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EFFECT OF ARTIFICIAL INTELLIGENCE ON PERFORMANCE OF BREWERY FIRMS IN SOUTH-SOUTH, NIGERIA.

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Abstract

The study investigated the effect of artificial intelligence on performance of brewery firms in South-South, Nigeria. The specific objectives were to examine the effect of artificial intelligence on competitive advantage, ascertain the effect of big data analytics on product development of brewery firms in South-South. This study adopted the survey research design. The study adopted primary data to gather information from the respondents. The population is nine hundred and eighty-nine (989). The sample size was three hundred and seventy-four (374). This study adopted the simple stratified sampling technique. Pearson correlation coefficient and regression model were used to test the relationship dependent and independent variables of the study. A total of three hundred and seventy-four (374) copies of the questionnaire were distributed to the selected breweries firms in South-South Nigeria. Out of this number, sixty-three (63) copies of questionnaire were lost/wrongly filled with percentage ratio of 16.8% while three hundred and eleven (311) copies of questionnaire were correctly filled and returned with percentage ratio of 83.2% and this formed the basis of the study. the finding of the study that there is a positive significant effect between artificial intelligence and competitive advantage of brewery firms in south-south. Big data analytics has a positive significant effect on product development of brewery firms in south-south. The study concluded that the findings concluded that artificial intelligence and big data analytics positively influenced organizational performance. The study recommended that brewery firms should continuously integrate artificial intelligence into customer relationship management systems to improve customer engagement, personalize services, and increase customer satisfaction and loyalty.

Keywords: Artificial Intelligence, Data Analytics, Performance and Brewery Firms

Introduction

Background to the Study

The rapid evolution of artificial intelligence (AI) brings enterprises more business opportunities. Artificial intelligence is the machines (programs) that operates in the simulation of human intelligence. In technologies, such as machine learning, data mining, natural language processing, image recognition, etc. Artificial intelligence can bring efficiency gains, cost savings, product quality improvements, and customer service improvements. Enterprise capabilities are critical for identifying business opportunities.

While there is excellent potential for artificial intelligence capability (AIC) to improve a performance, there are also significant challenges faced by organizations applying AI (Yu, 2021). Businesses can utilize AI to improve the customer service experience by offering more appropriate recommendations and less costly options.

According to the resource-based view; artificial intelligence's applied capability is an ensemble of implicit resources (Bag, 2021). These resources include supporting resources, labor skills, and organizational coordination. Once a firm masters organizing resources that are impossible to copy effortlessly, it possesses a competitive advantage and enhances firm performance. Although disruptive change has always existed, it was Clayton Christensen who clearly distinguished between "sustaining technologies" (which improve existing products) and "disruptive technologies" (which create new markets or significantly alter existing ones). In the Innovator's Dilemma, he explained that disruptive technologies often start as simpler, more affordable, and accessible solutions that initially serve niche or underserved markets. Over time, they improve and eventually displace established competitors. In the 21st century, disruptive technologies have accelerated rapidly due to globalization and digitalization. Innovations such as artificial intelligence, blockchain, cloud computing, and mobile technologies have reshaped industries ranging from banking, manufacturing, and healthcare.

Historically, disruptive technologies showed a continuous pattern of innovation-driven change, where new technologies challenge and replace established systems. From early industrial machines to modern digital platforms, disruption remains a central force shaping economic development, improving organizational performance, and global competitiveness (Chen & Lin, 2021).

In the Nigerian brewery industry, this period witnessed the gradual introduction of more efficient production systems, partial automation of brewing and bottling processes, and improvements in product quality and consistency. However, technological disruption remained largely incremental rather than radical, as brewery firms continued to depend heavily on imported brewing equipment, packaging technologies, and technical expertise. By the post-2010 era, the industry began to experience the influence of digital and Industry 4.0 technologies such as artificial intelligence, robotics, cloud computing, and the Internet of Things (IoT), which are increasingly redefining beverage production globally and gradually within Nigeria. Therefore, this study tends to examine the effect of artificial intelligence on performance.

Statement of the Problem

Globally, disruptive technologies such as artificial intelligence (AI), Internet of Things (IoT), cloud computing, and big data analytics are transforming manufacturing processes, including beverage production, by enabling automation, predictive maintenance, real-time monitoring, and data-driven decision-making. These technologies have the potential to enhance operational efficiency, reduce waste, improve product quality, and optimize supply chain management. In advanced brewing industries, digital technologies are already being used to monitor fermentation processes, manage inventory systems, and forecast consumer demand with high accuracy.

