

The Effect of Decision Support Systems on Strategic Business Decisions: Evidence from Manufacturing Companies in Nigeria

Abstract

This study examined the evaluation of the effect of Decision Support System on Strategic Business Decisions from selected manufacturing companies in Nigeria. The effective utilization of decision support system is crucial in driving business decisions, yet its impact on decision making within Nigeria manufacturing companies remains underexplored. This study examined the evaluation of the effect of Decision Support System on Strategic Business Decisions from selected manufacturing companies in Nigeria. The study employed a qualitative survey research design. The population for the study comprised top-level managers, middle managers, and operational managers from 34 listed manufacturing companies in Nigeria Exchange Group. A stratified random sampling technique was employed to select 1,014 samples. Taro Yamane's formula was employees to select the sample size of 286 respondents. Data collection is collected through a close ended questionnaire based on a five likert scale, designed to assess perceptions and practices related to decision support system. The data were analyzed using ordinary regression analysis to estimate the relationship between the dependent and independent variables. The findings revealed positive significant association between decision support system on strategic business decisions. This study hereby recommended Nigeria Manufacturing companies should invest in robust decision support systems to ensure continuous improvement and accountability. This study concludes that effective implementation and enhancement of decision support system can sustainably impact business decision process in Nigeria manufacturing companies.

Keywords: Decision Support System, Strategic Business Decision, performance evaluation, resource allocation

JEL:M15

1. Introduction

Globally, the challenges of poor business decisions have brought a lot of issues and consequences for organizations such as financial losses, damages to reputation, and legal liabilities. The significance of having decision support system in good condition could not be overstated, particularly for manufacturing companies. Effective decision support system played a pivotal role in providing timely and relevant financial information necessary for strategic business decision-making, performance evaluation, and resource allocation (Sutton, et al., 2021). However, global evidence suggested that manufacturing companies often faced challenges in ensuring the efficacy of their decision support system, leading to suboptimal decision-making outcomes (Bandyopadhyay, 2023).

Previous government and non-governmental reforms, regulations, policies, and guidelines were implemented globally to enhance the quality of decision support system. For instance, nations like the US, the UK, China, and international organization such as the UN enacted regulations and guidelines aimed at promoting transparency, accountability, and standardization in financial reporting and decision support system (Arnold 2016). Similarly, Nigeria implemented various reforms to improve financial reporting standards and enhance corporate governance practices among manufacturing companies (Demigha, 2021).

Despite these reforms and regulations, evidence suggested that decision support system in manufacturing companies might still not be in optimal condition. Issues such as lack of integration with strategic planning, technological limitations, and inadequate performance measurement systems were identified as common challenges faced by manufacturing companies (Dasanayaka et al., 2021). In the Nigerian context, additional challenges such as regulatory inconsistencies, corruption, and infrastructure deficiencies further exacerbated the problem, leading to subpar decision support system (Chandrains, & Zuhroh, 2021).

From the literature, the problem of ineffective business decisions could be linked to a lack of adoption and utilization of decision support systems. In Nigeria, manufacturing companies encountered challenges such as reliance on outdated and limited use of decision support technology, (Gupta & Sagar, 2020). These issues hindered the ability of manufacturing companies to utilize decision support systems effectively, thereby impacting their decision-making processes and overall performance.

The problems surrounding decision support systems among listed manufacturing companies in Nigeria had far-reaching consequences. Investors faced increased uncertainty and risk when making investment decisions due to the lack of transparency and reliability in financial reporting. This uncertainty might deter potential investors, limiting capital inflows and hindering economic growth. Moreover, inadequate decision support system could distort performance evaluations and misguide strategic decision-making, leading to inefficiencies and missed opportunities for growth and profitability (Kavka, et al, 2022).

Ultimately, the consequences of these problems could erode trust in the financial markets, undermine investor confidence, and impede the overall development of the company's economy. Another prominent issue was the lack of standardization and transparency in reporting financial information, leading to inconsistencies and difficulties in assessing company performance accurately (Leitner, & Wall, 2021). This ambiguity in accounting practices raised concerns among stakeholders, including investors, regulators, and the public, regarding the reliability and integrity of financial statements.

