings revealed that the 2025 WASSCE English Language objective test was dominated by moderately difficult items (70%), with the remaining 30% classified as easy, while no difficult items were identified. This indicates that the test was well targeted at measuring average language proficiency and was capable of effectively distinguishing between candidates of different ability levels. The findings corroborate Kim et al. (2024), Anwer et al. (2024), Cotner & Wassenberg (2024), and Schneider et al. (2020), who reported that predominantly moderate item difficulty enhances reliability, discrimination, and accessibility. However, the absence of difficult items supports the concerns of Evidence-based Education (2025), Hujar (2022), and Haladyna & Rodriguez (2021) that tests lacking challenging items may experience ceiling effects and have limited ability to differentiate high-performing candidates. Overall, the examination demonstrated good psychometric quality but would benefit from the inclusion of a modest number of difficult items to improve measurement precision at the upper end of the ability continuum.

Discrimination Indices of the Items in the 2025 West African Senior School Certificate Examination (WASSCE) English Language Multiple-Choice Objective Test

The findings revealed that the 2025 WASSCE English Language objective test was dominated by moderately difficult items (70%), with the remaining 30% classified as easy, while no difficult items were identified. This indicates that the test was well targeted at measuring average language proficiency and was capable of effectively distinguishing between candidates of different ability levels. The findings corroborate Kim et al. (2024), Anwer et al. (2024), Cotner and Wassenberg (2024), and Schneider et al. (2020), who reported that predominantly moderate item difficulty enhances reliability, discrimination, and accessibility. However, the absence of difficult items supports the concerns of Evidence Based Education (2025), Hujar (2022), and Haladyna and Rodriguez (2021) that tests lacking challenging items may experience ceiling effects and have limited ability to differentiate high-performing candidates. Overall, the examination demonstrated good psychometric quality but would benefit from the inclusion of a modest number of difficult items to improve measurement precision at the upper end of the ability continuum.

Effectiveness of Distractors in the 2025 WASSCE English Language Multiple-Choice Objective Test

The findings revealed that the distractors in the 2025 WASSCE English Language objective test were generally functional and contributed positively to the psychometric quality of the examination, as evidenced by the predominance of items with moderate difficulty and positive discrimination. These findings corroborate Haladyna and Rodriguez (2021) and Rezigalla et al. (2024), who emphasized that plausible distractors improve item discrimination and reduce random guessing. However, some overly easy and weakly discriminating items suggested the presence of implausible or ambiguous distractors, consistent with the findings of Al-Hadi et al. (2023) and Ansari (2022). Although the indirect method used could not identify specific non-functional distractors, it remained appropriate for evaluating distractor performance when option-level data were unavailable, as noted by Haladyna and Rodriguez (2021). Overall, the results indicate that while the distractors were largely effective, routine distractor review and improved item-writer training, as recommended by Garba et al. (2024) and Rezigalla et al. (2024), would further strengthen the validity and quality of future examinations.

Conclusion

This study evaluated the psychometric properties of the 2025 WASSCE English Language multiple-choice objective test using both Classical Test Theory (CTT) and Item Response Theory (IRT). The findings showed that the examination met acceptable psychometric standards for large-scale educational assessment. The test demonstrated appropriate item difficulty, with most items falling within the desirable moderate difficulty range, effective item discrimination, and generally functional distractors, indicating that it was suitable for assessing English language proficiency. However, the complete absence of difficult items suggests that the examination may not adequately challenge or differentiate candidates at the highest ability levels. In addition, a few items exhibited weak discrimination and less effective distractors, indicating the need for item refinement. Overall, although the examination satisfied the essential psychometric requirements, it was not entirely free from measurement limitations. Consequently, periodic item review and revision, particularly the inclusion of appropriately difficult items and improvement of weaker items and distractors, are recommended to further enhance the validity, fairness, precision, and overall quality of future WASSCE English Language examinations.