However, the extent to which brewery companies in Nigeria have adopted and effectively utilized these disruptive technologies remains limited and uneven. While leading firms have made efforts toward process automation and digital transformation, many operational areas still rely on conventional production and management systems. This partial adoption limits the

ability of these firms to fully realize the efficiency gains and competitive advantages associated with disruptive technologies. The slow adoption of disruptive technologies in Nigerian brewery companies can be attributed to several contextual challenges, including high cost of technology acquisition and maintenance, inadequate digital infrastructure, unreliable power supply, and shortage of skilled personnel capable of managing advanced technological systems. These constraints not only hinder technological integration but also affect the overall performance of firms in terms of productivity, profitability, and market responsiveness.

Furthermore, the dynamic nature of technological change poses a significant threat to brewery firms that fail to adapt, firms that are unable to respond to technological disruptions risk losing their market position to more innovative competitors. In Nigeria's brewery industry, this risk is heightened by increasing competition from both local and international brands, as well as changing consumer preferences. Despite the growing relevance of disruptive technologies in manufacturing, there is limited empirical evidence on how these technologies specifically influence the performance of brewery companies in Nigeria. Most existing studies focus on the general manufacturing sector without addressing the unique operational dynamics of the brewing industry. It therefore, becomes imperative to investigate the effects that artificial intelligence have on performance of brewery firms in South-South, Nigeria.

Objectives of the Study

The main objective of this study was to examine the effect of artificial intelligence on performance of brewery firms in South-South, Nigeria. However, specific objectives were to:

i. Examine the effect of artificial intelligence on competitive advantage of brewery firms in South-South.
ii. Ascertain the effect of big data analytics on product development of brewery firms in South-South.

Research Questions

i. To what extent is the effect of artificial intelligence on competitive advantage of brewery firms in South-South?
ii. What is the effect of big data analytics on product development of brewery firms in South-South?

Research Hypotheses

HO_1: There is no positive significant effect between artificial intelligence and competitive advantage of brewery firms in South-South

HO_2: Big data analytics has no positive significant effect on product development of brewery firms in South-South

Review of The Related Literature

Big data analytic capability (BDAC)

The main characteristic of big data can be summarized in "5Vs", including volume, variety, velocity, veracity, and value (Wamba 2017). However, big data itself barely has crucial business values without suitable analytical tools (Aziz, 2023). Thus, it is necessary for an organization to perform big data analytics (BDA). There are various definitions of BDA in the literature. According to Wamba (2017), BDA is a multidisciplinary discipline involving computer science, data science, and mathematical models for systematically collecting and evaluating data. BDA has also been referred to as the capability to collect, analyze and interpret big data to extract business insights and transform this information into competitive advantages (Ferraris ,2019; Wamba ,2017). An organization must deploy various resources and capabilities to develop big data analytics capabilities (BDAC). Mikalef, (2019) defined BDAC as "the ability of a firm to capture and analyze data towards the generation of insight by effectively orchestrating and deploying its data, technology, and talent". Nonetheless,

Mikalef, (2019) argue that BDAC comprises three main blocks: tangible resources, human skills, and intangible resources. Specifically, tangible resources include data, technology, and basic resources; human skills include technical and managerial skills; and intangible resources include data-driven culture and organizational learning. The human, tangible, and intangible resources are interrelated, and many synergies exist among these essential resources for developing BDAC. Given the potential benefits of data analytics, many commercial organizations pour financial resources into technology and data infrastructure and spend time aligning big data initiatives with their strategic goals (Gupta & George, 2016). Although data and technology are essential for developing BDAC, they cannot provide competitive advantages without incorporating human and intangible resources.

Regarding human resources, both technical and managerial skills are necessary for implementing big data analytics initiatives (Mikalef, 2020). Davenport (2014) argues that managerial skills, such as interpersonal communication, largely determine whether a data analytics project will be successful. Also, data-driven culture and organizational learning are key resources for building BDAC. For instance, it is essential to have a data driven culture to ensure the successful implementation of big data projects across the workforce (Gupta & George, 2016).

