RELATIONSHIP BETWEEN SUSTAINABLE DEVELOPMENT AND MANUFACTURING FIRMS PERFORMANCE IN EDO STATE, NIGERIA

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Abstract: *This study examines sustainable development in manufacturing firms' performance in Edo State, Nigeria. The purpose was to establish the association among social, economic and environmental developments on manufacturing firms in Edo State. The methodology utilized was the survey research proportions. The population comprised of top level employees of ten selected manufacturing firms registered with the Manufacturers Association of Nigeria (MAN) in Edo state, with international affiliation. A total of one hundred (100) employees of the ten selected manufacturing firms in the state, constituted the sample size. The purposive sampling technique was made use to choose ten (10) employees each from the designated manufacturing firms. Data analysis engaged was the descriptive and inferential statistics. The outcomes discovered that manufacturing firm's social and economic developments were significant predictors of sustainable development among the manufacturing firms, in the State, while environmental development was insignificant. The study recommended that manufacturing firms should exemplify social development program as core values, it is also recommended, that they formulate and implement economic development policies that will foster the growth of their firms, the study concluded that firms should take proactive measures to minimize their environmental approach by adopting eco-friendly initiatives.*

Keywords: Economic development, Environmental development, Manufacturing firms, Social development, Sustainable development

JEL Classification: M31, M38, L95, L20.

1. Introduction

Sustainable development has gained significant prominence within Nigeria's manufacturing industry in recent years. Agwu, Emeti and Nwobu (2018) explained that sustainable development embodies a development approach that addresses present needs while safeguarding the future generations' ability to fulfil their own requirements. Beginning from the manufacturing viewpoint, this translates into the adoption of practices that are socially reasonable, economically worthwhile and environmentally accountable.

One fundamental systematic procedure through which sustainable development is being tackled in Nigeria's manufacturing sector is through the adoption of green manufacturing practices. Green manufacturing entails the reduction of waste and emissions, utilization of

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renewable resources, and the design of products with recyclability in mind, as expounded by Akinlabi, Akinlabi and Akinlabi (2017). Oluyemi and Oluseyi (2019) opined that green manufacturing practices can substantially moderate the environmental effect of manufacturing operations, therefore contributing to sustainable development. Nevertheless, the growth of manufacturing firms in Nigeria has been obstructed by challenges such as deficiency of adequate infrastructures, contradictory policies, financial constraints and scarcities of skilled labour among others (Ogundipe & Urim, 2019). Though, sustainable development in Nigeria's manufacturing sector exceeds environmental issues; it also incorporates both social and economic issues. Adeoye, Adeoye and Agunbiade (2019) postulate that sustainable development within this sector should also centre on creating decent employment opportunities, promoting gender equality, enhancing the well-being of local communities and so forth. Attaining this inventiveness includes sourcing materials and labour locally, providing trainings/workshops for the workforce, adapting to modern technologies and providing adequate welfare packages among others. Sustainable development covers different dimensions, most outstandingly social, economic and environmental, all essential for the development of long-term social welfare, economic progression and environmental conservation. Starting from the social aspect of sustainable development it concentrates on augmenting fairness, equity, justice and all-encompassing. In the setting of Nigeria's manufacturing industry, there exists a necessity to investigate the social factors impacting sustainable development. Afolabi, Kuye and Babalola (2021) have observed that inadequate awareness among stakeholders constitutes a substantial barrier to achieving sustainability in the sector. The economic facet of sustainable development aims to promote enduring economic growth while ensuring equitable distribution of economic benefits throughout society. In the context of Nigeria's manufacturing sector, Abegunde, Aremu and Salawu (2019) have highlighted the sector's potential as an engine of sustainable economic growth, though it faces challenges like insufficient infrastructures and financial limitations affecting this sector among others. The environmental dimension of sustainable development emphasizes environmental preservation while ensuring that economic and social development remain uncompromised. In the Nigeria situation, numerous studies have analysed the environmental factors influencing sustainable development. Ogunbodede and Adeleke (2021) illustrated that insufficient infrastructure and weak institutional frameworks hinder sustainable development in the sector. Hence, the necessities to critically analyse the different dimensions and fill the gaps in order to empirically ascertain the correlation among sustainable development and manufacturing firms' performance in Edo state.

