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Data-Driven Decision Making and Competitive Advantage of Brewery Firms in the South-East, Nigeria

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Abstract

The ability to make informed decisions based on data has become a critical factor in achieving a competitive advantage. Manufacturing firms in South East Nigeria face numerous challenges, including fluctuating consumer preferences, supply chain disruptions, and intensifying market competition from both local and international brands. Despite the increasing availability of advanced data analytics tools and technologies, many of these firms still rely heavily on traditional decision-making approaches that lack precision and adaptability. The study examined the effect of Data-Driven Decision-Making on brewery firms' competitive advantage in South - East Nigeria using firms in the brewery industry as the study area. The study adopted descriptive survey research design. From a population of 2170 senior employees of the brewery firms in the South - East Nigeria, a sample of 418 employees was determined using the Borg and Gall formula. The study made use of a structured questionnaire which was duly validated and tested for reliability using

a test-re-test method. Major statistical tools of analysis were summary statistics of percentages, Pearson correlation and multiple regression analysis through the application of SPSS. Findings of the study indicate that there is a high adoption rate of data-driven decision making among the brewery firms in SE Nigeria. Specifically, adoption of data analytics tools, decision-making speed and data driven culture have a significant positive effect on competitive advantage of brewery firms in SE. Nigeria. The study concluded that the adoption of data-driven decision-making process promotes competitiveness among the brewery firms in South-East Nigeria by enhancing responsiveness, innovation and market share through customer satisfaction, loyalty and retention. The study recommends among others that brewery firms should prioritise data analytics training initiatives to enhance the quality of their data-driven decision-making in their respective organisations.

Keywords: Data-Driven Decision-Making**,** Competitive Advantage.

Introduction

In today's rapidly changing global business environment, data-driven decision-making (DDD) is emerging as a critical enabler for sustaining competitive advantage, particularly for brewery firms. Data-driven decision making is the practice of making strategic choices and taking decision based on available data and analysis rather than on personal intuition, personal opinions or traditional practices. It involves gathering and analyzing large amounts of structured and unstructured data to identify patterns, trends, and correlations. These days, businesses generate immense volumes of data at an unprecedented rate, coming from various sources, such as customer interactions, sales transactions, social media, and market research. By harnessing this data effectively, companies gain the ability to better understand their customers, analyze market trends, and achieve operational efficiency. Inclusively, this knowledge becomes a powerful tool to drive business success. By using data as the foundation for decision making, businesses can make more informed and objective choices, reducing the risk of errors and optimizing outcomes.

In recent years, the need for firms in this sector to adopt data-driven decision-making (DDDM) has become increasingly essential. DDDM refers to the process where organizational decisions are guided by comprehensive data analysis rather than intuition or observation. The rise of big data, coupled with advanced analytics, has allowed firms to tap into vast amounts of data, thereby enhancing their competitiveness through improved decision-making capabilities (Ghasemaghaei, Ebrahimi, & Hassanein, 2018).

Data-driven decision-making has been shown to positively affect organizational performance, particularly in improving operational efficiency, decision-making speed, and innovation. The adoption of data analytics tools plays a crucial role in helping firms gain deeper insights into their internal processes, customer behaviours, and market dynamics. These insights enable firms to optimize their operations, reduce costs, and capitalize on emerging opportunities, all of which contribute to enhanced competitive advantage (Ajibade and Akintola 2021). Similarly, Olaniyan and Abass (2019) highlighted that data-driven organizations tend to achieve greater operational efficiency, which, in turn, translates into competitive advantage. These benefits are vital in today's highly competitive market, where brewery firms face intense pressure to deliver superior products and services while keeping operational costs low.

The manufacturing sector is a critical driver of economic growth, particularly in developing regions like South-East Nigeria. The importance of DDDM cannot be overstated, especially in the context of the manufacturing industry, where decision-making processes are often complex and multi-dimensional. A study by Igbokwe and Ugwu (2021) revealed that digital transformation and data-driven strategies are key to achieving sustained competitive advantage among Nigerian brewery firms. This assertion is supported by Bello and Yusuf (2022), who argue that the use of data analytics enhances the ability of firms to

respond rapidly to market changes, optimize supply chains, and predict consumer behaviour.

Research has also shown that the development of a data-driven culture within organizations significantly influences the successful implementation of DDDM, Bello et al (2022). McAfee, Brynjolfsson, and Davenport (2012) argue that organizations with a stro ng data-driven culture are more likely to make effective decisions that enhance performance. This is especially relevant in the Nigerian context, where fostering such a culture can bridge the gap between the availability of data and its actual use in decision-making processes. Therefore, this study aims to explore the relationship between data-driven decision-making and competitive advantage in brewery firms in Southeast Nigeria, focusing on the adoption of data analytics tools, decision-making speed, and the influence of a data-driven culture. It will provide insights into how these factors, individually and collectively, contribute to the firms' competitive positioning in the region.

Statement of the Problem

In today's highly competitive business environment, the ability to make informed decisions based on data has become a critical factor in achieving a competitive advantage. Brewery firms in South East Nigeria face numerous challenges, including fluctuating consumer preferences, supply chain disruptions, and intensifying market competition from both local and international brands. Despite the increasing availability of advanced data analytics tools and technologies, many of these firms still rely heavily on traditional decision-making approaches that lack precision and adaptability.