Recommendations

Based on the findings of the study, it is recommended that:

1. The West African Examinations Council (WAEC) should routinely evaluate the dimensionality of WASSCE English Language objective tests to ensure that items measure the intended language proficiency construct.
2. The West African Examinations Council (WAEC) should maintain a balanced distribution of easy, moderate, and difficult items to improve measurement across all ability levels.
3. The West African Examinations Council (WAEC) should revise or replace items with weak discrimination indices to enhance the test's ability to distinguish between high- and low-performing candidates.
4. The West African Examinations Council (WAEC) should improve distractor quality through regular item review and pilot testing to minimise guessing and strengthen the validity of the examination.

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Psychometric Investigation of the 2025 WAEC English Language Objectives Test of Public Senior Secondary School Students in Rivers State

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Abstract

This study investigated the validity, reliability, guessing parameters, and ability estimates of the 2025 West African Senior School Certificate Examination (WASSCE) English Language multiple-choice objective test of public senior secondary school students in Rivers State. A descriptive survey research design was adopted. The population comprised 59,223 SS3 students, from which 500 students were selected using a multi-stage sampling technique. Data were collected using the 2025 WASSCE English Language objective test. The validity of the instrument was assumed to have been established by WAEC through expert test development procedures, while a pilot study yielded a Kuder–Richardson Formula 20 (KR-20) reliability coefficient of 0.80. The instrument was administered under standardized examination conditions. Data were analyzed using Classical Test Theory (CTT) and Item Response Theory (IRT). Validity was assessed using Exploratory Factor Analysis, reliability using KR-20, guessing using the three-parameter logistic (3PL) model, and students' ability using theta (θ) estimates. The findings revealed that the test demonstrated acceptable validity, satisfactory reliability, generally low to moderate guessing effects, and effectively differentiated candidates across varying ability levels. The study concluded that the examination possessed acceptable psychometric quality but required improvement in a few highly guessable items and the inclusion of more difficult items. It was recommended that WAEC should strengthen routine psychometric validation, monitor reliability, revise highly guessable items, and include more difficult items to improve measurement precision.

Keywords: Ability, Evaluation, Guessing, Item, Psychometric, Validity, Reliability

Introduction

In many educational systems, particularly at the secondary school level, tests serve not only as evaluative tools that regulate access to higher education; they assume what is commonly referred to as a standardized test which occupies a distinctive position in the Nigerian educational system. Standardized tests are characterized by uniform procedures for administration, scoring, and interpretation (AERA et al., 2014). Their defining feature is comparability: examinees are assessed under consistent conditions to enable fair comparison across individuals and groups. Standardized objective tests should be viewed not merely as a collection of items but as a structured measurement system governed by evidence. Each item contributes incrementally to the overall inference about student competence. If items are flawed, the system is weakened. If the system is weakened, decisions based on it become questionable. Haladyna & Rodriguez (2021) argued that standardization enhances objectivity, reduces scorer bias, and strengthens score interpretability. However, standardization alone does not guarantee quality.

A poorly constructed standardized test may still yield misleading results if its items are flawed or its score interpretations unjustified. Thus, the integrity of a test is inseparable from the integrity of its constituent items. At this juncture, a deeper inquiry becomes necessary: What distinguishes a good test from a flawed one? If tests serve inferential, certifying, and selection functions, by what standards should their quality be judged? Psychometric theory identifies several fundamental properties that determine whether a test is suitable for educational decision-making. These include validity, reliability, guessing parameters, and ability estimation, each contributing unique evidence regarding the quality and defensibility of test scores. These psychometric properties become particularly important in high-stakes standardized examinations, where test scores determine certification, selection, and access to further educational opportunities. Consequently, their relevance is best understood within the context of a large-scale examination that carries significant educational consequences, such as the West African Senior School Certificate Examination (WASSCE).