2. Review of Related Literature and Formulation of Hypotheses

2.1. Manufacturing Firms

Ahmed and Adelaja (2019) defined manufacturing firms as those businesses that are engaged in tangible goods production. In the Nigeria perspective it comprised firms actively involved in the transformation of raw materials or components into finished products through a systematic combination of human, physical and chemical processes among others. These firms primarily operate within diverse sectors such as food processing, textiles, chemicals, automobiles, electronics and so forth (Ibenta, 2017). The Nigerian government has acknowledged the pivotal role played by manufacturing firms in fostering economic growth, employment generation, diversification of exports and has therefore enacted policies aimed at bolstering the sector's development (Adesina, 2018).

Manufacturing firms exhibit varying dimensions in terms of size and operational scale, spanning from Small and Medium-scale Enterprises (SMEs) to massive transnational establishments (Ibenta, 2017). Thus, they distinguish themselves from other business categories, such as service-oriented or trading enterprises, by their central emphasis on the

tangible production of goods, as opposed to the provision of intangible services or the exchange of goods (Adesina, 2018).

Manufacturing enterprises in Nigeria can be characterized by their production capabilities, which encompass the judicious utilization of labour, capital and technology to yield value-added products (Ogundipe & Urim, 2019). These entities typically operate from physical facilities, such as factories or production plants, where the intricate manufacturing processes transpire (Adesina, 2018). Furthermore, they depend on a skilled workforce equipped with technical expertise to proficiently oversee and manage the production procedures (Ogundipe & Urim, 2019). The trajectory of the manufacturing sector in Nigeria has been shaped by a multitude of factors, including government policies, technological advancements, global economic trends and other related issues (Ibenta, 2017). Additionally, the functioning of manufacturing firms in Nigeria often necessitates substantial capital investments, channelled towards the acquisition of machinery, equipment and raw materials, in addition to funding Research and Development (R&D) endeavours (Ahmed & Adelaja, 2019).

2.2. Sustainable Development

Sustainability in the current government and business activities is generally acknowledged (Peattie, 2001). In 1987, the United Nations published the Brundtland Report which has comprehensively been accepted; describe sustainable development as a procedure of meeting the needs of the present without conceding the future generations their ability to meet their needs (United Nations, 1987). Sustainability takes an all-inclusive viewpoint by integrating the three dimensions of society, economy and environment. They are referred as the Triple Bottom Line (TBL) formulated by John Elkington. It is also known as the three-pillar model, which postulates that sustainable development entails the simultaneous quest of social, economic and environmental objectives. Hence, it underscores the necessity of harmonizing social, economic and environmental considerations in decision-making processes and recognizes the inherent interconnectedness and mutual reinforcement of these dimensions (Elkington, 1997). Sustainable development is an ever-evolving and dynamic concept shaped by various factors such as globalization, technological advancements, and shifting societal values (Lele, 2018).

2.3. Dimensions of Sustainable Development and Formation of Hypotheses

Social Development

Choi and Ng (2011) state that social sustainability revolves around the well-being of individuals and communities, serving as a form of non-economic wealth. Karpagam (2014) opined that the identical philosophies of justice and equality have been fundamentally linked to social dimension of sustainable development. Social sustainability complements human rights and human development, corporate power and environmental justice, global poverty and citizen action, responsible global citizenship relationships in an organize manner give the impression of easy matters of personal consumer or moral choice at the beginning (Brown & Bessnat, 2003).

> *H_{01}: Social development has no statistically significant association on manufacturing firms in, Edo State.*

Economic Development

Karpagam (2014) disclosed that the economic sustainability aspect necessitates that societies should follow growth path that create optimal flow of income, concurrently their elementary stock of manmade capital, human capital and natural capital is still being sustained. According to Caradonna (2014), economic sustainability demands the establishment of a system capable of consistently producing goods and services, avoiding excessive indebtedness and striking a balance among various sectors of the economy.