Recent studies made significant contributions toward addressing these challenges by exploring various factors influencing decision support systems in Nigerian manufacturing companies. For instance, Leitner and Wall (2022), investigated the effect of decision support systems on listed consumer goods companies in Nigeria, while Verdegay, and Rodríguez (2020), examined the impact of decision support system on the performance of manufacturing firms. These studies provided valuable insights into the complexities of decision support systems in the Nigerian context, offering potential solutions for enhancing decision-making processes.

Despite these efforts, significant challenges persisted, indicating a gap between theoretical insights and practical implementation. In light of the above challenges, this study aimed to examine the relationship between decision support systems and strategic business decisions among listed manufacturing companies in Nigeria. This study examined the evaluation of the effect of decision support system on strategic business decisions from selected manufacturing companies in Nigeria.

This study aimed to provide answers to the following research question below:

- i. What is the influence of decision support systems on business decisions among listed manufacturing companies in Nigeria?

The broad objective of this study was to assess the evaluation of the effects of management accounting practices on strategic business decisions among listed manufacturing companies in Nigeria, while the specific objective is to;

- i. assess the influence of decision support systems on strategic business decisions among listed manufacturing companies in Nigeria.

The following hypotheses is formulated and tested in the study:

- i. H₀₂: Decision support system does not have any significant effect on the business decisions among listed manufacturing companies in Nigeria.

Literature Review

The review of the literature aspect of this study covered three subheadings. This included the conceptual review, the theoretical review, and the empirical review of recent and relevant literature. The section was explored in that sequence.

Conceptual Review

This section gave definitions to the concepts variables of the study. It further showed the interaction and relationship between the dependent and independent variables of the study.

Business Decisions

Business decisions played a crucial role in guiding an organization by setting financial targets, allocating resources effectively, and monitoring performance against predetermined goals (Kimmel et al., 2020). Managers used business decisions to prioritize investments, control expenses, and align organizational activities with strategic objectives.

Kavka et al. (2022), viewed business decisions as the choices made by individuals or groups within an organization to achieve specific goals or objectives. These decisions were crucial for the success and sustainability of the business and could range from routine operational choices to strategic initiatives that shaped the long-term direction of the company. Ahmad et al. (2020), opined that business decisions related to pricing strategies, product mix optimization, and cost control heavily relied on accurate cost information provided by costing systems. Managers used cost data to determine the profitability of products, identify cost-saving opportunities, and make informed decisions about resource allocations.

Business decisions regarding performance improvement, resource allocation, and strategic planning were informed by performance management systems (Oyewole et al., 2019). These

systems provided managers with insights into key performance indicators, enabling them to identify areas of strength and weakness, allocate resources to high-priority initiatives, and drive continuous improvement efforts.

Spacey (2023), conceptualized business decisions as a commitment to a course of action by an organization. While such commitment influenced the future course of actions, it also responded to business conditions, processes, procedures, culture or change in the course of an action. This required techniques and the approval of multiple stakeholders. Conversely, Obi and Agwu (2017), likened business decisions to processes of selecting the best course of action among available alternatives to achieve the organization's goals and objectives. Based on the cost and benefits of available alternatives, a business decision was an act of selection or choice of one action from several alternatives (Ogundajo & Nyikyaa, 2021).

Effective decision support system enhanced the quality and timeliness of business decisions within manufacturing firms by providing managers with accurate and timely information, analytical tools, and performance metrics (Black, 2023). By examining the relationship between decision support systems and strategic business decisions, the study contributed to a deeper understanding of how organizations could leverage financial and non-financial information to drive strategic decision-making and improve performance outcomes.

Decision Support System

Decision Support Systems (DSS) were computer-based information systems that supported business or organizational decision-making activities (Kavka et al., 2022). It provides interactive tools and techniques to help users gather relevant information, analyze data, evaluate alternatives, and make informed decisions while Akter et al. (2019), defined decision support systems as interactive software-based systems intended to help managers in decision-making by accessing large volumes of information generated from various related information systems involved in organizational business processes, such as office automation systems and transaction processing systems. However, Sciarretta et al. (2019), in another study, viewed decision support systems as computer program applications used to improve a company's decision-making capabilities. They

analyzed large amounts of data and presented an organization with the best possible options available.

Additionally, decision support systems are subset of business intelligence aimed at helping organizations make informed business decisions based on vast troves of analyzed data. Sutton et al. (2020), defined decision support systems as interactive information systems that analyzed large volumes of data to inform business decisions. Decision support systems supported the management, operations, and planning levels of an organization in making better decisions by assessing the significance of uncertainties and the tradeoffs involved in making one decision over another, such as payback period, net present value, and cost-volume-profit analysis. Moreover, the payback period was defined as the expected number of years required to recover the original investment. If all factors were held constant, a project with a shorter payback period was considered a better project because investors could recover the capital invested in a short period (Zativita et al., 2019).