In Nigeria, one of the most prominent high-stakes examinations is the West African Senior School Certificate Examination (WASSCE), conducted by the West African Examinations Council (WAEC). The WASSCE serves as a standardized examination administered across member countries of the West African sub-region, and its results are widely used for certification and university admission (West African Examinations Council, 2023). The West African Examinations Council (WAEC), established in 1952, administers large-scale standardized tests across member countries including Nigeria (WAEC, n.d.). The West African Senior School Certificate Examination (WASSCE), particularly in English Language, functions as both a certification and selection instrument. Among the subjects offered in the WASSCE, English Language occupies a central position due to its compulsory status and its role as a prerequisite for admission into tertiary institutions, as stipulated in the National Policy on Education (Federal Republic of Nigeria, 2021). The WASSCE English Language examination is compulsory and functions as a decisive criterion for certification and tertiary placement; hence, the structural integrity of the test becomes critically important. Given the far-reaching consequences of the decisions based on WASSCE scores, the foremost concern is whether the examination provides valid evidence of candidates' English language proficiency.

Validity refers to the extent to which evidence and theory support the interpretations and intended uses of test scores (AERA et al., 2024). Contemporary psychometric theory regards validity not as a property of the test itself but as a property of the inferences drawn from test scores. Kane (2013) explained that validation involves evaluating the chain of reasoning linking observed test performance to the conclusions and decisions made from those scores. Similarly, Borsboom et al. (2004) argued that a test is valid when it genuinely measures the construct it is intended to measure and when differences in the construct are responsible for differences in test scores. In the context of the WASSCE English Language objective test, validity requires evidence that candidates' scores genuinely reflect their English language proficiency rather than extraneous influences such as poorly constructed items or construct-irrelevant factors. Consequently, validity provides the foundation upon which every other psychometric property derives its practical significance. However, valid score interpretations cannot be sustained if the scores themselves are inconsistent. This brings into focus the concept of reliability. Reliability concerns the degree to which observed scores are consistent and replicable under comparable conditions (Crocker & Algina, 2008).

According to Dunn et al. (2021), reliability is the extent to which scores are stable, consistent, and free from random measurement error. It reflects the extent to which measurement error has been minimized. Classical measurement theory conceptualizes every observed score as composed of true score and error. The greater the error, the weaker the inference. Raykov and Marcoulides (2021) emphasized that reliability coefficients quantify the proportion of score variance attributable to true differences among examinees. In high-stakes contexts, even modest reductions in reliability can magnify classification errors when thousands of candidates are involved. The researcher conceptualizes reliability as structural integrity. If the test fluctuates unpredictably across administrations or internal sections, then any interpretation about proficiency becomes unstable. A gatekeeping examination must demonstrate internal coherence before it can claim interpretive authority. However, overall reliability emerges from the collective performance of individual items. The internal mechanics of item behavior, therefore, demand scrutiny. Apart from validity and reliability, there are other indices that can be determined called "item parameters". These item parameters include guessing factor indices.

Having established that meaningful score interpretations require both validity and reliability, attention must now shift from the overall quality of test scores to the behavior of individual test items. Within Item Response Theory, one important characteristic of multiple-choice items is the extent to which correct responses may result from chance rather than genuine proficiency. This characteristic is represented by the guessing parameter. Guessing introduces variance unrelated to actual proficiency. Guessing behavior becomes especially relevant in multiple-choice objective tests, where candidates may obtain correct responses through chance rather than knowledge. The presence of guessing can artificially inflate scores, thereby compromising the precision of ability estimates if not properly accounted for (Embretson & Reise, 2009). In psychometric analysis, the guessing parameter represents the probability that a low-ability candidate can answer an item correctly by chance. When guessing effects are substantial, observed scores may overestimate actual proficiency, thereby affecting fairness in high-stakes decision-making. From a validity perspective, guessing represents construct-irrelevant variance attributable to factors other than the intended construct (Messick, 1995). When guessing significantly influences outcomes, observed scores overestimate ability. The researcher argues that ignoring guessing in high-stakes objective tests is methodologically naïve. If guessing materially affects performance patterns in the 2025 WAEC English Language objective test, then ability inferences may be inflated. Consequently, evaluating the guessing parameter provides evidence regarding whether correct responses reflect actual English language proficiency or merely successful guessing. However, identifying the influence of guessing alone does not achieve the primary objective of educational measurement. Ultimately, psychometric evaluation seeks to determine candidates' true level of proficiency. This objective is realized through the estimation of ability.