Sustainable companies during any period give assurance of sufficient cash flow so as to warrant liquidity while producing tenaciously to their shareholders above returns (Dyllick & Heckerts, 2002). Hence, economic sustainability focus on distribution of resources equitably so as achieve significant effect through the decrease of resource exploitation adverse magnitudes

H_{02}: Economic development has no statistically significant association on manufacturing firms in Edo State.

Environmental Development

Environmental sustainability encompasses the prudent management of resources to minimize environmental harm and preserve biological diversity and natural heritage (Cozzio, 2019). Buyukozkan and Cifei (2010) indicated that the modern business environment would depend in their supply chains for their company existence on the grade at which companies accepts that aspects. Karpagam (2014) also stated that the environmental element similarly requires resourceful sustainable usage, efficient sink role and conservation of stock of capital that are natural, that is performance in the environment should be liking to its ability to demonstrate its three functions proficiently and continuously in order for the stability of the ecology and the resilience not to be disturbed.

H_{03}: Environmental development has no statistically significant association on manufacturing firms in Edo State.

2.4. Underpinning Theory for the Study

Dowling and Pfeffer (1975) opined that organizational legitimacy led to the consequential introduction of legitimacy theory. It is the significance that exists between the larger social system and an entity that have similar value. In the event of disagreement among the value systems, there is a potential risk to the entity of legitimacy theory. Thus, the theory underlines the importance of organization to fulfil their social responsibility so as to sustain their growth. Burlea Şchiopoiu and Popa (2013) opined that legitimacy theory stimulates and encourages firms in formulating and executing their charitable environmental and social exposures, so that their objectives and social contracts will be accomplish which can guarantee their survival in times of crunch.

Legitimacy theory ensures to confirm that firms are seen to confine their activities in line with the standard of their host societies, which they will be, perceive as being legitimate by the outside societies. These limits and customs are well thought out as being stable, but dynamic. Henceforth, organizations need to be responsible and morally committable to their host environment through which they function (Deegan & Unerman, 2011).

Deegan (2002) stated precisely that firms existence might be endangered if its social contract is perceived that it has been break through by the society.

2.5. Conceptual Framework

A conceptual framework serves as a visual depiction elucidating the interplay between the independent variables and dependent variable. The ensuing diagram offers a graphical representation of this relationship:

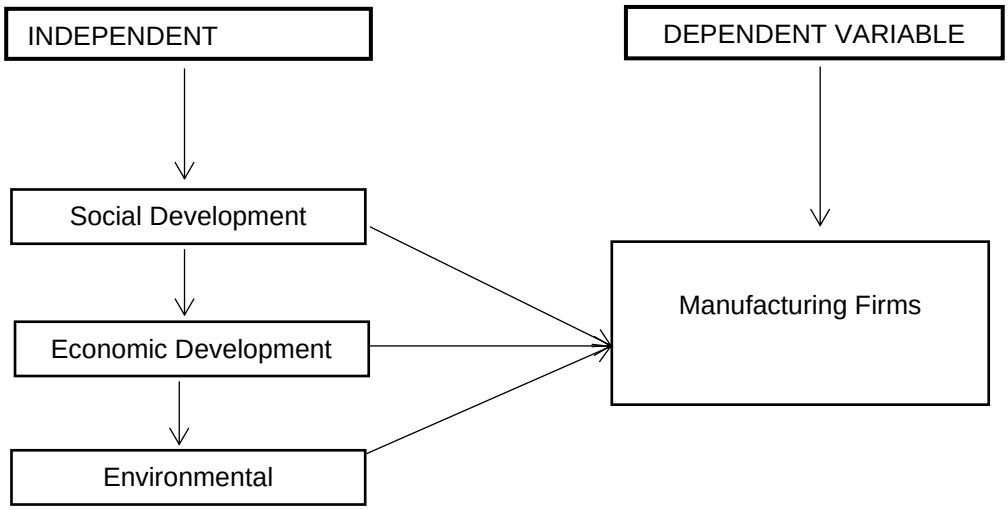

Figure 1: Conceptual Framework
Source: Researchers' construction (2024)