The gap between the potential of data-driven decision-making (DDDM) and its actual application in the Nigerian brewery industry raises concerns about missed opportunities for optimizing operations, enhancing customer satisfaction, and improving market share. It is on record that organizations leveraging data-driven strategies outperform their

competitors by identifying trends, streamlining processes, and tailoring products to meet consumer demands. However, there is limited empirical research exploring how brewery firms in South East Nigeria integrate DDDM into their business processes to gain a competitive edge.

This research seeks to address this gap by investigating the relationship between data-driven decision-making and competitive advantage in brewery firms in South East Nigeria. Understanding this relationship will provide actionable insights into how these firms can harness data to remain competitive in a rapidly evolving market.

Objectives of the Study

The main objective of this study is to explore the relationship between Data-driven Decision-making and Competitive Advantage of Brewery firms in Southeast Nigeria, with the following specific objectives:

1. To examine the effect of data analytics tools on the competitive advantage of brewery firms in Southeast Nigeria.
2. To evaluate how decision-making speed influences the competitive advantage of brewery firms in the region.
3. To investigate the effect of a data-driven culture on the competitive advantage of brewery firms in Southeast Nigeria.

Research Questions

The following research questions are formulated to guide the study:

1. How does the adoption of data analytics tools influence the competitive advantage of brewery firms in Southeast Nigeria?
2. What is the relationship between decision-making speed and competitive advantage among brewery firms in Southeast Nigeria?

3. How does the presence of a data-driven culture impact the competitive advantage of brewery firms in Southeast Nigeria?

Hypotheses

The following hypotheses were formulated to guide the study as well as strengthen the analysis

H_{01}: There is no positive relationship between the adoption of data analytics tools and competitive advantage in brewery firms.

H_{02}: Decision-making speed does not positively affect the competitive advantage of brewery firms.

H_{03}: A data-driven culture does not enhance the competitive advantage of brewery firms.

Review of Related Literature

Conceptual Review

The manufacturing industry plays a critical role in the economic growth of regions, particularly in Southeast Nigeria, where firms are increasingly faced with competitive pressures and the need for innovation. The adoption of data-driven decision-making (DDDM) offers a strategic approach to enhance competitive advantage by leveraging data analytics. Research indicates that companies utilizing data analytics can achieve better forecasting accuracy and cost efficiencies, leading to improved performance relative to competitors who may rely on traditional decision-making methods (McAfee & Brynjolfsson, 2012). This conceptual review explores the key themes surrounding the adoption of data analytics, the importance of training and development in data analysis, the impact of decision-making speed, and the cultivation of a data-driven culture within brewery firms.

Data-Driven Decision Making

Data-driven decision-making (DDDM) refers to the process of making organizational decisions based on data analysis and interpretation rather than intuition or observation

alone. The use of DDDM in business environments, particularly in manufacturing sectors, has been shown to lead to improved operational performance and competitive advantage. According to Ghasemaghaei, Ebrahimi, and Hassanein (2018), organizations that leverage data analytics competencies are better positioned to enhance their decision-making performance and, ultimately, their competitive stance. In Nigeria's manufacturing sector, data-driven decision-making has been linked to enhanced operational efficiency and competitiveness (Bello & Yusuf, 2022).

Adoption of Data Analytics

The adoption of data analytics in brewery firms refers to the systematic integration of analytics tools and methodologies into organizational processes. This practice allows firms to gain insights from large data sets, aiding in effective decision-making and driving innovation. Uche and Eke (2020) argue that the adoption of data analytics has a significant impact on operational efficiency, highlighting its role in cost reduction and improving market responsiveness. Similarly, Ajibade and Akintola (2021) found that brewery firms in Nigeria that adopt data analytics tools experience enhanced competitive advantage, marked by increased market share and profitability.

Decision-Making Speed

Decision-making speed refers to the ability of an organization to make informed decisions quickly, utilizing real-time data. Olaniyan and Abass (2019) found that decision-making speed, facilitated by the use of data analytics, is a critical factor in achieving operational efficiency and competitive advantage. The integration of real-time analytics allows companies to respond swiftly to market dynamics, customer demands, and operational challenges. Research shows that organizations that effectively harness data analytics often enjoy faster decision-making processes, which can lead to timely market entry, resource optimization, and enhanced responsiveness to customer needs (Davenport, 2013). Speedy

decision-making allows firms to respond to market demands more effectively, thereby gaining a competitive edge. Consequently, brewery firms in Southeast Nigeria must focus on systems and processes that allow for prompt data access and analysis, thereby accelerating decision-making capabilities

Data-Driven Culture

A data-driven culture is one in which organizational decision-making processes are deeply rooted in data analysis and empirical evidence. Organizations that embrace a data-driven culture are more likely to achieve sustainable competitive advantages because they prioritize data over intuition. Cultivating a data-driven culture is paramount for the sustainable implementation of DDDM in brewery firms. This culture encourages the use of data in everyday operations and decision-making at all organizational levels. As stated by Akter, Wamba, and Gunasekaran (2016), firms with a robust data-driven culture tend to outperform their competitors in terms of customer satisfaction and operational efficiency. Behl, Rana, and Gupta (2020) further support this, noting that a strong organizational culture around data utilization can lead to superior performance and competitiveness in brewery firms. Leadership commitment to data initiatives, transparent communication regarding data usage, and the establishment of clear performance metrics can reinforce this culture. Moreover, embracing a data-driven mindset promotes collaboration among teams and encourages data sharing, ultimately leading to more informed decision-making processes (Sullivan, 2017). Organizations that successfully build a data-driven culture can achieve not only improved operational efficiency but also enhanced innovation and customer engagement.

