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BUSINESS INTELLIGENCE MODEL AND COMPETITIVE ADVANTAGE OF FOOD AND BEVERAGE COMPANIES IN NIGERIA

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ABSTRACT

The researcher examined business intelligence model and competitive advantage of food and beverage companies in South-South Geo-political Zone, Nigeria. The objective was to examine the influence of data quality, data management system and data warehousing on competitive advantage of food and beverage companies in south-south geo-political zone, Nigeria. Survey research design was used for the study. The population of the study consisted of 3081 with the sample size of 354 which was determined using Taro Yamane formula for sample size determination. Data were collected using questionnaire which designed using modified 4 point rating scale and administered to the staff of Nestle Nigeria Plc and Cadbury Nigeria Plc which were selected for the study and were analyzed using regression analysis. Finding revealed that data quality, data management system and data warehousing have significant and positive influence on competitive advantage of food and beverage companies 'in south-south geo-political zone, NigeriaP-0.000(P<0.05). Thus, it was concluded that data quality, data management system and data warehousing have significant influence on competitive advantage of food and beverage companies in south-south geo-political zone, Nigeria. It was recommended that since poor data undermined and flawed effective decision making, organizations should ensure that they invest adequately in data cleaning that is characterized by timeless, accurate and relevance for informed business decision-making and gain competitive edge over its competitors.

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INTRODUCTION

In today's hyper-competitive business landscape, organisations are increasingly turning to business intelligence (BI) models to gain insights, make informed decisions, and ultimately achieve a sustainable competitive advantage. BI encompasses various processes, technologies, and tools aimed at transforming raw data into meaningful and actionable insights to support strategic decision-making. Central to the effectiveness of BI initiatives are factors such as data quality, efficient data management systems, seamless data integration, robust data warehousing, technological capabilities and effective mobile devices. Moreover, the proliferation of mobile devices has further heightened the importance of delivering BI solutions that are accessible anytime and anywhere.

The manufacturing sector in Nigeria encompasses a wide range of industries including food range of industries including food and beverages, textiles, chemicals, cement, and automotive among others. Despite facing challenges such as infrastructural deficiencies, policy inconsistencies, and regulatory constraint, the sector has exhibited resilience and potential for growth. However, achieving sustainable competitive advantage has become increasingly complex amidst rapid changes in market dynamics. Therefore, Competitive advantage refers to the unique strengths and capabilities that enable a company to outperform its rivals and achieve superior market position. In the context of manufacturing, traditional sources of competitive advantage such as cost leadership and product differentiation have evolved to include factors beyond tangible goods, notably service quality. Manufacturing companies in Nigeria are recognizing the significance of business intelligence models (BIM) in delivering high-quality services to enhance customer satisfaction, loyalty and overall competitiveness

Modern manufacturing organizations have significant challenges in surviving and expanding their operations without a competitive advantage. The economic downturn that has recently impacted manufacturing organizations' operations has led to a decline in performance in areas including revenue losses, poor service quality, low market shares, increased labor turnover, and returns on marketing investment. This made it imperative for business owners and managers to implement aggressive positioning and product differentiation tactics in order to boost productivity and gain a competitive edge over competing organizations. Unfortunately, a large number of Nigerian manufacturing enterprises have underperformed compared to expectations, suggesting that they have not yet properly incorporated business intelligence models into their operations. The possibility of significant investment needed during its implementation is, however, a major problem associated with BI adoption, particularly for manufacturing companies (Kfouri and Skyrius, 2016).

Despite the growing importance of BI, organizations often face challenges of harnessing its full potentials of achieving a competitive advantage (edge) over rival companies because often time most food and beverage companies lack technological capabilities to provide service quality different from rival companies and gain competitive edge. However, studies have been conducted on business intelligence models and competitive advantage of food and Beverage companies but to the best knowledge of the researcher, studies conducted using the dimensions of BIM such as data quality, data management system, technology, mobile device and data integration in one model to evaluate their effects on competitive advantage of Food and Beverage companies are few in the available management literature. Therefore, this study will be conducted to expand the frontier of the available literature with the purpose of evaluating business intelligence model and competitive advantage of Food and Beverages companies in south-south geo-political zone, Nigeria.

The main objective of this study is to examine business intelligence model and competitive advantage of food and beverage companies in Nigeria. Specifically, is to: 1 examine the effect of data quality on competitive advantage in food and beverage companies in South-South Geo-political zone, Nigeria :2 investigate the effect of data management system on competitive advantage in food and beverage companies in South-South Geo-political zone,.3 examine the combine effect of data warehousing on competitive advantage in food and beverages companies in South-South Geo-political zone, Nigeria. The following research questions will be asked to guide the study:1 How does data quality affect competitive advantage of Food and beverage companies in South-South Geo-political zone, Nigeria?2 How does data management system affect competitive advantage of food and beverage companies in South-South Geo-political zone, Nigeria?3 What is the effect of data warehousing on competitive advantage of food and brewages companies in South-South Geo-political zone, Nigeria? In line with the objectives of this study, the following research hypotheses will be formulated to guide the study. **Ho_1:** There is no significant effect of data quality on competitive advantage of food and beverage companies in South-South Geo-political zone, Nigeria. **Ho_2**: There is no significant of data management on competitive advantage of food and beverage companies in South-South Geo-political zone, Nigeria.**Ho_3:** There is no significant effect of data warehousing on competitive advantage food and beverage companies in South-South Geo-political zone, Nigeria.