Adeyemi (2022), defined decision support systems as interactive computer-based applications that combined data and mathematical models to help decision-makers solve complex problems faced in managing public and private enterprises and organizations. However, Kärenlampi (2021), Net Present Value (NPV) was applied in capital budgeting to analyze the profitability of an investment or project, and this formula was sensitive to the reliability of future cash inflows that an investment or project would yield. NPV compared the value of money received today and the value of that same amount of money in the future by taking inflation and rate of return into account (Gupta & Sagar, 2020). Moreover, decision support systems were interactive human-computer decision-making systems that supported decision-makers rather than replaced them, utilizing data and models. They solved unstructured and semi-structured problems with a focus on effectiveness rather than efficiency in decision processes.

Additionally, Simegn (2020), defined a decision support system as a computer-based information system that supported business or organizational decision-making activities. A DSS was a collection of integrated software applications and hardware that formed the backbone of an organization's decision-making process and helped to make decisions, which might be rapidly changing and not easily specified in advance. Sutton et al. (2020), Viewed that DSS was an

interactive computer system that could be used by managers without help from computer specialists. DSS was an information system that aided a business in decision-making activities that required judgment, determination, and a sequence of actions. The decision support system, within the context of management accounting practices and business decision-making among listed manufacturing companies in Nigeria, sought to provide insights into how technology could enhance decision-making processes and drive performance improvement within organizations.

Theoretical Review

In this study, two theories were reviewed to help explain the theoretical basis on which the study objective and hypothesis rested upon. This included agency theory and contingency theory. Agency theory explained the importance of business decisions, while contingency theory explained the link between decision support system and business decisions.

Agency Theory

This theory was propounded by Michael C. Jensen and William H. Meckling in 1976. Agency theory assumed that both the principal and the agent were utility maximizers with different interests. Both principals and agents acted in their self-interest, striving to maximize their utility. The principal-agent relationship operated under a contractual agreement where the principal delegated tasks or responsibilities to the agent. Principals and agents might have had divergent interests, leading to potential conflicts of interest between them. There might have been a difference in information between principals and agents, with agents potentially having more information about their actions and decisions than principals. Agents might have exhibited risk aversion, especially if their compensation was tied to performance metrics or outcomes. The principal-agent relationship functioned under a contractual relationship. Agency theory studied the problems and solutions linked to the delegation of tasks from principals to agents in the context of conflicting interests between the parties.

This theory had some criticisms, such as it was not only two parties that were involved in every contractual dealing. Critics also argued that the assumption of rationality and utility maximization oversimplified human behavior, ignoring factors such as emotions, biases, and social dynamics. Agency theory focused excessively on the agency problems arising from the behavior of agents,

neglecting the potential shortcomings or actions of principals. The theory did not fully account for the dynamic nature of organizational relationships and the changing preferences or motivations of individuals over time. Also, some critics argued that agency theory was too narrow in its focus on economic factors and failed to consider broader social or ethical considerations in organizational decision-making. It was not possible to determine the expectations of both parties because human expectations were dynamic, and agency theory focused only on the lapses of agents while neglecting those of principals.

In the context of this study, agency theory provided a relevant framework for understanding the relationship between management accounting practices and business decisions within organizations. By designing and implementing effective management accounting practices that aligned the interests of managers with those of shareholders, enhanced transparency and accountability, mitigated agency costs, and facilitated optimal decision-making among listed manufacturing companies in Nigeria, the study explored how principals (owners or shareholders) delegated decision-making authority to agents (managers or employees) and how different management accounting practices influenced this relationship.

Specifically, this study examined how management accounting practices, such as budgeting systems, costing systems, decision support systems, and performance management systems, served as mechanisms for aligning the interests of principals and agents. By analyzing the effectiveness of these practices in mitigating agency costs and ensuring the efficient allocation of resources, this study contributed to understanding how organizations navigated the principal-agent relationship to achieve their objectives.

Though agency theory had weaknesses, despite its weaknesses, it was the theory chosen for this study because it sufficiently covered the critical aspects of the study. It addressed the relationship that existed between management accounting practice and business decision, which was purely a principal and agent relationship, while other theories would complement its weaknesses.