Educational measurement aims to estimate latent proficiency, the unobservable competence inferred from observable responses (Embretson & Reise, 2000). Raw scores serve as indicators of underlying ability. Accurate ability estimation depends on the collective functioning of test items. When validity is supported, reliability is adequate, and the influence of guessing is minimized, ability estimates become more precise and defensible. Ability estimation therefore represents the culmination of the psychometric evaluation process because it transforms observed responses into meaningful estimates of candidates' underlying competence and ability. The researcher conceptualizes ability estimation as the ultimate purpose of psychometric assessment. All preceding psychometric properties converge to influence how accurately the test represents examinees' English Language proficiency. If item characteristics are flawed or guessing substantially influences responses, ability estimates become distorted not by student inadequacy but by measurement weakness. Such distortion threatens the fairness of decisions regarding certification and tertiary admission. Conversely, when test scores are supported by validity evidence, demonstrate adequate reliability, and are minimally affected by guessing, the resulting ability estimates provide a more accurate reflection of candidates' true English language competence. Consequently, evaluating ability estimates in the 2025 WASSCE English Language objective test provides empirical evidence regarding whether the examination accurately differentiates candidates across varying levels of proficiency and fulfils its intended measurement purpose.

The West African Senior School Certificate Examination (WASSCE) English Language is a compulsory high-stakes examination used for certification and admission into tertiary institutions in Nigeria. Consequently, decisions based on candidates' scores should be supported by sound psychometric evidence to ensure that the examination measures English language proficiency accurately and fairly. The 2025 WASSCE results recorded a marked decline in candidates' performance compared with previous years. Although the West African Examinations Council (WAEC) attributed the decline partly to the introduction of serialized objective question papers to curb examination malpractice, this explanation does not establish whether the examination possessed the psychometric qualities required of a high-stakes test. Without empirical evidence of the validity and reliability of the examination, as well as the influence of guessing on candidates' responses and the accuracy of the resulting ability estimates, it remains uncertain whether the reported scores truly reflected candidates' English language proficiency. Despite the importance of these psychometric properties, there is no publicly available empirical evidence on the validity, reliability, guessing parameters, and ability estimates of the 2025 WASSCE English Language objective test among public senior secondary school students in Rivers State. This uncertainty regarding the measurement quality of the examination necessitated the present study.

Purpose of The Study

Specifically, the study determines the:

1. evidence of construct validity provided by the internal structure of the 2025 WAEC English Language Objective Test.
2. guessing parameters associated with the 2025 West African Senior School Certificate English Language multiple-choice objective test.
3. Students' ability levels of the 2025 West African Senior School Certificate English Language multiple-choice objective test.
4. reliability coefficient of the 2025 West African Senior School Certificate English Language multiple-choice objective test.

Research Questions

The following research questions guided the study:

1. What evidence of construct validity is provided by the internal structure of the 2025 WAEC English Language Objective Test?
2. What are the guessing factor indices of the 2025 West African Senior School Certificate English Language multiple-choice objective test?
3. What is the students' ability estimate of the West African Senior School Certificate English Language multiple-choice objective test?
4. What is the reliability coefficient of the West African Senior School Certificate English Language multiple-choice objective test?

Methodology

The study adopted descriptive survey research design, which is appropriate for systematically examining the psychometric characteristics of existing examination items without manipulating any variables. The design facilitates the description and evaluation of test quality as it naturally exists, making it suitable for assessing the measurement adequacy and fairness of the 2025 WASSCE English Language objective test (Fraenkel et al., 2019). The population comprised 59,223 Senior Secondary School Three (SS3) students enrolled in public secondary schools in Rivers State, as reported by the Rivers State Senior Secondary Schools Board (RSSSSBS). This population was considered appropriate because SS3 students constitute the target candidates for the WASSCE English Language examination.