2. REVIEW OF RELATED LITERATURE

Conceptual Review

Business Intelligence

Business Intelligence is referred to as the techniques, technologies, systems, practices, methodologies, and applications that analyze critical business data to help an enterprise better understand its business and market and make timely business decisions (Ramakrishnan *et al.* 2012). As summarized by Chugh and Grandhi (2013), the key benefits of implementing business intelligence solutions in an enterprise includes: Equipping the company with the ability to analyze data from multiple sources and using different dimensions;

Competitive Advantage

The concept of competitive advantage is due to profitability as a long-term concept, that is, there is continuity in achieving profits, and the performance of the organization is above average in the industry to which it belongs, and this is sufficient to be evidence of its superiority and sustainability. Organizations seek to maintain its position and multiply efforts to continue to excel and progress in sustaining its competitive advantage among organizations in the same sector (Al-Alaq, 2016).

Business Intelligence Model and Competitive Advantage

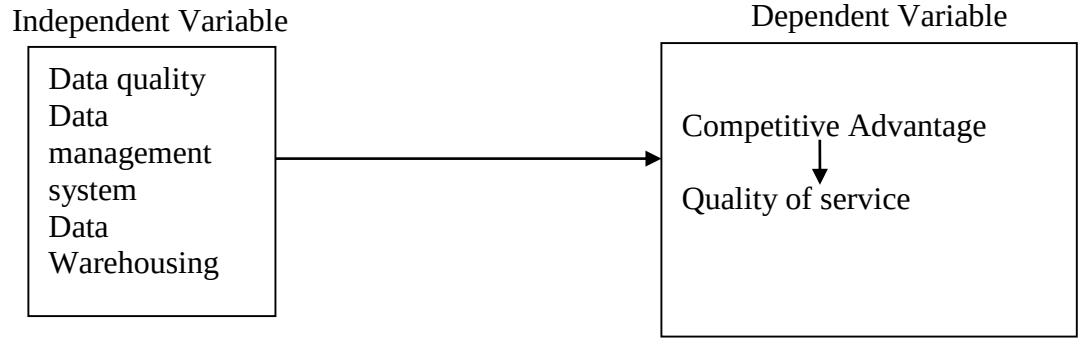

Figure 2.1: Conceptual Model shows the relationship among all the variables.
Source: Researcher`s Conceptualization (2023)

Data Quality

In today data driven world, the essentials of data quality cannot be overstated, business rely on data to make informed decision, drive innovation, and gain competitive edge. However, poor data quality can lead to inaccurate insights, flawed strategies and missed opportunities. Therefore, ensuring high-quality data is important for firm success (Diderrich, 2019).In ensuring that data quality is a continuous process which require commitments, investment, and collaboration across the organization. By understanding the elements which influence data quality implementing effective strategies, leveraging appropriate tools and technologies, and following best practices, firms can unlock full potential of its data assets and drive sustainable growth and innovation (Terisa and Filipe, 2019).

Data Management System

Data management system is the corner store of efficient information governance in modern day digital age. At its core, data management refers to the systematic organization, storage, and retrieval of data to ensure its accuracy, security and usability. This process encompasses a wide range of business activities, including data collection, cleaning, integration and analysis. With the exponential growth of data volumes across various industries, organizations are increasingly realizing the importance of implementing robust data management practices to drive actionable weight and maintain a competitive advantage in the market (Diderrich, 2019).

Data Warehousing

Data warehousing plays a pivotal roles in present day businesses, serving as a centralized repository for vast amounts of data collected from various sources within an organization (Gartiler, 2013). By consolidating data for desperate systems into a single, coherent structure, data warehouses enable organizations to gains valuable insights to their operations, customers, and market friends. This centralized approach to data management facilitates effective analysis and decision making processes, empowering businesses to respond quickly to market changes and capitalize on emerging opportunities (Teresa and Filipe, 2019).