Contingency Theory

Contingency theory was propounded by Fred Fiedler in 1958. Contingency theory shows the relationship between leadership effectiveness and situational circumstances. Contingency Theory

emphasizes the importance of adapting decision support systems to fit the specific needs and circumstances of an organisation. It suggests that different organisations may require different decision support systems based on their unique situations and environments. Contingency Theory offers valuable insights into the dynamic nature of decision support systems and highlights the importance of aligning these practices with the unique circumstances and needs of each organisation.

Contingency theory assumes that the effectiveness of decision support systems depends on the specific circumstances and context of the organisation. Also, assumed that organisations must be flexible and able to adjust their decision support systems to align with changing conditions and requirements. External factors, such as technological changes and industry dynamics, may influence the selection and implementation of decision support systems. Contingency theory also assumes that the primary goal of decision support systems is to enhance organisational performance and achieve strategic objectives. In the context of this study, Contingency Theory provides a relevant framework for understanding the relationship between decision support systems and strategic business decisions in manufacturing companies.

Decision support systems according to Nixon and Burns (2012), discussed that decision support systems may be different from one organisation to the other. This can be related to organisations operating in different industries or sectors. (Green 2015), applied contingency theory to decision support systems and explained that there is no single general standard accounting practice that can be applied to all organisations. In essence, each organisation will have its decision support system practices.

The theory looks at certain influential factors that will assist management in deciding on an appropriate management accounting practice (Green, 2015). These factors can either be technological changes or the infrastructure of an organisation. For example, a manufacturing food company may want to change the technology used to a more modern hygienic and efficient way of handling, processing and packaging its food. It may then consider installing a computer-based system that mass produces its products (Juras. 2014). However, the type of qualified personnel that is required to operate such highly complex equipment will influence the type of decision support systems selected and production costs (Martin et al., 2015).

Critics argue that contingency theory oversimplifies the complexity of organisational dynamics by focusing solely on situational factors and neglecting other important aspects such as organisational culture and leadership styles. Some critics contend that Contingency Theory lacks predictive power and may not provide clear guidance on which decision support systems are most suitable in specific situations. Adapting decision support systems to fit specific contingencies may pose challenges in implementation, as organisations may struggle to identify and respond effectively to situational factors.

Theoretical Framework

This study focused on Agency theory and contingency theory. In the context of this study, Agency theory, propounded by Michael C. Jensen and William H. Meckling in 1976, examined the relationship between principals (shareholders) and agents (managers) within an organization. It assumed that both parties were utility maximizers with different interests and that there could be conflicts of interest between them. In the context of this study, agency theory helped to understand how business decisions were made within manufacturing companies, considering the interests of stakeholders such as shareholders, managers, and employees.

The contingency theory, developed by Fred Fiedler in 1958, posited that there was no one best way to organize or make decisions. Instead, the effectiveness of decision support system depended on the specific contingencies faced by an organization, such as industry dynamics, technological advancements, and market conditions. In the context of this study, contingency theory helped to understand how decision support system is selected and applied within manufacturing companies based on these specific contingencies.

By integrating agency theory and contingency theory, this study sought to evaluate how decision support systems is influenced by the agency relationship between shareholders and managers, as well as the specific contingencies faced by manufacturing companies in Nigeria. It aimed to explore how these theories could help solve the issues of decision support systems and strategic business decision-making, ultimately contributing to a deeper understanding of the factors affecting decision-making processes within manufacturing companies.

Empirical Review

Issues that are related to decision support system and business decisions have received huge and growing attention from various scholars all over the world. Findings, contributions and recommendations from past studies have been of great benefit to all organisations and companies in terms of decision-making, the inconsistency of previous studies' findings calls for further studies because of the dynamic nature of our society and economy. This study will review some recent related studies.

Israel and Patrick (2020), examined the influence of advanced manufacturing technology on the management accounting practices of selected manufacturing firms in Nigeria. A structured questionnaire was used. The data collected was analyzed using the panel least square regression method. The study concludes that advanced technology has a positive and significant effect on the performance of manufacturing firms. The study also concludes that the use of intensive labour has a significant but negative relationship with firm performance.

Obamoyegun et al. (2021), investigated management accounting and its limitations in the decision-making of business organisations in Nigeria. The method of research is exploratory based on Library research where documentary information on the topic as expressed in journal articles, government publications, bulletins, unpublished papers and internet-based materials are utilized to gather information. The study revealed that management accounting has a significant effect on business organisations in Nigeria.