Artificial Intelligence

Several definitions of AI have been published in an attempt to distinguish it from other conventional information technologies. To understand the concept of AI, it is necessary to first understand the notions of "artificial" and "intelligence" separately. "Intelligence" can be described as involving mental activities, such as learning, reasoning, and understanding. "Artificial", on the other hand, refers to something that is made by humans, rather than occurring naturally (Mikalef & Gupta, 2021). By combining these two together, Artificial Intelligence can be understood as making machines capable of simulating intelligence (Wamba, 2020). It is therefore evident that there is a consensus that AI refers to giving the computer human-like capabilities, meaning that computers are able to perform tasks that normally require human intelligence. This includes activities such as understanding, reasoning, and problem-solving (Mikalef & Gupta, 2021). AI emulates human performance by acting as an intelligent agent, which performs actions based on a specific understanding of input from the environment (Eriksson, 2020). In other words, the aim of AI is to try to reproduce human cognition by emulating how humans learn and process information. Cognitive technology is a term often used when referring to this capability. Cognitive technologies resemble the action of the human mind, meaning that it provides the computer the function to think and act like a human.

In their definition, some scholars focus on the idea that AI should not need to be explicitly programmed to perform an intelligent task. It should be able to sense, interpret, learn, plan, comprehend, and act on its own, meaning that AI should be able to correctly interpret external data, learn from this data, and use this learning to achieve specific goals and tasks through flexible adaption (Maanu et al, 2025). Doing so should be achieved without following predetermined rules or action sequences throughout the whole process.

It is also identifiable that there are two main ways of defining AI. The first of these defines AI as a tool that solves a specific task that could be impossible or very time-consuming for a human to complete (Echendu et al, 2023). The second group of definitions regards AI as a system that mimics human intelligence and cognitive processes, such as, interpreting, making inferences, and learning. Both categories of definitions share some

similarities but also present some important differences. A common notion in both categories is that AI does not necessarily replace humans, but instead, AI operates as an augmentation agent for performing difficult and time-consuming tasks. Yet, both categories of definitions have some diverging points. While one category of definitions assumes that AI is perfectly capable of imitating human behavior, the second category of definitions regards AI as a tool, assuming it cannot exactly replicate human capabilities. Another noticeable difference is that some definitions refer to AI as a discipline of scientific inquiry, while others perceive the notion as an applied capacity of a system or machine (Al Nuaimi, 2019). These definitions show that there are noticeable underlying assumptions, and some important differences about what AI is and what it encompasses.

For the purpose of this article, we adopt the stance that AI is an applied discipline that aims to enable systems to identify, interpret, make inferences, and learn from data to achieve predetermined organizational and societal goals. Ebelugwu and Emereole (2026), established that the adoption and integration of digital technologies into banking operations have improved organizational efficiency, service delivery, customer satisfaction, and overall operational performance. Artificial intelligence (AI), which has its roots in philosophy, mathematics, computation, psychology, and neuroscience (Kuzma, 2020), is becoming the 'new normal' in both manufacturing and service industries. AI is aimed at making machines think like humans but surpassing the way humans work. It is equipping machines with the capacity to autonomously gather and process information from their environment to make decisions, solve problems, and undertake other actions where human reasoning is needed. AI is increasingly incorporated at work to improve task execution and performance.

Impact of Artificial Intelligence orientation on Value Propositions

The potential use cases for AI technologies within the organizational sphere are manifold, and a plethora of value-adding applications have been suggested both for private and public organizations (Dubey et al, 2021). One broad categorization that can be made involves the distinction between the use of AI for internal- and external-oriented functions. Internal functions involve using AI for improving internal business processes, such as decision-making, or for streamlining internal business processes. On the other hand, external functions include using AI in products and services that are in direct contact with customers Some examples of the later include the use of AI to recommend songs of interest to listeners by Spotify. It is therefore expected that the value-adding possibilities of AI applications are very diverse in nature. To date, there are to the best of our knowledge no studies that differentiate on performance metrics depending on the use case of AI. Furthermore, such an area of inquiry also raises the question of what the appropriate metrics are in order to be able to capture effects of AI and how to benchmark different similar applications.