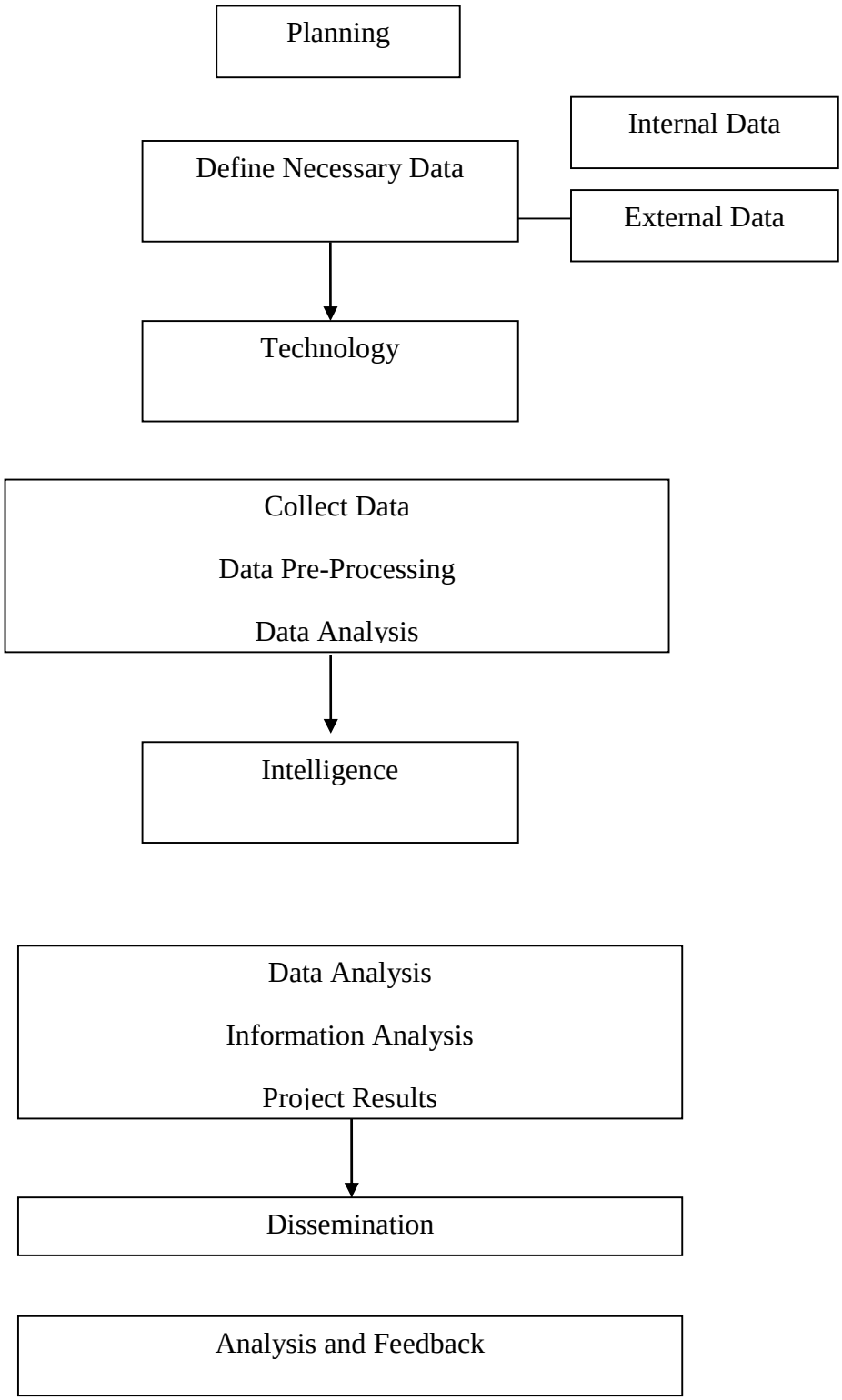

Fig. 2.1: BIM Implementation

Source: Tenesa and Filipe (2019)

Theoretical Review

Resource-Based View Theory

The resource based view theory was adopted for this study. This theory was formally developed by Penrose in 1959. It postulates that given that business controls its resources, then it will achieve superior performance. It was advanced later to fit the growing usage (Wernerfelt, 1984; Rumelt, 1984; Barney, 1986). These authors explain that to be able to sustain the competitive advantage of a firm, it was useful to focus on the distinctiveness of the resources. Resource-based view perspective emphasizes that exclusive capabilities and resource of a firm is the basic source of competitive advantage and higher performance (Barney,1986). Owing to the postulation of Barney in 1986, it is clear that resource base view focus mainly on the internal and external capabilities of a firm, meaning that for the firm to obtain superior performance such organization must have full control of its resources. But if all the Firms have all the capabilities to compete within the industry, it therefore means that, there is no competitive advantage. Therefore, for an organization to attain competitive advantage, such organization must have superior capabilities that is difficult to mimic by its rivals and gain competitive advantage over its competitors

Empirical Review

Kamara (2014) used Equity Bank as a case in examining the benefits of business intelligence systems. The objective was to examine the effect of strategic value, innovation service and business performance. Survey research design was adopted for the study. Data were collected through the use of questionnaire .Respondents were 500 in number and these were senior staff of the bank who were actively working as at the time this study was conducted. Regression analysis was used to the null hypothesis formulated for the study. Findings of this survey indicated that business intelligence systems provide strategic value that improves performance through innovative services, products and enhanced decision making. Therefore, it was concluded that strategic value and innovation services have significant effect on business performance. This study is correlated with the presence study in terms of variable and design used as they both sought to evaluate business intelligence and to adopt survey research design as a plan to obtain relevance data for the study.