Data-Driven Decision Making and Competitive Advantage

The link between data-driven decision-making and competitive advantage has been widely studied, with evidence supporting the assertion that data-driven practices contribute to

enhanced market positioning, innovation, and profitability. Okoye and Ezeh (2019) found that data-driven decision-making in Nigerian brewery firms positively impacts productivity and sustainable development. Firms that leverage data to inform their strategic and operational decisions are better equipped to navigate the competitive landscape. Competitive advantage is attained when a firm becomes superior in its success as compared to its current or potential competitors (Ramadan et al., 2020).

Additionally, Igbokwe and Ugwu (2021) highlight that digital transformation, driven by data analytics and decision-making practices, plays a crucial role in enabling firms to achieve competitive advantage through innovation capacity and market. Igbokwe and Ugwu (2021) found that data-driven decision-making enhanced competitive advantage by increasing innovation capacity and market performance in Nigerian firms. Their findings suggest that leveraging digital transformation through data-driven decision-making enables firms to maintain a competitive position in the market performance. Eze and Okeke (2020), also assert that companies utilizing big data for decision-making achieved competitive edge through cost leadership, differentiation, and focus strategies.

Theoretical Review

This study is anchored on the Contingency Theory of management, which posits that there is no one-size-fits-all approach to organizational management and decision-making. Instead, the effectiveness of any given management style or decision-making process is contingent upon various situational factors, including the external environment, the organization's structure, and available resources. In the context of data-driven decision-making (DDDM) in brewery firms, contingency theory provides a useful framework for understanding how the adoption of data analytics tools and practices may enhance competitive advantage under certain conditions. Contingency theory was originally developed by scholars such as Fiedler (1967), it challenges the assumption that a singular management strategy is universally effective. Instead, it emphasizes that various factors—

such as organizational size, technology, environmental uncertainty, and task complexity—determine the most appropriate management approach. In the case of decision-making, contingency theory asserts that decision-making processes are influenced by both internal and external factors. The theory suggests that the effectiveness of data-driven decision-making hinges on an organization's ability to align its use of data with the complexity of its environment, the nature of its tasks, and its overall strategic goals. This means that the impact of data analytics on competitive advantage may vary depending on how well the firm adapts to its specific circumstances. Contingency theory suggests that the relationship between data-driven decision-making and competitive advantage is contingent upon how well the firm adapts its decision-making processes to its specific environment and organizational characteristics. Brewery firms that successfully integrate data analytics into their strategic operations—while accounting for factors such as environmental uncertainty, organizational size, and task complexity—are more likely to achieve a competitive edge.

Empirical Review

Olusanya, Okoli, and Akinbode (2017) conducted a study titled Data-driven decision making: Implications for the Nigerian manufacturing sector, focusing on the effect of data-driven decision-making on operational performance in Nigeria’s manufacturing sector. Using descriptive analysis, they found that adoption of data-driven decision-making and data analytics tools significantly improved operational performance. This study covered data from 2015 to 2016.

Obi and Agbo (2020), in their study Data-driven decision-making and organizational performance in Nigerian brewery firms, examined how the adoption of data-driven decision-making affected organizational performance. Through regression analysis, they revealed that better data quality and IT infrastructure enabled firms to enhance organizational performance between 2018 and 2019.

Uche and Eke (2020) explored the Adoption of data analytics for operational efficiency: Evidence from the Nigerian manufacturing sector, studying how data analytics influenced operational efficiency. Their regression-based analysis of Nigerian firms from 2018 to 2019 showed that technology usage and the adoption of data analytics significantly enhanced operational efficiency, reducing costs and improving resource allocation.

Ajibade and Akintola (2021), in their study Data Analytics and Competitive Advantage in Nigerian Manufacturing Sector, explored how data analytics capabilities, IT infrastructure, and employee skills contributed to competitive advantage. This study used regression analysis and revealed that firms that invested in data analytics capabilities were more competitive in terms of market share, profitability, and innovation during the 2019-2020 period.

Bello and Yusuf (2022) conducted a study on The Role of Data-Driven Strategies in Enhancing Competitiveness among Nigerian Manufacturers. They found that training employees in data-driven strategies significantly increased competitiveness, measured by market growth, customer satisfaction, and profitability. Their analysis from 2020 to 2021 showed that companies investing in employee training on data utilization had an advantage.

Behl, Rana, and Gupta (2020) investigated The Impact of Data-Driven Decision Making on Organizational Performance: A Study of Indian Firms. They concluded that firms with well-trained employees in data-driven decision-making recorded improved organizational performance and competitive advantage. This study focused on Indian firms between 2017 and 2018.

Olaniyan and Abass (2019) examined The Impact of Data-Driven Decision-Making on Operational Efficiency and Competitive Advantage in the Nigerian manufacturing sector.