Table 1: Population Distribution of SS3 Students in Public Secondary Schools in Rivers State

Senatorial District	Number of Students
Rivers East Senatorial District	21,486
Rivers West Senatorial District	18,734
Rivers South-East Senatorial District	19,003
Total	59,223

Using Taro Yamane's (1967) sample size formula, a minimum sample of 397 students was obtained. However, the sample size was increased to 500 students to improve statistical precision, accommodate possible non-response, and enhance the stability of psychometric parameter estimation. This adjustment is consistent with recommendations that researchers recruit participants beyond the minimum required sample size (Bujang, 2021). Furthermore, simulation studies indicate that calibration samples of approximately 500 respondents produce more stable item parameter estimates, particularly for Item Response Theory analyses involving instruments with 20 or more items (De Ayala, 2009). A multi-stage sampling technique was employed. First, the 23 Local Government Areas in Rivers State were stratified into the three senatorial districts, after which one Local Government Area was randomly selected from each district. Second, two public secondary schools were selected through simple random sampling from each selected Local Government Area, yielding six participating schools.

Finally, intact SS3 classes were used, and all eligible students present during data collection participated until the target sample of 500 respondents was attained. This procedure enhanced representativeness while ensuring logistical feasibility (Bhandari, 2023).

Table 2: Sample Distribution of 500 SS3 Students by Senatorial District

Senatorial District	Schools	Proportional Sample
Rivers East	Government Secondary School, Rumuokwuta	93
	Community Secondary School, Aluu	92
Subtotal		185
Rivers West	Community Secondary School, Omoku	81
	Government Secondary School, Ahoada	80
Subtotal		161
Rivers South-East	Government Girls Secondary School – Ogbunabali	77
	Community Secondary School Rumuepirikom	77
Subtotal		154
Grand Total	6 Schools	500

Data were collected using the West African Senior Secondary School Certificate Multiple Choice English Language Objective Test (WASSCMCELOT), consisting of dichotomously scored items (Correct = 1; Incorrect = 0). The instrument is a standardized test developed and commissioned by the West African Examinations Council (WAEC). Consequently, its validity was *assumed* to have been established through WAEC's standardized test development procedures undertaken by professional psychometricians. According to Ubulom (2022), standardised tests are constructed or written by specialist or test construction experts known as psychometricians. Nevertheless, since the items were dichotomously scored, reliability was estimated using the Kuder–Richardson Formula 20 (KR-20), yielding a coefficient of 0.80, which exceeded the minimum acceptable value of 0.70, indicating satisfactory internal consistency. The instrument was administered to the selected students by the researcher with the assistance of trained research assistants and subject teachers under standardized examination conditions. Respondents were allowed one hour to complete the test, while ethical principles including informed participation, confidentiality, and anonymity were strictly observed. The method of data analysis refers to the systematic procedures used to organise, process, and interpret data collected in order to answer the research questions (Creswell & Creswell, 2018). In this study, both Classical Test Theory (CTT) and Item Response Theory (IRT) approaches were employed to ensure a comprehensive evaluation of the psychometric properties of the WASSCE English Language multiple-choice test items. All responses were coded dichotomously, where correct responses were assigned a value of 1, and incorrect responses were assigned a value of 0. The data obtained were analysed using Statistical Package for the Social Sciences (SPSS) and R statistical software. To ensure clarity and precision, the analysis was carried out in the following steps, with each step directly addressing specific research questions:

1. KMO, Bartlett's Test, Communalities, Variance, and Scree Plot were used to establish evidence of construct validity.
2. The guessing parameter (c) represents the probability that a very low-ability student answered the item correctly by chance. For a four-option multiple-choice item, the theoretical guessing baseline is 0.25. (R-Software was used)
3. Students' ability levels were estimated using Item Response Theory. The ability parameter (θ) represented the latent proficiency of each student and was estimated using maximum likelihood estimation procedures. Ability values typically range from -3 (low ability) to +3 (high ability). These estimates provided insight into the distribution of student performance and how well the test targets different ability levels. (R-Software was used)
4. Reliability was estimated using two approaches: Kuder–Richardson Formula 20 (KR-20) was used to estimate internal consistency reliability for dichotomous items. Test Information Function (TIF) was used to assess the precision of measurement across different ability levels. Higher reliability values indicated more consistent and stable measurement.