Ali, Miah and Khan (2018) studied the gains of business intelligence utilization by small businesses. This study reviewed at least 75 articles on relationship between the agility of an organization and business intelligence. The business intelligence variables in the study were personnel, organizational and technological capabilities. The study found that business intelligence is highly recognized as an enabler of achievement of organizational agility by small businesses. Survey research design was adopted for the study. A primary source of information such as questionnaire was used to collect data from the respondents who were selected for the study. The data collected were analyzed using regression analysis and finding indicated that personnel, organization agility and technology capabilities have significant relationship with business intelligence of small business. It was concluded that the dimensions of organisational agility have significant relationship with business intelligence of small business in Nigeria. This is related with the presence study in term of the methodology used as they both sought to adopt survey research design but different in terms of the organization of the study.

Kasemsap (2018) investigated business intelligence and multiple use of data mining and how it maximizes opportunities, minimizes risk and supports business growth. The

objective was to evaluate the influence of knowledge management on business growth. Survey research design was adopted for the study. Data were collected using personal interview and questionnaire. The data collected were analysed using regression analysis. Finding showed that business intelligence and knowledge management maximizes business opportunities for firms through integration of relevant information leading to improved performance. This study is connected to the presence study as they both evaluated business intelligence on its relevance in the management of an organization. Also, the study is corrected to the study in terms of the methodology adopted as they both used survey design and regression analysis as an instrument for data analysis

Umoh et al (2023) examined business intelligence and competitive advantage of Hotels in Akwa Ibom State, Nigeria, The objective was to evaluate the influence of data management system and mobile devices on competitive advantage of Hostels in Akwa Ibom State, Nigeria. Survey research design was used for the study, and the population of the study consisted of 1,806 respondents with a sample size of 327 employees which were determined using Taro Yamane formula for sample size determination. A primary source of data collection was used for the study such as questionnaire which had a response rate of 73.7% respectively. Data collected were analysed using simply linear regression analysis. Findings indicated that data management systems and mobile devices have significant and positive influence on competitive advantage of Hotels in Akwa Ibom State. Based on the finding, it was concluded that data management system and mobile devices significantly interacted positively to influence competitive advantage of Hotels in Akwa Ibom State. Therefore, this study is related to the presence study in term of variables and methodologies used as they both sought to evaluate business intelligence and competitive advantage. However, the study was different in terms of organization used because the presence study used food and beverage manufacturing companies while the previous study used service industry such as Hotels.

3. METHODOLOGY

Research Design

The survey design will be used for this study. This method will be used because, it enables the researcher to collect data for the purpose of describing and interpreting existing condition, prevailing practices, beliefs, attitudes and on-going process. It helps the researcher to find answers to questions, collect first-hand information, elicit information from the respondents, obtain data from primary sources and collect data from the target population regarding business intelligence model and competitive advantage of food and beverage companies..This study will be carried out in Nestle Nigeria Plc and Cadbury Nigeria Plc. The choice behind the selection of these organizations is that Nestle Nigeria Plc and Cadbury Nigeria Plc are quoted and their shares are actively traded on the floor of Nigeria Exchange Group (NEG) and are some of the fastest growing food and beverage companies in Nigeria

The accessible population of this study consisted of 2,300staff of Nestle Nigeria Plc and 781 Cadbury Nigeria Plc. Therefore, the total population of 3081 accessible population will be used for this study and it formed the basis of this study. Also, the units of analysis will comprise senior staff, middle and junior staff of the two selected food and beverage companies in south-south geo-political zone of Nigeria to ensure precision of results. The sample size of this study consisted 354 which were determined using of Taro Yamane formula for sample size determination. The formula was given below as:

$$n = \frac{N}{1+N(e^2)}$$

Where:

n = Sample size

N = Population size

e = the acceptable sample error (0.05)
1 = Theoretical Constant

$$n = \frac{3{,}081}{1+3081(0.0025)}$$

$$n = \frac{3081}{1+7.7025}$$

$$n = \frac{3081}{8.7025}$$

$$n = 354$$

Therefore, since the population of the study is not collected from a particular organization, Proportion sample allocation formula will be used to allocate the sample respondent to the each of the organization selected for the study for the purpose of ensuring precision of results. The formula is given as:

$$P = \frac{sxn}{N}$$

Where:
P = Proportional Allocation
S = Staff strength of each organisation
n = sample size
N = Population of the study

$$Nestle, P = \frac{2300 + 354}{3081}$$

$$P = 264$$

$$Cadbury, P = \frac{781 + 354}{3081}$$

$$P = 90$$

The simple random technique will be used for this study because it will enable the research to select the respondents without bias. This means that the respondents will have equal right to be participated in the study. Data for this study will be collected from primary sources and the data will be sourced through the use of questionnaire. This is because questionnaire helps to collect first hand information and elicit responses from the respondents who are selected to participate in the study. The instrument for data collection will be questionnaire. The questionnaire will design in line with the independent and dependent variables for the study. It will be structured using close ended questionnaire and scored using modified 4-point rating scale, Strongly Agree = (4), Agree= (3), Disagree= (2), and Strongly Disagree = (1)