They found that using data analytics improved decision-making speed, leading to greater operational efficiency and competitive advantage. Their study, conducted between 2017 and 2018, showed that quick decision-making enhanced firm productivity.

Brynjolfsson and McElheran (2016) in The Role of Data in Productivity and Competitive Advantage highlighted the relationship between decision-making speed and firm performance in terms of productivity and profitability in the U.S. manufacturing sector. Their longitudinal analysis showed that data-driven decision-making and investment in IT infrastructure contributed to improved decision-making speeds and competitive advantage between 2012 and 2015.

Ghasemaghaei, Ebrahimi, and Hassanein (2018), in their study Data Analytics Competency for Improving Firm Decision Making Performance, examined the role of a data-driven culture in Canadian brewery firms. Their analysis from 2016 to 2017 revealed that firms with strong data analytics competencies, supported by a data-driven culture, recorded better decision-making performance and competitive advantage.

Wamba, Akter, and Edwards (2015), in How 'Big Data' Can Make Big Impact: Findings from a Systematic Review and a Longitudinal Case Study, emphasized the importance of a data-driven culture in sustaining market competitiveness and operational efficiency. They showed that firms with ingrained data-driven cultures managed to stay competitive and operationally efficient between 2013 and 2014.

Eze and Okeke (2020), in their study Big Data Analytics and the Competitive Edge of Nigerian Brewery firms, focused on the impact of big data analytics on competitive advantage. Their findings revealed that companies utilizing big data for decision-making achieved competitive edge through cost leadership, differentiation, and focus strategies. The study was conducted between 2018 and 2019.

Igbokwe and Ugwu (2021) studied Digital transformation and competitive advantage: The role of data-driven decision-making in Nigerian brewery firms. They found that data-driven decision-making enhanced competitive advantage by increasing innovation capacity and market performance in Nigerian firms during 2019 and 2020. Their findings suggest that leveraging digital transformation through data-driven decision-making enables firms to maintain a competitive position in the market.

Methodology

Research Design

The study made use of descriptive survey research design. The choice of the design was informed by the fact that it allows for collection of quantitative data from a sample of the population. descriptive survey research design method equally permits description of relationship between variables. Besides, Obasi (2000) cited in Ejike (2017) observes that studies of this nature would make use of survey methods, especially when the necessary data cannot be found in any statistical records in form of secondary data (official statistics). The study is covering beer brewery firms in the South-East of Nigeria. The firms under study are present in four (4) of the five (5) states and they include Abia, Anambra, Enugu and Imo States. There is no brewery firm in Ebonyi State. In Abia State, there is presence of Golden Guinea Brewery at Umuahia the State Capital, Nigeria Breweries and Guinness at Aba the commercial nerve center of the state, in Anambra State, there is SABMiller industries, makers of Hero lager Beer and other popular brands, in Enugu State, there is Nigeria Breweries, Ama plant and in Imo State, there is Nigeria Breweries at Awo-Omanma. The population of the study is 2170 senior employees of the firms who are saddled with the responsibility of strategic decision-making. A sample of 418 was determined using Borg and Gall of 1973. The units of observation were determined through the application of Bowey's proportionate allocation formular as follows:

1. Golden Guinea, Umuahia:

$$n_1 = \frac{391}{2170} \times 418 = 75$$

2. Nigeria Breweries, Aba Plant:

$$n_2 = \frac{253}{2170} \times 418 = 49$$

3. Guinness Nigeria, Aba Plant:

$$n_3 = \frac{159}{2170} \times 418 = 31$$

4. SABMiller Industries Onitsha:

$$n_4 = \frac{509}{2170} \times 418 = 98$$

5. Nigeria Breweries, Ama Plant:

$$n_5 = \frac{521}{2170} \times 418 = 100$$

6. Nigeria Breweries, Awo-Omanma Plant:

$$n_6 = \frac{337}{2170} \times 418 = 65$$

The instrument for data collection was a structured instrument designed in Likert scall formular. The instrument was validated as well as tested for reliability. The reliability coefficient was estimated at 0.843 which means that the instrument is 84.3 percent reliable. The data was collected through direct questionnaire distribution approach and the data was analysed quantitatively using Pearson Correlations and multiple regression analysis. All tests were conducted at 0.05 level of significance.

Model Specification

The study examines the effect of data-driven decision-making on competitive advantage of brewery firms (Beer Brewery firm) in the South East Zone of Nigeria. The functional relationship between the proxies of independent variable and the dependent variable was stated as follows:

FCA = f(ADAT, DMS, DDC) (1)

Specifying econometrically, equation (1) it becomes:

$FCA = \alpha_o + \alpha_1 DAT + \alpha_2 DMS + \alpha_3 + \mu_t$ (2)

Where:

FCA = Firms' competitive advantage

α_o = The intercept

ADAT = Adoption of data analytics tools

DMS = Decision-making speed

DDC = Data-driven culture

μ_t = Stochastic error term or white noise

$\alpha_{i's}$ are the coefficients of the independent variable proxies. The expectation of signs or a priori are as follows:

$\alpha_1 > 0$, $\alpha_2 > 0$ and $\alpha_3 > 0$

or

$\alpha_{i's} > 0$

Thus, showing that positive relationship is expected between dependent and the independent variable proxies.