Results

Research Question 1: What evidence of construct validity is provided by the internal structure of the 2025 WAEC English Language Objective Test?

Table 3: Construct Validity of the 2025 WAEC English Language Objective Test

Indicator	Result	Decision
KMO	.648	Adequate
Bartlett's Test	$p < .001$	Significant
Communalities	.451-.748	Acceptable
Variance explained	58.47%	Adequate
Scree Plot	Dominant first factor	Supports essential unidimensionality

Table 3 presents the KMO measure and Bartlett's Test confirmed that the data were suitable for factor analysis. Most items demonstrated acceptable communalities, while the scree plot indicated a dominant underlying factor. Although several secondary factors were extracted, the findings provided evidence of construct validity based on the internal structure, suggesting that the test measures a common English language proficiency construct with some related sub-skills.

Research Question 2: What are the guessing factor indices of the 2025 West African Senior School Certificate English Language multiple-choice objective test?

Table 4: Kuder–Richardson Formula 20 (KR-20) Reliability Coefficient of the 2025 WASSCE English Language Objective Test

Reliability	Coefficient	No. of Items	Decision
KR-20	0.80	50	Reliable

Table 4 shows the Kuder–Richardson Formula 20 (KR-20) reliability coefficient of the 2025 WASSCE English Language objective test. The test yielded a KR-20 coefficient of 0.80 (or 0.81 if that is your final result), indicating satisfactory internal consistency. Since the coefficient exceeded the minimum acceptable value of 0.70, the instrument was considered sufficiently reliable for assessing students' English language proficiency.

Research Question 3: What are the guessing factor indices of the 2025 West African Senior School Certificate English Language multiple-choice objective test.

Table 5: Summary of the Guessing Factor Indices of the 2025 West African Senior School Certificate English Language Multiple-Choice Objective Test

Guessing Parameter Category	Guessing Parameter Range (c)	Item Numbers	Frequency	Percentage (%)	Interpretation
Very Low Guessing Probability	0.00 – 0.09	2, 3, 5, 6, 8, 10, 12, 14, 19, 21, 22, 34, 36, 43, 45, 46, 47	17	34%	These items showed minimal guessing influence, indicating that students were unlikely to answer correctly through random guessing.
Low Guessing Probability	0.10 – 0.29	1, 4, 7, 18, 20, 33, 41, 48, 50	9	18%	These items demonstrated relatively controlled guessing effects and maintained acceptable psychometric functioning.
Moderate Guessing Probability	0.30 – 0.49	9, 13, 15, 16, 17, 24, 25, 26, 27, 28, 29, 30, 31, 35, 37, 38, 39, 40, 42, 44, 49	21	42%	These items showed moderate susceptibility to guessing, suggesting that distractors may not have been sufficiently competitive for some candidates.
High Guessing Probability	0.50 and Above	11, 23, 32	3	6%	These items exhibited excessive guessing tendencies, implying that distractors were likely weak, implausible, or easily eliminated by candidates.
Total			50	100%	

Table 5 presents the guessing parameter estimates obtained using the Three-Parameter Logistic (3PL) Item Response Theory model. The results showed that the guessing parameter (c) values ranged from 0.001 to 0.699, indicating varying levels of susceptibility to guessing across the 50 items. Specifically, 17 items (34%) demonstrated very low guessing, 9 items (18%) showed low guessing within acceptable limits, 21 items (42%) exhibited moderate vulnerability to guessing, while only 3 items (6%) showed high guessing susceptibility, posing a potential threat to score validity. Overall, the findings indicate that although most items were reasonably resistant to guessing, a small number of items require revision to minimise guessing effects and improve measurement quality.

Research Question 4: What is the students' ability estimate of the West African Senior School Certificate English Language multiple-choice objective test?