The validity of the instrument used was face and construct validity. Face validity means the transparency of a test as it appears to test participants. Also, construct validity is the degree to which a test measure what it intends to measure. A pre-test instrument was used also, to validate the instrument. Few copies of the questionnaire will be administered to some staff of Nestle Nigeria Plc and Cadbury Nigeria Plc for completion and during the exercise, observations and criticisms will be made and corrections will be done before preparing the final copies. However, the supervisor will make adjustments and give guidelines on the validation. Reliability means the consistency and stability of result when a measuring scale is repeated on the study on the same group of respondents. Reliability is then the ability of instrument and precision of a measuring instrument. Therefore, to measure the reliability of the instrument, the test-retest measure will be used on 10 respondents in each of the company used for the study. It will be administered on interval of two weeks. Cronbach Alpha statistics will be used to calculate and to measure the reliability of the instrument; the value of the alpha coefficient of 0.70 above was dim to be acceptable.

The following empirical models will be developed and used to test the null hypotheses of this study and will be bellow as:

*CA = F(*DQ*)*
CA = F(DMS)
*QS= F(*DW*)*

In order to ascertain the combined influence of business intelligence model and competitive Advantage, the composite model is given below:

QS = f(DQ, DMS, DW)

Equations 1-5 above can be rewritten in its explicit form as below:

$QS_{it} = \beta_0 + \beta_1 DQ + \varepsilon$ ***eq.1***

$QS_{it} = \beta_0 + \beta_1 DMS + \varepsilon$ ***eq.2***

$QS_{it} = \beta_0 + \beta_1 DW + \varepsilon$ ***eq.3***

$QS_{it} = \beta_0 + \beta_1 DQ + \beta_2 DMS + \beta_3 DW + {}_E$ ***eq.7***

Where:

DQ = Data Quality
DMS = Data Management System
DW = Data Warehousing
$\beta 0$ = Intercept Coefficient
$\beta 1, \beta 2, \beta 3$, = Coefficients of the independent variables
E = Error term

The data were analyzed using descriptive and inferential statistics. Descriptive statistics such as simple percentage and pie-chart will be used to analyse the data while inferential statistics such as Simple Linear and multiple regression analysis will used to test the null hypotheses for the study, using statistical software programme known as Statistical Package for Social Sciences (SPSS), version 25.

The basic aim of the multiple regression models in this study is to examine empirically the extent to which the independent variables can explain the hypothesized performance variable in these construction companies in Uyo along the regression line. The model will be estimated using the coefficient of determination (R^2). It helps to measure the goodness of fit of the model while t-value is used to measure the differences in the mean at 5% (percent) level of significance.

4. DATA PRESENTATION, ANALYSIS, INTERPRETATION AND FINDINGS

Data Presentation

This chapter dealt with the data presentation, analysis and findings. Three hundred and fifty four (354) copies questionnaire were distributed to Nestle Nigeria plc and Cadbury Nigeria during the working hours. In Nestle Nigeria plc, two hundred and sixty-four (264) copies of questionnaire were distributed but two hundred and fifty were filled and returned. While in Cadbury Nigeria Plc , ninety copies of questionnaire were distributed (90) but eighty-five (85) copies of questionnaire were filled and returned respectively.

This represented 99.4% response rate, which is considered very good to make conclusions for a study. Mugerda and Mugenda (2013) posited that,50% response rate is adequate,60% is good on this assertion, 100% response rate was very good. This high response approach used by the researcher in data collection, due to the fact that the research administered the questionnaire with help of a research assistant to the employees during working hours and waited for the respondents to complete the questionnaire before collection. The copies were handled with care as a result of the sensitization on the exercise, and the data were presented in Appendix(iii)

Table 4.1: Questionnaire Administrations

Companies	No. of questionnaire distributed	No. of questionnaire filled and returned
Nestle Nigeria Plc	264	250
Cadbury Nigeria Plc	90	85
Total	**354**	**335**

Source: Field survey (2024)

The table 4.1 showed that two hundred and sixty four (264) copies of questionnaire were distributed to Nestle Nigeria Plc, but two hundred and fifty copies were filled and returned while ninety copies of questionnaire were distributed to Cadbury Nigeria Plc, but eighty five copies of questionnaire were filled and returned. Therefore, three hundred and three hundred and thirty five (335) form the basis for this analysis.