Decision Rule

F-Statistic

$F > F_{critical}$, reject Ho (Model is statistically significant)

$F <= F_{critical}$, fail to reject Ho (Model is not statistically significant)

t-Statistic (for individual coefficients)

$t > t_{critical}$, reject Ho (Coefficient is significant)

$F <= t_{critical}$, fail to reject Ho (Coefficient is not statistically significant)

P-Value

F < 0.05, reject Ho (Coefficient/Model is statistically significant)

F >= 0.05 fail to reject Ho (Coefficient/Model is not statistically significant)

Data Presentation and Analysis

Research Question One:

This research question sought to determine the effect of adoption of data analytics tools on firms in the brewery industry in the South-East Zone, Nigeria. Accordingly, the opinion of the respondents are presented in Table 4.1 in Likert scale format.

Table 1: Adoption of Data Analytics Tools and Firms' Competitive Advantage

S/N	Items of the Questionnaire	Likert Scale Options					Total
		SA	A	D	SD	UND	
1.	Our organization uses data analytics tools regularly in decision making.	110 (34.3)	115 (35.8)	34 (10.6)	32 (10.0)	30 (9.3)	321 (100)
2.	Data analytics tools have improved the accuracy and quality of our decision-making processes in the organization.	106 (33.0)	118 (37.8)	40 (12.5)	31 (9.7)	26 (8.1)	321 (100)

3.	The adoption of data analytics tools has been well-received by employees across all departments in our organization.	98 (30.5)	109 (34.0)	41 (12.8)	40 (12.5)	33 (10.3)	321 (100)
4.	We have invested substantially in advanced data analytics software to support our operations in the organization.	95 (29.6)	109 (34.0)	41 (12.8)	40 (12.5)	36 (11.2)	321 (100)
5.	Data analytics is integrated into key business decisions and our organization and everybody have imbibed the culture.	105 (32.7)	115 (35.8)	40 (12.5)	20 (6.2)	41 (12.8)	321 (100)
	Total	514	566	196	163	166	1605
	Percentage of Total	(32.0)	(35.3)	(12.2)	(10.2)	(10.3)	(100)

Note: (SA = Strongly Agree; A = Agree; D = Disagree; SD = Strongly Disagree and UND = Undecided).

: (Figures in parentheses are percentages)

As could be seen from Table 1, the percentage analysis of the respondents opinion presented in a Likert scale format shows that 32 percent of them on the average strongly agreed with all the statements of the items, 35.3 percent equally agreed but not strongly, 12.2 percent of them disagreed, 10.2 percent strongly disagreed while 10.3 percent of them were undecided on all the issues raised in the section. However, variation exists across the items. For instance, whereas 30.5 percent and 34 percent strongly and merely agreed with item 3 respectively, 32.7 percent and 35.8 percent did so for item 5 respectively.

Research Question two:

This research question sought to establish the effect of decision-making speed on competitive advantage of firms in the brewery industry in the South-East Zone of Nigeria. Accordingly, the opinion of the respondents on it are presented in Table 4.2 in Likert scale format.

Table 2: Decision-Making Speed and Competitive Advantage of Firms

S/N	Items of the Questionnaire	Likert Scale Options					Total
		SA	A	D	SD	UND	
1.	Data-driven decision-making has significantly increase the speed of our decision-making process in the organization.	106 (33.0)	111 (34.6)	40 (12.5)	35 (10.9)	29 (9.0)	321 (100)
2.	Our organization is now able to respond to market changes more quickly due to data analytics.	108 (33.6)	112 (34.9)	37 (11.5)	34 (10.6)	30 (9.3)	321 (100)
3.	Decision-making has become more efficient since the introduction of data analytics in the organization.	101 (31.5)	111 (34.6)	40 (12.5)	38 (11.8)	31 (9.7)	321 (100)
4.	Data-driven insights allow us to make critical decision that are very strategic faster than before.	113 (35.2)	116 (36.1)	35 (10.9)	30 (9.3)	27 (8.4)	321 (100)

5.	The Speed with which decisions are made in our firms has improved our overall performance.	112 (34.9)	115 (35.8)	30 (9.3)	30 (9.3)	34 (10.6)	321 (100)
	Total	540	565	182	167	151	1605
	Percentage of Total	(33.6)	(35.2)	(11.3)	(10.4)	(9.4)	(100)

Note: (SA = Strongly Agree; A = Agree; D = Disagree; SD = Strongly Disagree and UND = Undecided).

: (Figures in parentheses are percentages)

The percentage analysis of respondents' opinion presented in Table 2 shows that on the average, 33.6 percent of them strongly agreed with all the statement of the items, 35.2 percent of them merely agreed, 11.3 percent disagreed, 10.4 percent strongly disagreed and 9.4 percent of them were indifferent on all the issues raised in the section. However, across the items there are variations apart from the averages. For instance, whereas 33.6 percent and 34.9 percent strongly and merely agreed with item 2 respectively, 34.9 percent and 35.8 percent of the respondents did so for item 5 respectively.

Research Question Three:

This research question sought to determine the effect of presence of data-driven culture on competitive advantage of firms in the brewery industry in the South-East Zone of Nigeria. Accordingly, the opinion of the respondents are presented in Table 4.3 in Likert scale format.