Methodology

This study employed a survey research design. The survey was descriptive research that aimed to describe the characteristics of a population or phenomenon. In this study, the objective was to assess the evaluation of the effect of management accounting practices on business decisions among listed manufacturing companies in Nigeria. It allowed the systematic collection of detailed information directly from respondents, ensuring comprehensive and detailed information about these practices and perceptions. The population of this study are top-level managers, middle managers, and operational managers of each company, totaling 1014 individuals. Stratified random sampling techniques were used to select 1014 samples from 34 listed manufacturing firms on the Nigeria Exchange Group.

This study used Taro Yamane's formula. Based on this, the sample size was 286. A closed-ended questionnaire was employed, and the questionnaire was based on a five-point Likert scale divided into five sub-sections. To establish the reliability of the instrument, Cronbach's Alpha method of reliability was used.

The model for this study is specified below:

$$BD = f(\text{MAP})$$

$$BD = \beta_0 + \beta_1 \text{CS} + \beta_2 \text{BS} + \beta_3 \text{DSS} + \beta_4 \text{PMS} + \epsilon_{it} \dots\dots\dots (1)$$

Where:

BD = business decision

CS = costing system

BS = budgeting system

DSS = decision support system

PMS = performance management system

$\beta_0, \beta_1, \beta_2, \beta_3, \beta_4$ = Constant to be estimated (Interception)

ϵ_{it} = Error Term.

RESULTS AND DISCUSSION

This presents the comprehensive findings from of information obtained from a survey questionnaire administered. The variable was used to test the hypothesis. Only factors from the economy's manufacturing sector were used. Ordinal Logistic Regression and Correlation Coefficient Analysis were used to examine the hypotheses.

Demographic information

This study has 286 respondents. 214 respondents were male, while 72 respondents were female representing 74.83% and 25.17% respectively. 201 respondents, or 70.28% of the population, were top-level managers. Additionally, 34 respondents (11.89% of the population) worked as operational managers. There were 51 middle-level managers indicating 17.83% of the respondents.

On the other hand, 67 respondents (23.43% of the population) reported having between eight to scale level. Nineteen (19) respondents reported between 11 to 13 scale level. That accounts for 6.64% of the total population studied.

There were 200 respondents with 14 level and above scale, or 21.16% of the total population. The total number of respondents with below 10 years of experience was 17, representing 5.94% of the overall population. 48 respondents had between 10 to 15 years of experience, accounting for 16.78% of the total population. 45 respondents had between 16 to 20 years of experience. This represents 15.73% of the total population. 176 respondents had more than 20 years of experience which accounts for 61.54% of the total population.

Table 1: DEMOGRAPHIC STATISTICS

Variable		Freq.	Percent	Cum.
Status	1	201	70.28	70.28
	2	34	11.89	82.17
	3	51	17.83	100.00
Years in service	1	17	5.94	5.94
	2	48	16.78	22.73
	3	45	15.73	38.46
	4	176	61.54	100.00
Level	1	67	23.43	23.43
	2	19	6.64	30.07
	3	200	69.93	100.00
Gender	1	214	74.83	74.83
	2	72	25.17	100.00

Source: Author's computation (2024)

Descriptive information

The study's variables include DSS and BD. While these are categorical variables, median and mode were used to describe its features. DSS, 5 respondents strongly disagreed that DSS is an important factor while 33 respondents were in the disagree category. This denotes 1.75% and 11.54% of the population sample. Of the sample, 84 respondents were undecided about the effect of DSS on business decisions. This denotes 29.73% of the respondents. 123 respondents and 41 respondents were in the agree and strongly agree category. This represents 43.01% and 14.34% of the total respondents.

Also, there varying opinions on BD among respondents. In the strongly disagree category, 5 respondents (1.75%) did not believe at all in various measures put in place to improve business decisions. While 32 respondents (11.19%) thought that such measures were not related to business decisions. 70 respondents were undecided about these measures representing 24.48% of the population sample. In the agree and strongly agree category, 131 respondents and 48 respondents were in these categories. While there were 286 sampled respondents, this represents 45.8% and 16.78% of the respondents believed the measures put in place by business organisations concerning business decision-making.