Description of Research Questions using Simple Percentages

Research Question 1

i What is the influence of Data Quality on Competitive Advantage of Food and Beverage Companies in South-South Geo-Political Zone, Nigeria

Table 4.2 Description of Research Question using Simple percentages

	Data Quality	SA	A	D	SD	Total
1.	I perceive the role of data quality in enhancing competitive advantage within the Company	150(44.8%)	100(29.9)	50(14.9)	35(10.4)	
2.	I have confident in the overall reliability of the data sources utilized within the organization	110(32.8)	140(41.8)	55(16.4)	30(9.0)	
3.	My organization takes accurate measures to ensure the timeliness of data update and Maintenance	120(35.9)	135(40.3)	65(19.4)	15(4.5)	
	Total					**335**

Source: Researcher's Computation (2024)

Table 4.2 indicates that 150 respondents representing 44.8% strongly agree that data quality enhances competitive Advantage while 100 respondents representing 29.9% Agree, 50% respondents representing 14.9% disagree and 35 respondents representing 10.4% respondents strongly disagree that they perceived the role of data quality in enhancing competitive advantage of Food and Beverage Companies in South –South Zone, Nigeria. Also, 110 respondents representing 32.8% strongly agree that they have confident in the overall reliability of the data sources utilized within the organization while 140 respondents representing 41.8% agree, 55 respondent representing 16.4 disagree and 30 respondents representing 9.0 strongly disagree that they have confident in the overall reliability of data sources utilized in the organization. Furthermore, 120 respondents representing 35.9% strongly agree that their organizations take accurate measures to ensure the timeliness of data update and maintenance while 135 respondents representing 40.3% agree, 65 respondents representing 19.4% disagree and 15 respondents representing 4.5% staff strongly disagree that their organization takes accurate measures to ensure the timeliness of data update and

Maintenance. The results further showed that most of the respondents strongly agree that data quality have significant impact on competitive advantage of food and beverage companies in South-South Geo-political zone, Nigeria.

Research Question 2

ii How does data management system affect quality of service in food and beverage companies in South-South Geo-Political zone, Nigeria?

Description of Research Question using Simple percentages

	Data management System	SA	A	D	SD	Total
1.	Data management system support data integration across different platforms and applications	125(37.3)	130(38.8)	70(20.9)	10(3.0)	
2.	My organization ensure that data security and compliance are achieved through its regulatory standard	150(44.8)	100(29.9)	55(16.4)	30(9.0)	
3.	I perceive the role of data management system in driving competitive advantage through improved data accessibility and usability	105)(31.3)	145(43.3)	50(14.9)	35(10.4)	
	Total					**335**

Source: Researcher's Computation (2024)

Table 4.3 shows that 125 respondents representing37.3% respondents strongly agree that data management system support data integration across different platforms and application while 130 respondents representing 38.8% agree, 70 respondents representing 20.9% disagree and 10 respondent representing 3.0% strongly disagree that data management system support data integration across different platforms and application. Also, 150 respondents representing 44.8% strongly agree, 100 respondents representing 29.9% agree,55 respondents representing 16.4 % disagree and 30 respondents representing 9.0% strongly disagree that their organization ensure that data security and compliance are achieved through it regulatory standard. In the same vein, 105 respondents representing 31.3% strongly agree, 145 respondents representing 43.3% agree, 50 respondents representing 14.9% disagree and 35 respondents representing 10.4% strongly disagree that they perceive the role of data management system in driving competitive advantage through improved data accessibility and usability. This in Addition, revealed that over 74.6% respondents maintain that data management system has positive interaction with competitive advantage in Food and beverage companies in South-south Geo-political Zone, Nigeria.

Research Question 3

iii What is the effect of data warehousing on quality of service in food and brewage companies in South-South Geo-political zone, Nigeria?

Table 4.4 Description of Research Question using Simple percentages

	Data Warehousing	SA	A	D	SD	Total
1.	Our organizations business goals and objectives align with data warehousing strategies	145(43.3)	115(34.3)	40(11.4)	35(10.4)	

2.	Our companies utilize a data warehouse solution to store and manage large volumes of data for informed decision making	155(46.3)	125(37.3)	30(9.0)	25(7.5)	
3.	We ensure that security and integrity of data stored within our data warehouse are in place.	150(44.8)	130(38.8)	35(10.4)	20(6.0)	
	Total					**335**

Source: Researcher's Computation (2024)