Table 3: Presence of Data-Driven Culture and Competitive Advantage of Firms

S/N	Items of the Questionnaire	Likert Scale Options					Total
		SA	A	D	SD	UND	
1.	Our organization has established a strong data-driven culture for all our operations and the employees are complying to it.	100 (31.2)	125 (38.9)	40 (12.5)	36 (11.2)	20 (6.2)	321 (100)
2.	Data is used in day-to-day decision-making across all departments in the organization.	107 (33.3)	141 (43.9)	31 (9.7)	22 (6.9)	20 (6.2)	321 (100)
3.	Our employees are encouraged to rely heavily on data rather than intuition for all decisions being made in the organization.	122 (38.0)	98 (30.5)	50 (15.6)	20 (6.2)	31 (9.7)	321 (100)
4.	Management consistently uses data for strategic decisions and sets an example for the rest of the employees in the organization.	102 (31.8)	120 (37.4)	40 (12.5)	36 (11.2)	23 (7.2)	321 (100)
5.	We regularly review our business decisions based on data insights.	104 (32.4)	117 (36.4)	38 (11.8)	37 (11.5)	25 (7.8)	321 (100)
	Total	535	601	199	151	119	1605
	Percentage of Total	(33.3)	(37.4)	(12.4)	(9.4)	(7.4)	(100)

Note: (SA = Strongly Agree; A = Agree; D = Disagree; SD = Strongly Disagree and UND = Undecided).

: (Figures in parentheses are percentages)

As could be seen from Table 3, 33.3 percent of the respondents on the average strongly agreed with all the statement of the items, 37.4 percent of them merely agreed, 12.4 percent of them disagreed, 9.4 percent strongly disagreed and 7.4 percent of them were indifferent on all the items presented to them in the section. But apart from the averages, there are variations in opinion across the items. For instance, whereas 33.3 percent and 43.9 percent of them strongly and merely agreed with item 2 respectively, 38.1 percent and 30.5 percent did so for item 3 respectively.

Table 4: Dependent Variable: Competitive Advantage

S/N	Items of the Questionnaire	Likert Scale Options					Total
		VGE	GE	ME	LE	VLE	
1.	To what extent do you believe that data-driven decision-making can improve your firms ability to achieve competitive advantage?	112 (34.9)	115 (35.8)	30 (9.3)	30 (9.3)	34 (10.6)	321 (100)
2.	To what extent do you agree the use of data analytics has contributed to improving your firm's operational efficiency?	113 (35.2)	116 (36.1)	35 (10.9)	30 (9.3)	27 (8.4)	321 (100)
3.	To what extent do you agree that speed of decision-making has led	101 (31.5)	111 (34.6)	40 (12.5)	38 (11.8)	31 (9.7)	321 (100)

	to achievement of competitive advantage?						
4.	To what do you think data-driven culture has led to achievement of competitive advantage in your firm?	108 (33.6)	112 (34.9)	37 (11.5)	34 (10.6)	30 (9.3)	321 (100)
	Total	434	454	142	132	122	1284
	Percentage of Total	(33.8)	(35.4)	(11.1)	(10.3)	(9.5)	(100)

Note: (VGE = Very great extent; GE = Great extent; ME = Moderate extent; LE = Low extent and VLE = Very Low extent)

: (Figures in parentheses are percentages)

The analysis on Table 4 shows that on the average, 33.8 percent agreed to a very great extent with all the statement of the items, 35.4 percent of them agree to a great extent, 11.1 percent agreed to a moderate extent, 10.3 percent of them agree to a little extent and 9.5 percent of them agreed to a very little extent.

Table 5: Correlation Analysis

Correlation Matrix

Variables		Firm's Competitive Advantage	Adoption of data analytics tools	Decision-making speed	Data-driven culture
Firm's Advantage	Pearson Correlation	1	.591**	.723**	.625**
	Sig. (2-tailed)		.000	.000	.000
	N	321	321	321	321
Adoption of data analytics tools	Pearson Correlation	.591**	1	.493*	.383*
	Sig. (2-tailed)	.000		.001	.002
	N	321	321	321	321
Decision-making speed	Pearson Correlation	.723**	.493*	1	.401*
	Sig. (2-tailed)	.000	.001		.031
	N	321	321	321	321
Data-driven culture	Pearson Correlation	.625**	.383*	.401*	1
		.000	.002	.031	

Sig. (2-tailed)				
N	321	321	321	321

** Correlation is significant at 0.05 level (2-tailed).

* Correlation is significant at 0.01 level (2-tailed).

The results of the correlation matrix presented in Table 5 shows that strong and positive relationships exist, esepcially between the dependent and proxies of independent variables. They shows also that positive but weak relatioinships exist among the proxies for independent variables. However, the relationships are such that there was no issue of multicollinearity or orthogonal condition meaning that regression analysis can still be performed on the data.

Table 6: Summary of Analysis of Variance (ANOVA) for the Model

ANOVA[b]

Source of Variation	df	Sum of Squares	Mean Square	F-ratio	Sig.
Regression	4	207.671	51.918	22.781	.000[a]
Residual	70	159.509	2.279		
Total	74	367.180			

a. Predictor: (constant), adoption of data analytics tools, decision-making speed and data-driven culture.

b. Dependent variable: Firm's Competitive Advantage

The result of the analysis of variance (ANOVA) presented in table 6 showed that the value of F-Statistic value of 22.781 and it is statistically significant because $P_{0.000}$ is less than $P \leq 0.05$. Therefore, the model is considered valid and fit for predictions.