Table 2: VARIABLES STATISTICS

	Scale	Freq.	Percent	Cum.
DSS	1	5	1.75	1.75
	2	33	11.54	13.29
	3	84	29.37	42.66
	4	123	43.01	85.66
	5	41	14.34	100
BD	1	5	1.75	1.75
	2	32	11.19	12.94
	3	70	24.48	37.41
	4	131	45.8	83.22

Total	5	48	16.78	100
		286	100	

Source: Author's computation (2024)

Interaction Effects

BD	Coef.	Std. Err.	Z	P>z	[95% Conf. Interval]
DSS					
1 1	0 (empty)				
1 3	0 (empty)				
1 4	0 (empty)				
1 5	0 (empty)				
2 1	0 (empty)				
2 2	5.0308	1.8604	2.7000	0.0070	1.3846 8.6770
2 3	0.4405	1.9353	0.2300	0.8200	-3.3526 4.2335
2 4	2.8709	1.9255	1.4900	0.1360	-0.9030 6.6449
2 5	0 (omitted)				
3 2	-0.7975	1.9937	-0.4000	0.6890	-4.7051 3.1101
3 3	-4.5106	2.1877	-2.0600	0.0390	-8.7984 -0.2228
3 4	-2.4443	2.1042	-1.1600	0.2450	-6.5685 1.6799
3 5	-7.4513	2.5343	-2.9400	0.0030	-12.4185 -2.4841
4 2	0 (omitted)				
4 3	-3.6494	1.2353	-2.9500	0.0030	-6.0705 -1.2283
4 4	-0.8608	1.0219	-0.8400	0.4000	-2.8637 1.1420

Source: Author's Computation (2024)

Multicollinearity

Because multicollinearity can inflate the standard errors of the coefficients, ordinal regression analysis assumes no perfect multicollinearity. The study used a correlation matrix test to assess

the degree of multicollinearity among independent variables. It measures the predictive power of independent variables in a regression model. High correlations (e.g., above 0.8 or 0.9) between pairs of predictors can indicate potential multicollinearity issues.

The association between DSS and CS is linear and significant, with a correlation coefficient of 0.4762 and a p-value of 0.0000. Additionally, DSS and BS had a 0.4321 correlation with a 0.0000 p-value. This suggests that DSS and BS have a strong linear relationship.

Table 3: Average Marginal Effects

BD	Category	Delta dy/dx	method Std. Err.	z	P>z	[95% Conf. Interval]
DSS						
	1	-0.0139	0.0065	-2.12	0.0340	-0.0267 -0.0011
	2	-0.0627	0.0140	-4.48	0.0000	-0.0902 -0.0353
	3	-0.0590	0.0127	-4.64	0.0000	-0.0839 -0.0341
	4	0.0507	0.0112	4.54	0.0000	0.0288 0.0726
	5	0.0850	0.0172	4.93	0.0000	0.0512 0.1187

Multicollinearity

Because multicollinearity can inflate the standard errors of the coefficients, ordinal regression analysis assumes no perfect multicollinearity. The study used a correlation matrix test to assess the degree of multicollinearity among independent variables. It measures the predictive power of independent variables in a regression model. High correlations (e.g., above 0.8 or 0.9) between pairs of predictors can indicate potential multicollinearity issues.

The correlation between BD and DSS was 0.4814, with a p-value of 0.0000. This implies a strong linear link between the BD and the DSS. This implies that there is a linear and significant link. Overall, there was a moderate correlation between BD and DSS respectively indicating no

potential multicollinearity issues in the model as a correlation coefficient of 1 denotes perfect multicollinearity.

Table 4: Correlation analysis

	BD	DSS
BD	1.0000	
DSS	0.4814*	1.0000
	0.0000	0.0000

Source: Author's Computation (2024)

Model's Estimation, Prediction and Analysis

The DSS's beta coefficient is 0.7811, with a 0.000 p-value. This suggests that if decision support systems are made better on a unit-by-unit basis, the likelihood of being in a higher category of business decisions will improve by 78.11. However, a relative risk (or odds ratio) of 1.0 indicates no difference in risk (or odds) between groups. While a relative risk (or odds ratio) greater than 1.0 indicates an increased risk (or odds) between dependent and independent variables, a relative risk (or odds ratio) less than 1.0 indicates a decreased risk (or odds ratio) between dependent and independent variables.