Table 4.4 reveals that 145 respondents representing 43.3% strongly agree that their organizations business goals and objectives align with data warehousing strategies while 115 respondents representing 34,3% agree, 40 respondents representing 11.4% disagree and 35 respondents representing 10.4% strongly disagree that the business goals and objectives of their organizations align with data warehousing strategies. Furthermore, 155 respondents representing 46.3% strongly agree that their companies utilize a data warehouse solution to store and manage large volumes of data for informed decision making while 125 respondents agree. However, 30 respondents representing 9.0% disagree and 25 respondents representing7.5% strongly disagree that they companies utilize a data warehouse solution to store and manage large volumes of data for informed decision- *making*. Similarly, 150 respondents representing 44.8% strongly agree that they ensure that security and integrity of data stored within their data warehouse are in place, 130 representing respondents 38.8% agree. However, 35 respondents representing 10.4% disagree and 20 respondents representing 6.0 strongly disagree that they ensure that security and integrity of data stored within our data warehouse are in place. The result clearly indicates that about 77.6% respondent affirmed the association between data warehousing competitive advantage of food and beverage companies in South-south Geo-political Zone of Nigeria respectively.

Test of Hypotheses

Hypothesis 1

Ho_1: There is no significant effect of data quality on quality of service in food and beverages companies in South-South Geo-political zone, Nigeria.

H_2: There is significant effect of data quality on quality of service in food and beverage companies in South-South Geo-political zone, Nigeria.

Table 4.5 The Simple Linear Regression Analysis on The influence of Data quality on Competitive Advantage of Food and Beverage Companies in South-south Geo-Political Zone

Coefficients

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	T	Sig.
1	(Constant)	.028	.019		1.423	.156
	Data Quality	1.003	.010	.983	98.080	.000

F-value, 9619.725, P-value .000, R^2 - value.967

Source: Researcher's Computation (2024)

Table 4.5 shows the simple linear regression analysis on the influence of data quality and competitive advantage of food and beverage companies in south-south geo-political zone of Nigeria. The results yield R^2 –value of .967, F-value of 9619.725, P-value of .000 and beta coefficients of 1.003 respectively. This implies that data quality can account for 96.9% change in competitive advantage of food and beverage companies in south-south geo-political zone, Nigeria. Also, to ascertain the fit of the model, the F-statistics was computer and result yields 9619.725 which mean that the model is fit to evaluate the interaction between data quality and competitive advantage. This result is supported by the beta coefficients of 1.003 which indicates that 1 unit increase of data quality will produce 1.003 increase in competitive advantage of food and beverage Companies. Statistically, since the F-value of 9619.725 fall within the threshold of acceptance, and P-value of .000 fall within the alpha value of 0, 05%(P<0-05) level of significance in social sciences, it can be affirmed that the null hypothesis which stated that data quality has no significant influence on competitive advantage in food and beverage companies in south-south geopolitical zone of Nigeria is rejected and the alternative accepted , meaning that the association between data quality and competitive advantage is positively correlated

Hypotheses 2

Ho_2: There is no significant of data management on quality of service in food and beverage companies in South-South Geo-political zone, Nigeria.

H_2 : There is no significant of data management on quality of service in food and beverag companies in South-South Geo-political zone, Nigeria

Table 4.5 :The Simple Linear Regression Analysis on the influence of Data management on Competitive Advantage of Food and Beverage Companies in South-south Geo-Political Zone

Coefficients[a]

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	T	Sig.
1	(Constant)	.052	.022		2.336	.020
	Data Management System	.995	.012	.977	84.012	.000

F-value, 7058.058 *, P-value .000, R^2 - value* .955

Source: Researcher's Computation (2024)

Table 4.5 shows the simple linear regression analysis on the influence of data warehousing on competitive advantage of food and beverage companies in south-south geopolitical zone, Nigeria. The results yield R^2 –value of .955, F-value of 7058.058, Beta coefficients of .995 and the corresponding P-value of .000 respectively. This implies that data warehousing can account for 95.5% change in competitive advantage of food and beverage companies in south-south geo-political zone of Nigeria. The result is supported by the Beta coefficients of .995 which means that 1unit increase of data warehousing would produce 99.5% increase in competitive advantage of food and beverage companies in south-south geo-political zone , Nigeria. Statistically, however, to evaluate the fit of the model, the F-statistics is computed and results yield 7058.058 which mean that the model is fit to examine the connection between data warehousing and competitive advantage. Therefore, since the F-value of 7058.058 fall within the threshold of acceptance, and the P-value of .000 lies below the alpha value of 0.05 ($P<0.05$) level of significance in social sciences, it can be concluded that the null hypothesis which states that data warehousing has no significant influence on competitive advantage of food and beverage companies in south+-south geo- political zone of Nigeria is rejected and alternative accepted, meaning that data warehousing has significant influence on competitive advantage. The results further reveal that data warehousing has predictive power to examine the association between data warehousing and competitive advantage of food and beverage companies in south-south geo-political zone, Nigeria.

Hypotheses 3

Ho_1 : There is no significant influence of data warehousing on competitive advantage in food and beverage companies in South-South Geo-political zone, Nigeria.