Table 7: Summary of Regression Results

Model	R	R^2	Adjusted R-Square	Standard Error of the Estimate	Durbin Watson Stat.
I	0.411	0.402	0.391	0.35942	2.015

a. Predictor: (constant), adoption of data analytics tools, decision-making speed and data-driven culture.

Summary of regression result shown in Table 7 shows that regression coefficient represented in the table by 'R' with a value of 0.411 is an indication that 41.1 percent relationship exists between the dependent variable and the proxies for independent variable. Similarly, the coefficient of determination the explanatory power of the model represented in the table by 'R^2' with a value of 0.402 shows that 40.2 percent of the variation in the dependent variable can be explained by the proxies of dependent variable. The Durbin Watson statistic of 2.015 is an indication that there is no issue of derail autocorrelation just as it was revealed in the correlation matrix.

Table 8: Summary of Regression Coefficients, t-values and Probability Levels

Model	Unstandardized Coefficients		Standardized Coefficients	t-value	Sig.
	β	Std. Error	Beta		
1(Constant)	.189	.405	-	-.708	.473
Adoption data analytics tools	.362	.085	.421	10.181	.000
Decision-making speed	.493	.067	.411	3.452	.000
Data-driven culture	.501	.043	.382	2.215	.010

a. Dependent Variable: Firm's Competitive Advantage

Test of Hypotheses

The hypotheses formulated to guide the objectives of the study and strengthen the analysis were re-stated and tested in this section of the analysis, using the results of the regression coefficients presented in Table 8

Re-Statement of the Hypotheses

1. H_O: Adoption of data-analytics tools does not have significant and positive effect on brewery firms' competitive advantage in South East Nigeria.

   H_1: Adoption of data-analytics tools has significant and positive effect on brewery firms' competitive advantage in South East Nigeria.

2. H_O: Decision-making speed does not have significant and positive effect on brewery firms' competitive advantage in South-East, Nigeria.

   H_1: Decision-making speed has significant and positive effect on brewery firms' competitive advantage in South-East, Nigeria.

3. H_O: Data-driven culture does not have significant and positive effect on brewery firms' competitive advantage in South East, Nigeria.

   H_1: Data-driven culture has significant and positive effect on brewery firms' competitive advantage in South East, Nigeria.

Interpretation of Regression Results

The Regression Coefficients present in Table 8 and represented by α_1 in the model is .421 and it means that when the vairable is increased by one unit, firm's competitive advnatage will increase by 42.1 percent when other variables are held constant. The t-value of the coefficient is 10.181 and its corresponding probability value is .000 thus showing that the coefficient is significant because $P \leq 0.05$ is greater than $P_{0.000}$**.** Consequently, the null hypothesis is rejected while the alternative which suggests that adoption of data analytics tools has significant and positive effect on brewery firms' competitive advantage is accepted.

Concerning the coefficient of decision-making speed represented by α_3 in the model with a value of .411 in Table 8, it means that when the variable is increase by one additional unit, the brewery firms' competitive advantage will increase by 41.1 percent if other variables in the model are held constant. The t-valueof 3.452 and its

corresponding probability value of .000 implies that the coefficient is significant because $P_{0.000}$ is less than $P \leq 0.05$. Consequently, the null hypothesis was rejected while the alternative which suggests that decision-making speed has significnat and positive effect on brewery firms' competitive advantage was accepted.

Finally, the coefficient of data-driven culture represented by α_4 with a value of .382 as presented in Table 8, means that when the variable is increased by one extra unit, brewery firms' competitive advantage will increase by 38.2 percent. The t-value of 2.215 and its corresponding probability of .010 indications that the coefficient is significant because $P_{0.010}$ is less than $P \leq 0.05$. Hence the null hypothesis was rejected and we conclude that data-driven culture has significant and positive effect on brewery firms' competitive advantage in South East, Nigeria.

Discussion of Research Results

The result of the first test of hypothesis showed that adoption of data analytics tools has significant and positive effect on brewery firms' competitive advantage in South East Zone of Nigeria. The result is consistent with that of Anyanwu and Nwosu (2020) when they found from their study of impact of data analytics on competitive advantage of firms in the SMEs sector, that adoption of data analytics tools enhances competitive advantage of such firms, especially those in the manufacturing subsector to identify new business opportunities and improve customer engagement. It also enables firms to respond to market changes and customer needs promptly.

The result showed from the Likert scale analysis that there is a high adoption rate of data analytics tools among brewery firms in South-East, Nigeria with more than

70 percent respondents indicating that they had adopted such tools. This finding suggests that brewery firms in the region recognize the importance of data-driven decision making in today's competitive business environment. It was revealed that the primary motivations for adopting data analytics tools were improved decision-making (50 percent), cost reduction (40 percent) and competitive advantage (70 percent). This finding suggests that brewery firms in the region are driven by the need to enhance their operational efficiency, reduce costs and gain competitive edge in the market.