Performance

In the literature, there are various definitions of firm performance. According to Rai, (2006), firm performance refers to "the degree to which a focal firm has superior performance relative to its competition". Regardless of the differences in definitions, most studies measure firm performance as a multidimensional construct composed of financial and non-financial components. For example, Wamba *et al*. (2017) measured firm performance based on two perspectives (i.e., financial and market performance). Also, prior research measures firm performance by two separate constructs, namely market

performance and operational performance (Gupta & George, 2016; Gupta ,2018). Based on the literature, market performance measures a commercial organization's actual outcomes (e.g., market share and new markets), and operational performance refers to an organization's productivity (e.g., profits and return on investment). Organization performance has been the most important consideration for every organization, be it profit or non-profit organization. It has been very important for managers to know which factors influence an organization's performance in order for them to take full advantage and appropriate steps to initiate them. Organizational researchers among themselves have different opinions of performance as it continues to be a contentious issue. According to Kee (2000), organizational performance is the organization's ability to attain its goals by using resources in an efficient and effective manner. Quite similar to Kee (2000), defined organizational performance as the ability of the organization to achieve its goals and objectives. According to Cascio (2014) organizational performance is the degree of attainment of work mission as measured in terms of work outcome, intangible assets, customer link, and quality services. Kaplan and Norton (2001) defined organizational performance as the organization's capacity to accomplish its goals effectively and efficiently using available human and physical resources. This definition provides the justification for organizations to be guided by objective performance criteria when evaluating employees‟ work based performance. This is also helpful in evaluating the achievement of the organizational goals as well as when developing strategic plans for the organizations‟ future performance. Although many studies have found that different companies in different countries tend to emphasize on different objectives, literature suggests financial profitability and growth to be the most common measures of organizational performance.

Theoretical Review

Theory of Creative Destruction by Schumpeter (1939)

Schumpeter (1939) considered innovation as both the creator and destroyer of corporations and entire industries. He was among the earliest scholars to note the disruptive nature of technological change observing that it could lead to waves of "creative destruction." Schumpeter insisted on the role of entrepreneurs in seizing discontinuous opportunities to innovate. Innovations were taken in a broad sense of new 'combinations' of producers and means of production, which includes new products, new methods of production, opening up of new markets, utilization of new raw materials, or even the reorganization of a sector of the economy. In later years, Schumpeter (1942) placed greater emphasis on the role of larger enterprises in innovation, seeming to believe that as scientific knowledge accumulated there was a threshold investment in R & D below which a firm could not be an effective player. Schumpeter argued that entrepreneurs, who could be independent inventors or Research and Development engineers in large corporations, created the opportunity for new profits with their innovations. In turn, groups of imitators attracted by super-profits would start a wave of investment that would erode the profit margin for the innovation.

However, before the economy could equilibrate a new innovation or set of innovations, conceptualized by Schumpeter as Kondratiev cycles, would emerge to begin the business cycle over again.

Task-Technology – Fit Theory by Goodhue & Thompson, (1995)

The Task-Technology Fit Model was developed by (Goodhue & Thompson, 1995) to explain the utilisation of technology by examining the fit of technology to users'

tasks/requirements. The purpose of the theory was to add to the body of knowledge on technology utilisation in the private and public contexts, which had limited explanation as to how the acceptance of technology contributes to individuals' performance. TTF was the first theory that aimed to explore the post-adoption aspect of technology utilisation, unlike other prior research, which had mainly focused on the antecedents of use and intention (Goodhue & Thompson, 1995). Specifically, by 1995, the literature on the IS management domain was characterised by two streams of research, namely focusing on technology utilisation and task-technology fit. The research on technology utilisation mostly examined the relationships between attitudes, beliefs, their associated factors and the use of information communication technologies. This stream was represented by theories such as the Theory of Reason Action (TRA), the Theory of Planned Behaviour (TPB) and Technology Acceptance Model (TAM).

For instance, TRA and TPB measure the likelihood of technology acceptance by investigating the effects of attitude toward behaviour, subjective norm and perceived behavioural control. TAM explains and predicts the use of technology and behavioural intention by examining the core constructs, which are perceived usefulness and perceived ease of use (Venkatesh ,2003). The research in that domain was complemented by research findings on the factors that relate to attitudes and beliefs, such as technology characteristics (e.g. quality) or situational factors (e.g. social influence). The acceptance of technology was mostly considered to be the manifestation of intention or use behaviour.