H_2 : There is no significant of data warehousing on quality of service in food and beverage companies in South-South Geo-political zone, Nigeria

Table 4.5 The Simple Linear Regression Analysis on The influence of Data Warehousing on Competitive Advantage of Food and Beverage Companies in South-south Geo-Political Zone

Coefficients[a]

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	T	Sig.
1	(Constant)	.004	.018		.230	.818
	Data Warehousing	.996	.009	.986	106.957	.000

F-value 11439.863, P-value .000, R^2-value 972

Source: Researcher's Computation (2024)

Table 4.5 indicates the simple linear regression analysis on the influence of data warehousing and competitive advantage of food and beverage companies in south-south geo-political zone, Nigeria. The results yield R^2 – value of .972, f-value of 11439.863 P-value of .000 and Beta Coefficients of .996 respectively. This implies that data warehousing can account for 97.2% variation in competitive advantage of food and beverage companies in south-south geo-political zone, Nigeria. This is supported by beta coefficients of .996 which implies that 1 unit increase of data warehousing will lead to .996 increase in competitive advantage of food

and beverage companies in south-south geo-political zone, Nigeria. However, to evaluate the fit of the model, the F-statistics was computed and results yield the value of 11439.863 which means that the model is fit to evaluate data warehousing and competitive advantage of food and beverage companies in south-south geo-political zone, Nigeria. Therefore leveraging on this interaction between data warehousing and competitive advantage, organization can do better if data are properly stored and maintained to ensure accurate and reliable information for informed decision making. Statistically, since F-value of 11439.863 fall within the threshold of acceptance and P-value of .000 lies below alpha value of 0.05(P<0..05) level of significance in social sciences, it can be affirmed that the null hypothesis which stated that data warehousing has no significant influence on competitive advantage is rejected and the inverse accepted, meaning data warehousing has positive and significant influence on competitive. The result further indicates that data warehousing has explanatory power to explain the association between business intelligence model and competitive advantage in food and beverage companies.

Discussion of Findings

The results of hypothesis one clearly showed that data quality has significant influence on competitive advantage of food and beverage companies of south –south geo-political zone, Nigeria. This means that data quality has the explanatory power to establish the linkage between business intelligence model and competitive advantage. This result is supported by the work o(Robbins and Coulter (2003) posited that quality can also be seen as the state of satisfaction, which customers want to continuously reach Cost is an important factor in achieving competitive advantage for organizations as it always seeks to reduce costs to the extent that does not affect the nature of the product and the goal of its production The result is also in agreement, the result of Oakland (2015) who stated that High quality data is characterized by accurate, timeless and relevance. Organizations must invest in data cleaning, validation, and governance processes to ensure that their BIM systems are built on a foundation of reliable data.

Also, hypothesis two revealed that data management system has significant influence on competitive advantage of food and beverage companies in south-south geo-political zone of Nigeria. This implies that the connection is positively correlated. This result is supported by the work of Umoh *et al*., (2023) who clearly stated that data management system has significant and positive influence on competitive influence on Hotels in Akwa Ibom State. Ahumada and Perusquia (2016) who postulated that modern data management system leverage advanced technologies such as cloud computing, big data platforms, and artificial intelligence to handle vast amount of data efficiently

Furthermore, Hypothesis three indicated that data warehousing has positive and significant influence on competitive advantage of food and beverage companies. It further shows that effective data warehousing has the potency to give companies a competitive edge over rival companies if properly harness and maintain efficiently. This clearly showed that data warehousing is one of the key components of business intelligence model that determines organizational competitive advantage if it is utilize effectively. This finding is in agreement the work of Ali et al., (2018) who clarified that the understanding of the interplay between these components, will enable organization to develop and implement effective BI strategies to gain a competitive edge in today's dynamic business environment.

Summary

1. There is significant influence of data quality on competitive advantage in food and beverage companies in South-South Geo-political zone, Nigeria.

2. There is significant influence of data management on competitive advantage of food and beverage companies in South-South Geo-political zone, Nigeria.

3. There is significant influence of data warehousing on competitive advantage of food and beverage companies in South-South Geo-political zone, Nigeria.

Conclusion

The result showed that the association between data quality, data management system and data warehousing is positively significant. Therefore, it was concluded that there is significant influence of data quality on competitive advantage of food and beverage companies in South-South Geo-political zone, Nigeria. Also, that data management system has significant influence on competitive of food and beverage companies in South-South Geo-political zone, Nigeria, and data warehousing has significant influence on competitive advantage of food and beverage companies in South-South Geo-political zone, Nigeria.

Recommendations

It was recommended in line with the findings of this study that:

1. Since poor data undermined and flawed effective decision making, organizations should ensure that they invest in data cleaning that is characterized by timeless, accurate and relevance for informed business decision-making and gain competitive edge over its competitors

2. Management should adopt flexible data management system that give insights for effective decision-making and gain competitive advantage

3. Organisation should develop reliable data warehousing that is capable of driving valuable insights through technological capabilities and gain competitive advantage over its rivals companies.

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