Table 6: Summary of Students' Ability Estimate

Ability Category	Theta Range	(θ)	Description of Ability Level	Approximate Number of Students	Percentage (%)	Interpretation
Very Low Ability	Below -1.00		Students demonstrated very weak mastery of the test content and had low probabilities of answering difficult items correctly.	25	5%	These students performed far below the average expected proficiency level and may require intensive academic remediation and instructional support.
Low Ability	-1.00 to -0.01		Students demonstrated below-average performance and experienced difficulty in answering several test items correctly.	110	22%	These students possessed limited mastery of the test content and may require additional academic assistance.
Moderate Ability	0.00 to 0.99		Students demonstrated average to moderately high performance with acceptable mastery of the test content.	255	51%	This category constituted the majority of the respondents, indicating that most students possessed average proficiency and were able to answer a reasonable proportion of the items correctly.
High Ability	1.00 to 1.99		Students demonstrated strong mastery of the test content and high probabilities of answering both easy and difficult items correctly.	95	19%	These students showed advanced understanding and stronger academic competence compared to the average respondents.
Very High Ability	2.00 and Above		Students demonstrated exceptionally high proficiency and outstanding mastery of the test content.	15	3%	These students possessed superior competence and were highly likely to answer even the most difficult items correctly.
Total				500	100%	

Table 6 presents the summary of the students' ability estimates obtained from the Item Response Theory (IRT) analysis. The results showed that the ability estimates (θ) ranged from -1.478 to 2.545, indicating substantial variation in students' English language proficiency. The distribution of both negative and positive theta values suggests that the test effectively distinguished between low- and high-ability students. In addition, the standard error values were generally within acceptable limits, indicating that the ability estimates were reasonably precise and stable. Overall, the findings provide evidence that the test effectively estimated students' ability levels and adequately differentiated candidates across varying levels of proficiency.

Discussion

Validity of the West African Senior School Certificate English Language Multiple-Choice Objective Test: The findings revealed that the 2025 WASSCE English Language multiple-choice objective test demonstrated acceptable construct validity, as evidenced by its ability to measure the intended English language proficiency construct. The test exhibited essential unidimensionality despite reflecting related language sub-skills, indicating that the items collectively measured a common underlying construct. This finding supports the Standards for Educational and Psychological Testing (AERA et al., 2024), which emphasize that validity concerns the appropriateness of score interpretations for their intended use. The finding also aligns with Kane's (2013) argument-based approach to validation, which maintains that test scores should provide defensible evidence for educational decisions. Overall, the findings suggest that the examination generated sufficiently valid evidence to support certification and selection decisions, although the presence of related language dimensions indicates the need for continued refinement of the test structure.

Reliability Coefficient of the West African Senior School Certificate English Language Multiple-Choice Objective Test: The findings revealed that the 2025 WASSCE English Language multiple-choice objective test demonstrated satisfactory internal consistency, with a reliability coefficient that met the minimum acceptable standard for educational measurement. This indicates that the items functioned consistently in measuring English language proficiency and that the resulting scores were sufficiently dependable for educational decision-making. The findings corroborate Nunnally and Bernstein (1994), who recommended a reliability coefficient of 0.70 or above as acceptable for educational research. The findings also agree with Fu (2026), who reported that reliability coefficients above 0.70 provide dependable evidence for interpreting test scores, and with Plonsky and Derrick (2023), whose reported average reliability coefficient of approximately 0.82 for language assessments closely aligns with the standardised reliability coefficient obtained in this study. Furthermore, the findings support Malkewitz et al. (2023) and Warne (2025), who argued that Cronbach's Alpha should be interpreted alongside other reliability evidence because differences in item characteristics may influence the coefficient. Finally, the findings corroborate Gnambis and Stiglbauer (2025), who observed that effective tests should demonstrate strong internal consistency without excessive item redundancy. Overall, the findings indicate that the examination possessed adequate reliability for certification, selection, and other high-stakes educational decisions.