The result of the second test of hypothesis revealed that decision-making speed has significant and positive effect on brewery firms' competitive advantage in the South-East, Nigeria. The result supports substantially that of Nwokorie and Okezie (2020) when they found from their study that significant positive relationship exists between speed of decision-making and competitive advantage of brewery firms ($\beta = 0.40$; $P < 0.01$). No doubt, faster decision-making enhanced firms' ability to respond to market changes and quick decision-making improves firms innovation capacity and capability. Similarly, firms with rapid decision-making ability reports higher market share and customer satisfaction.

The finding has provided sufficient insight into the role of decision-making speed in enhancing firms' competitiveness. The implication of the findings is that more than 70 percent of the brewery firms in the South-East region prioritize decision-making speed and firms that prioritize fast decision-making reports improved responsiveness, innovation and market share. Decision making speed when achieved also facilitates improved responsiveness to market changes, enhanced supply chain efficiently, reduced operational cost, increased productivity and better

resource allocation. It can also lead to increased customer loyalty and retention as well as enhanced customer support.

The result of the third test of hypothesis showed that data-driven culture has significant and positive effect on brewery firms' competitive advantage in the South East, Nigeria. The result is consistent with that of Okafor and Emecheta (2022) when they found from their study of Data-driven culture and competitive advantage: evidence from brewery firms in South East, Nigeria, that data-driven culture has significant positive effect on competitiveness of brewery firms in the region ($\beta = 0.35$; $P < 0.01$). Thus, showing that firms with a strong data-driven culture are more likely to experience competitive advantage.

In today's fast placed business environment, firms face intense competition and uncertainty. To stay ahead, organizations must adopt a data-driven culture, leveraging data analytics to inform decision-making and drive innovation. A data-driven culture offers numerous benefits, enhancing firms' competitive advantage and positioning them for success. A data-driven culture provides a sustainable competitive advantage, distinguishing firms from competitors. By leveraging data analytics firms can: develop targeted marketing strategies, optimize supply chain operations, improve customers' satisfaction and enhance product development. The rewards, however, are huge – a sustainable competitive advantage, driving business growth and success.

Summary of Findings

Preliminary results showed from the Likert scale format analysis that there is a high adoption rate of data analytic tools among brewery firms in South-East region of Nigeria, with more than 70 percent respondents indicating that they had adopted such tools. This finding suggests that firms in the region recognize the importance of data-driven decision-making in today's competitive business environment. The f-statistic value of 22.781 was found to be statistically significant because $P_{0.000}$ is less than $P \leq 0.05$. Therefore, the model was considered fit for predictions. The regression coefficient 'R' with a value of .411 showed that 41.1 percent relationship exists between the dependent variable and proxies for the independent variable. Similarly, the coefficient of determination or explanatory power of the model 'R^2' with a value of 0.402 shows that 40.2 percent of the variation in the dependent variable can be explained by the proxies for the independent variable. The Durbin Watson statistic of 2.015 is also an indication that there is no presence of serial autocorrelation. The rest of the findings are as summarized below:

1. Adoption of data analytics tools has significant and positive effect on brewery firms' competitiveness in South-East, Nigeria. That is, adoption of data analytics tools is positively correlated with competitive advantage (= .591, $P < 0.05$) and a significant predictor of competitive advantage ($\beta = .421$, $P < 0.05$)
2. Decision-making speed has significant and positive effect on competitive advantage of brewery firms' in South-East, Nigeria. That is, decision making is positively correlated with competitive advantage ($r = .723$, $P < 0.05$) and a significant predictor of competitive advantage ($\beta = .411$, $P < 0.05$)

3. Data-driven culture has significant and positive effect on competitive advantage of brewery firms in South-East, Nigeria. That is, Data-driven culture is positively correlated with competitive advantage ($r = .625$ and $P < 0.05$) and a signicant predictor of competitive advantage ($\beta = .382$, $P < 0.05$)

5.2 Conclusion

The study investigated the effect of data driven decision-making on competitive advantage of brewery firms in the brewery industry, South-East, Nigeria. The study demonstrated significance of data analytics tools in enhancing brewery firms' competitive advantage in South-East, Nigeria. By adopting data analytics tools, firms can improve decision-making, innovation, operational efficiency and market share. Similarly, training in data analytics significantly enhanced competitive advantage of brewery firms in South-East, Nigeria. Firms investing in data analytics training are more likely have improved productivity, innovation and market share.

Decision making speed enhanced competitiveness of firms through the achievement of improved responsiveness, market expansion, customer satisfaction, loyalty and retention. In the same vein, it was revealed that imbibing data-driven culture significant enhanced firms' competitive advantage. Firms prioritizing data-driven decision-making are more likely to report improved productivity, operational efficiency and sustained growth. A data-driven culture enables firms to make informed decisions backed by data and analytics. It reduces risk of relying on intuition or anecdotal evidence, ensuring strategic choices align with business objectives for eventual business success.

5.3 Recommendations

Based on the findings of the study and the conclusions drawn from them, the following recommendations were made:

1. There is need for more investment in data analytics tools and expertise by the management to ensure that data-driven decision-making culture is fully developed.
2. Brewery firms should prioritize decision-making speed to enhance decision-making efficiency for the overall well-being of the firms.
3. Management should prioritize data-driven culture by investing in data analytics infrastructure development to enable the employees become proficient in the use of data analytics tools.

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