Empirical Review

Mudholkar, (2024), carried out a study impact of Artificial Intelligence and Internet of Things on Performance Management: A Systematic Review. The study aims at assessing the outcome of AI and IoT to operational efficiency in business processes for various sectors. Exploring the Synthesis of the existing literature, combined with empirical evidence, this research examines the transformation possibility of AI and IoT Technologies in the improvement of the company. The centric findings have proved that there are significant upsurges in metrics of performance such as efficiency, productivity, quality, and customer satisfaction across different sectors of industries which are like healthcare, manufacturing, and retailing. Healthcare is another example. In this sector AI and IoT combination reduced the patient queue times by 50% while in manufacturing produced more products while spending 33% less capital costs. Similar to the case of brick and mortar stores, they recorded a 25% increment in their sales through AI-aided demand forecasting and the use of IoT in the inventory management. The findings of this research therefore point the way for the tremendous role played by AI and IoT in driving operational excellence, decision making processes and innovation in performance management. The research leads to the identification of major issues and concerns such as data privacy, security and technology integration, that require additional attention.

Eventually, by utilizing AI and IoT technologies, companies find new models of sustainable development and market advantages which are of great help in the context of the current business conditions. Maanu, Boateng, and Larbi, (2025), examined Effect of Artificial Intelligence on Mathematics Performance: A Meta-Analysis. Artificial intelligence (AI) has emerged as a transformative tool in education, offering personalized feedback, adaptive learning, and data-driven instructional strategies. While individual studies have explored its role in mathematics, findings remain fragmented. This study employs a meta-analysis to

systematically evaluate the overall effect of AI applications on students' mathematics performance. Methods: A comprehensive search was conducted across five databases (Google Scholar, Scopus, ERIC, Web of Science, and SCISPACE) for peer-reviewed quantitative studies published between 2017 and 2025. A total of 1,042 articles were identified, and after applying strict inclusion criteria guided by the PRISMA framework, 7 studies were retained. Data extraction followed a standardized protocol, and methodological quality was appraised using the Joanna Briggs Institute Critical Appraisal Checklist. Statistical analyses were performed with JASP, including effect size estimation, heterogeneity testing, and publication bias diagnostics. Results: The pooled effect size was $g = 0.603$ ($p < 0.001$, 95% CI = 0.393–0.813), indicating a moderate-to-large positive impact of AI on mathematics performance. Heterogeneity was substantial ($Q(6) = 52.41$, $I^2 = 90.08\%$), suggesting variability across contexts and intervention types.

However, fail-safe N analysis ($N = 520.124$) confirmed robustness against publication bias. Conclusion: Findings demonstrate that AI significantly enhances mathematics learning, supporting constructivist and socio-cultural theories of education where AI scaffolds learner self-efficacy and engagement. Policymakers and educators are encouraged to strategically integrate AI into curricula and teacher training to maximize its transformative potential in mathematics education. Luhana, Memon, and Khan, (2023), conducted a study the rise of artificial intelligence and its influence on employee performance and work. The objective of this paper is to investigate the impact of artificial intelligence (AI) on employee performance and work commitment within the workplace, while also acknowledging its limitations. The study employs a qualitative research approach and utilizes a simple random sampling method. Data collection is conducted through online questionnaires using Google Forms. The majority of the respondents (91.8%) fall within the age range of 20-30 years, with a total of 100 participants consisting of 58% females and 42% males. The findings reveal that AI can positively influence employee performance and work engagement. AI refers to the use of computers to simulate intelligent behavior with minimal human intervention.

However, there are concerns raised by academics regarding potential job losses and an increase in unemployment rates due to AI. Consequently, this may pose challenges in terms of infrastructure reconstruction, ensuring vehicle safety, and adapting laws and regulations. Nikmanesh, Harandi, Mirzaeian Khamseh, and Sana, (2025), examined the impact of big data acceptance and analysis on company performance. This study investigates the strategic impact of big data adoption and analytics on organisational performance, with a specific focus on the telecommunications sector in a developing economy. Addressing a key gap in the extant literature, it proposes an integrated framework assessing how big data technologies influence financial and operational outcomes, as well as exploratory and exploitative innovation (EPI) capabilities. A quantitative research design was employed, using structured questionnaires distributed among senior and mid-level managers of telecommunications firms actively engaged in analytics. Structural equation modelling (SEM) was used to empirically validate the conceptual model. Results indicate that big data analytics (BDA) significantly enhance decision-making and forecasting, which subsequently improve financial and operational performance. Big data adoption fosters exploratory and EPI, explaining the variance in organisational performance. Innovation and decision-making emerge as critical mediators in translating data capabilities into competitive advantage. Practical implications emphasise continued

investment in analytics infrastructure and human capital development.