Table 5a: Ordered Logistic Regression (Log Odd)

$$BD = f(DSS)$$

$$BD = \beta_0 + \beta_1 DSS + \epsilon_{it}$$

(The table below is the model interpretation)

BD	Coef.	Std. Err.	z	P>z	[95% Conf.	Interva l]
			5.000	0.000		
DSS	0.7811	0.1563	0	0	0.4748	1.0875
/cut1	2.3314	0.8026			0.7584	3.9045
/cut2	4.5528	0.6977			3.1853	5.9204
/cut3	6.2659	0.7251			4.8447	7.6870
						10.867
/cut4	9.1883	0.8566			7.5094	2

LR chi2(4) = 114.12
 Prob > chi2 = 0.0000
 Pseudo R2 = 0.1514
 Durbin-Watson d-statistic
 test 2.1074
 LR test of proportionality of
 odds 7.19(0.8446)
 0.0000(1.000
 Endogeneity 0)
 Iteration 0: log likelihood = -376.7998
 Iteration 1: log likelihood = -322.3492
 Iteration 2: log likelihood = -319.7521
 Iteration 3: log likelihood = -319.7419
 Iteration 4: log likelihood = -319.7419

Source: Author's Computation (2024)

Table 5b: Ordered Logistic Regression (Odd Ratio)

$BD = f(DSS)$

$BD = \beta_0 + \beta_1 DSS + \epsilon_{it}$

(The table below is the model interpretation)

BD	Coef.	Std. Err.	z	P>z	[95% Conf. Interval]
			1.380	0.168	
CS	1.2556	0.2072	0	0	0.9086 1.7352
			2.330	0.020	
BS	1.4465	0.2296	0	0	1.0597 1.9744
			5.000	0.000	
DSS	2.1839	0.3414	0	0	1.6076 2.9667
			3.660	0.000	
PMS	1.7391	0.2627	0	0	1.2934 2.3384
/cut1	2.3314	0.8026			0.7584 3.9045
/cut2	4.5528	0.6977			3.1853 5.9204
/cut3	6.2659	0.7251			4.8447 7.6870
/cut4	9.1883	0.8566			7.5094 10.8672
LR chi2(4) =	114.12				
Prob > chi2 =	0.0000				
Pseudo R2 =	0.1514				

Iteration 0: log likelihood = 376.7998
Iteration 1: log likelihood = 322.3492
Iteration 2: log likelihood = 319.7521
Iteration 3: log likelihood = 319.7419
Iteration 4: log likelihood = 319.7419

Source: Author's Computation (2024)

Discussion

This study demonstrates the decision support systems' effect on a firm's strategic decision-making processes in Nigeria. There were 286 participants in the study, of which 74.83% were men and 25.17% were women. Of all employees, 70.28% were top-level managers and 11.89% were operational managers. 17.83% of managers were at the middle level. Sixty-six percent of the group had experience levels between 8 and 13. 5.94% of the group has fewer than ten years of experience. Most of them had worked for more than twenty years. The study found that there is an increased likelihood of BD being in a higher category for DSS. The odd ratios for DSS and PMS 2.1839 respectively. The predictive margin for DSS on BD indicated that 1.85% strongly disagreed, 11.17% disagreed, and 24.11% undecided. 46.41% agreed, while 46.41% agreed, and 16.44% strongly agreed. Although, this indicates a mixed response, 62.85% of respondents agreed that DSS improve BD. This represents the majority of the population sample.

Conclusion

The study found that Decision Support Systems (DSS) had positive effect on strategic business decisions. A significant majority of respondents agreed on the importance of DSS, highlighting its role in enhancing the quality and speed of decision-making processes.

The study concludes that Decision Support Systems play a crucial role in enhancing strategic business decision-making processes among listed manufacturing companies in Nigeria.

Recommendation

The study recommend that management should create rooms for training programs for employees to enhance their skills in using Decision Support System tools effectively for informed decision-making.

Disclaimer (Artificial intelligence)

Option 1:

Author(s) hereby declare that NO generative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc.) and text-to-image generators have been used during the writing or editing of this manuscript.

Option 2:

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Details of the AI usage are given below:

1.chartgpt, openai, 3.5

2.

3.

Consent

As per international standards or university standards, respondents' written consent has been collected and preserved by the author(s).

COMPETING INTERESTS DISCLAIMER:

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Authors have declared that they have no known competing financial interests OR non-financial interests OR personal relationships that could have appeared to influence the work reported in this paper

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