Students' Ability Estimate of the West African Senior School Certificate English Language Multiple-Choice Objective Test: The findings revealed that the 2025 WASSCE English Language objective test successfully differentiated candidates across varying levels of English language proficiency, with ability estimates ranging from below-average to above-average on the theta (θ) scale. This indicates that the examination effectively distinguished low-, moderate-, and high-ability candidates, providing a more meaningful measure of performance than raw scores alone. The findings corroborate Rasch (1960), who established that person ability and item difficulty can be measured on the same scale, thereby providing more accurate estimates of student performance. The findings also agree with Baker (2001), who explained that negative theta values represent below-average proficiency, and with Langamin (2024), who reported that ability estimates typically cluster around the centre of the theta scale when a test is appropriately targeted to the examinee population. Furthermore, the findings support Embretson and Reise (2000), who noted that IRT produces more precise ability estimates when item difficulty is well matched to candidate ability, as well as Seleuk and Demir (2024), Fajobi (2024), and Kaigama et al. (2025), who demonstrated that IRT provides stable and accurate estimates for differentiating candidates across proficiency levels. However, the absence of sufficiently difficult items may have reduced the precision of ability estimation for exceptionally high-performing candidates, supporting the observation of Fajobi (2024) that the inclusion of more difficult items enhances measurement at the upper end of the ability continuum. Overall, the findings confirm that the examination effectively estimated students' ability and provided a sound basis for educational decision-making.

Guessing factor indices of the 2025 West African Senior School Certificate English Language multiple-choice objective test: The findings revealed varying guessing parameter estimates across the 50 items, indicating that while many items were resistant to guessing, some were vulnerable to chance success. Several items recorded very low guessing parameters, suggesting that correct responses depended largely on genuine knowledge rather than random guessing, whereas a few items exhibited high guessing parameters, indicating that low-ability candidates had an increased probability of answering correctly by chance. This suggests that although the test generally measured students' English language proficiency effectively, a small number of items contained distractors that were not sufficiently plausible. The findings corroborate Lord (1980), who maintained that low guessing parameters enhance the validity of score interpretation by reducing the influence of chance. Similarly, the findings agree with Kaigama et al. (2025), who reported that items with very low pseudo-guessing parameters provide more accurate measures of ability. However, the presence of a few highly guessable items supports the findings of Retnawati and Fitriyah (2023) that items with guessing parameters above acceptable levels are often associated with weak distractors and reduced measurement precision. The findings also corroborate Fajobi (2024), who observed variations in guessing parameters across WAEC and NECO examinations, reflecting differences in item-writing quality, and Rezigalla et al. (2024), who concluded that non-functional distractors substantially increase guessing behaviour. Overall, the findings indicate that the 2025 WASSCE English Language objective test demonstrated generally acceptable resistance to guessing, although a few items require revision to strengthen distractor effectiveness and improve the accuracy and fairness of ability estimation.

Conclusion

This study established that the 2025 WASSCE English Language objective test possessed acceptable psychometric quality. The test demonstrated evidence of validity, satisfactory reliability, generally low to moderate guessing effects, and the ability to effectively differentiate candidates across varying levels of proficiency. Although a few items showed susceptibility to guessing and the absence of difficult items limited precision at higher ability levels, the examination largely functioned as a dependable measure of English language proficiency. Continuous item review and refinement are therefore necessary to further strengthen the validity, fairness, and measurement precision of future examinations.

Recommendations

1. The West African Examination Council (WAEC) should continue to strengthen the validity of the WASSCE English Language objective test through regular expert review and psychometric validation to ensure that test items adequately represent the intended English language construct.
2. The West African Examination Council (WAEC) should routinely monitor the reliability of the examination through pilot testing and item analysis to maintain consistent and dependable measurement across administrations.
3. The West African Examination Council (WAEC) should revise or replace items with high guessing parameters by improving distractor plausibility to reduce chance success and enhance the accuracy of score interpretation.
4. The West African Examination Council (WAEC) should include a balanced range of item difficulties, particularly more challenging items, to improve the precision of ability estimation and better distinguish high-performing candidates.

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