Burga, Ridwan, Burga, and Ridwan. (2025), conducted a study case study of the use of big data in business decision making. This study explores the impact of Big Data Analytics (BDA) on business decision-making and business performance at PT XYZ, a leading e-commerce company in Indonesia. As businesses increasingly rely on data-driven strategies to remain competitive, Big Data has emerged as a critical tool for enhancing decision-making processes and optimizing business outcomes. The primary objectives of this study were to analyze how PT XYZ utilizes Big Data to inform strategic and operational decisions, to assess the benefits of this implementation, and to identify the challenges faced during the process. Through qualitative research methods, including interviews, document analysis, and observations, this study investigates the ways in which Big Data analytics tools such as predictive modeling, machine learning algorithms, and customer segmentation are integrated into the company's decision-making framework. The findings suggest that the use of Big Data has led to significant improvements in revenue growth, customer satisfaction, and operational efficiency at PT XYZ. Specifically, the company saw a 12% increase in revenue, a 15% improvement in customer satisfaction, and an 8% reduction in operational costs following the adoption of Big Data-driven decision-making processes.

Despite these positive outcomes, the implementation of Big Data faced several challenges, including data integration issues, skill gaps among employees, and high initial costs associated with adopting new technologies. The study concludes that while Big Data Analytics can greatly enhance business performance, companies must address these challenges to fully realize its potential. The research provides valuable insights for other businesses considering the integration of Big Data into their decision-making processes. It also contributes to the growing body of literature on Big Data's role in modern business management and its ability to drive strategic and operational improvements.

Methodology

This study adopted the survey research design. The study adopted primary data to gather information from the respondents. The population is nine hundred and eighty-nine (989). The sample size was three hundred and seventy-four (374)**.** This study adopted the simple stratified sampling technique. The questionnaire was designed in a five (5) point Likert scale structure which consisted of closed-ended questions that was easier for the respondents to answer because of the fixed presentation of questions and responses. Each item required the respondent to indicate the frequency of his or her various opinions under Strongly Agree (SA) =5, Agree (A) =4, Undecided (UN) =3, Disagree (D) = 2 and Strongly Disagree (SD) =1. In test the hypotheses Pearson correlation coefficient and regression model were employed to test the relationship dependent and independent variables of the study. A total of three hundred and seventy four (374) copies of the questionnaire were distributed to the selected breweries firms in South-South Nigeria. Out of this number, sixty-three (63) copies of questionnaire were lost/wrongly filled with percentage ratio of 16.8% while three hundred and eleven (311) copies of questionnaire were correctly filled and returned with percentage ratio of 83.2% and this formed the basis of the study.

Data Presentation

Table 1: Examine the effect of artificial intelligence on competitive advantage of brewery firms in South-South.N=311

RESPONSES	SA	A	UN	D	SD	TOTAL	MEAN	Std.

	5	4	3	2	1			Dev.
Machine learning capability contribute to the organization's resilience	103	173	33	2	-	1310	4.2	.648
Automation of processes improves organizational market share	130	163	16	2	-	1354	4.4	.609
Intelligent decision support enhances performance	146	155	10	-	-	1380	4.4	.558
Robotics and intelligent systems increase efficiency	124	165	20	2	-	1344	4.3	.622

Source: Field Survey, 2026

Table above showed the examine the effect of artificial intelligence on competitive advantage of brewery firms in South-South. Majority of the respondents with the highest mean scores of 4.4, 4.4, 4.3 and 4.2 respectively strongly agreed that Machine learning capability contribute to the organization's resilience. Automation of processes improves organizational market share. Intelligent decision support enhances performance. Robotics and intelligent systems increase efficiency.

Table 2: Ascertain the effect of big data analytics on product development of brewery firms in South-South. N=311

RESPONSES	SD 5	A 4	UN 3	D 2	SD 1	TOTAL	MEAN	Std. Dev.
Data quality management improves product development	101	173	31	4	2	1300	4.2	.709
Predictive analytics improve organization's financial assessment	122	165	20	4	-	1338	4.3	.647
Descriptive analytics enhances service delivery	134	161	12	4	-	1358	4.4	.623
Real-time analytics enhances revenue growth	126	161	22	2	-	1342	4.3	.632

Source: Field Survey, 2026

Table above showed effect of big data analytics on product development of brewery firms in South-South. Majority of the respondents with the highest mean scores of 4.4, 4.3, 4.3 and 4.2 respectively strongly agreed that Data quality management improves product development. Predictive analytics improve organization's financial

assessment. Descriptive analytics enhances service delivery. Real-time analytics enhances revenue growth.

Test of Hypotheses

HO_1: There is no positive significant effect between artificial intelligence and competitive advantage of brewery firms in South-South

Table 3: Correlation Matrix between artificial intelligence and competitive advantage of brewery firms in South-South

		Artificial Intelligence	Competitive Advantage
Artificial Intelligence	Pearson	1	.851
	Sig (2-tailed)	311	.001
	N	(0.724)	311
	R^2	72%	
Competitive Advantage	Pearson	.851	1
	Sig. (2-tailed)	.001	
	N	311	311

Source; Field Data, 2026

Data in table 3 shows correlation (r) coefficient of 0.851 which is positive p-value = .001 < .05% significant level, which indicates a very high extent relationship. This result indicates that artificial intelligence to a very high extent, relates to competitive advantage. The coefficient of determination (R2) of 0.724 indicates that 72% of competitive advantage could be accounted for by the artificial intelligence. This implies that there is a positive significant effect between artificial intelligence and competitive advantage of brewery firms in South-South .

HO_2: Big data analytics has no positive significant effect on product development of brewery firms in South-South.

Table 4: Simple regression analysis on big data analytics on product development

Variable	Parameters	Coefficient	Std error	t – value	p-value
Constant	β_0	3.251	0.116	6.168	.005
Big data analytics (X_1)	β_1	0.949	0.028	3.418**	.001
R-Square		0.793			
Adjusted R – Square		0.790			
F – statistics		118.611***			

Source: Field Data, 2026

Table above showed simple regression analysis on big data analytics on product development. The coefficient of multiple determination (R^2) was 0.790 which implies that 79.0% of the variations in dependents were explained by changes in the independent variable while 21.0% were unexplained by the stochastic variable indicating a goodness of fit of the regression model adopted in this study which is statistically significant at 1% probability level.

The coefficient of big data analytics was statistically significant and positively related to product development at 5 percent level (3.418**). P-value = .001% < .05% significance level. Therefore, we reject null hypothesis and uphold the alternative hypothesis which states that big data analytics has a positive significant effect on product development of brewery firms in South-South.

Summary of Findings

The results from the analysis of the findings stated that

i. There is a positive significant effect between artificial intelligence and

competitive advantage of brewery firms in south-south (p-value = .001 < .05% significant level). This implies that a unit increase in artificial intelligence leads to a unit increase in competitive advantage

ii. Big data analytics has a positive significant effect on product development of brewery firms in south-south (p-value = .001% < .05% significance level). This implies that a unit increase in big data analytics leads to a unit increase in product development

Conclusion

The findings revealed that disruptive technologies have become critical drivers of operational efficiency, competitiveness, innovation, productivity, and profitability among brewery firms operating in an increasingly dynamic and technology-driven business environment. This study examined the effect of disruptive technologies on organizational performance of brewery firms in South-South, Nigeria, with emphasis on artificial intelligence, big data analytics.

Furthermore, the findings concluded that artificial intelligence and big data analytics positively influenced organizational performance through automation, predictive analysis, customer service improvement, and intelligent decision support systems. Big data analytics enhanced firms' ability to process large volumes of business information, identify market trends, predict consumer behavior, and improve strategic planning.

Recommendations

i. Brewery firms should continuously integrate artificial intelligence into customer relationship management systems to improve customer engagement, personalize services, and increase customer satisfaction and loyalty.

ii. Brewery firms should constantly integrate big data analytics into research and development activities to enhance product design, quality improvement, packaging innovation, and introduction of new beverage products.

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