3. Methodology

The survey exploratory technique was utilized. Senior level employees of ten selected manufacturing firms in Edo state, located in the South-South geopolitical zone of Nigeria that are registered with the Manufacturers Association of Nigeria (MAN) with transnational association, within the three senatorial districts (Edo Central, Edo North, and Edo South constituencies) in the state, made up the population of the study. Ten respondents were systematic prudently chosen from each of the ten selected manufacturing firms using the purposive sampling approach. This method allows the researchers to decide the elements to be chosen intentionally which remain paramount (Kothari & Garg, 2016). Thus, the sample size comprised of one hundred (100) respondents. Primary source of data was employed, in order to administer the questionnaire and gather the necessary information from the selected manufacturing firms' employees who are the study respondents. To confirm the appropriateness of the hypotheses of the study professionals were consulted, also thirty (30) copies of the questionnaire were given to respondents in a pilot study for the research instrument to be experimented. The construct composite reliability co-efficient (Cronbach's alpha) was utilized to test the data from the assembled questionnaire with the aim of ascertaining the instrument internal consistency. The latent variable values for each items were above the recommended value of 0.80, which indicate that it is better if the reliability coefficient gets closer 1.0 better still acceptable if beyond 0.80 (Sekaran, 2003). The introduction letter of the questionnaire was used to inform the respondent the purpose of the study in order to enhance positive response rate and guaranteeing the confidentially of the information provided. The structure that made up the different categories of the questionnaire include (Section A and B). The demographic details of the respondents were in section A, while section B encompasses responses relating to dependent and independent variables. The dependent and independent variables were measured using the five-point Likert scale to evaluate the questionnaire which is the research instrument, accordingly rated as SD=1 for Strongly Disagree, D=2 for Disagree, UD=3 for Undecided, A=4 and SA=5 for Strongly Agree. To expedite the quick returns of the questionnaire it was administered manually and collected at a mutual agreed time from the respondents. The platforms for the descriptive and inferential statistics data analysis include the Statistical Package for Social Sciences (SPSS version 24.0) and Econometric Views (EViews 10.0) software which were used to analyse the coded data.

4. Results and Discussions

The study focus on a sample size comprising of one hundred (100) respondents (employees) of the selected manufacturing firms in Edo state. Correspondingly, the respondents were given out each copy of the questionnaire to fill. A remarkable response rate of 100% questionnaire copies were gathered and ascertained to be suitable was imputed into SPSS v 24.0 and EViews 10.0 software for the descriptive and inferential projected detailed statistical review.

Descriptive Statistics

This was employed to measure the profile of the study respondents:

Table 1: Respondents demographics data

Variable	**Category**	**Frequency (n=100)**	**Percentage (100%)**
Gender	Male	63	63.0
	Female	37	37.0
Marital status	Single	31	31.0
	Married	69	69.0
Age classification	22 - 26years	27	27.0
	27 - 31years	37	37.0
	32 years and above	36	36
Highest Educational qualification	SSCE/GCE	6	6.0
	ND/NCE	11	11.0
	HND/First Degree	27	27.0
	Master's Degree	51	51.0
	Ph.D.	5	5.0
Years of working Experience	1– 5	18	18.0
	6 – 10	24	24.0
	11 – 20	47	47.0
	21 and above	11	11.0

Note: GCE- General Certificate of Education, HND - Higher National Diploma, NCE- National Certificate of Education, ND - National Diploma Ph.D. - Doctor of Philosophy & SSCE - Senior Secondary Certificate of Education

Source: Researchers' field work (2024)

The tables exemplify the study respondents' profile. Gender revealed that 63 (63%) are males, while 37 (37.0%) are female. Marital status indicates 31(31.0%) are singles, while 69(69.0) are married. Furthermore, age classification shows that, 27(27%) are within 22-26 years; 37(37.7%) are between 27-31 years, 36(36.0%) are above 32 years. Educational qualification shows that 6(6.0%) had SSCE/GCE, 11(11.0%) represent HND/First degree, also 51(51.0%) acquired master's degree, while 5(5.0%) obtained Ph.D. Years of working experience, also demonstrate that 18(18.0%) had 1-5 years of experience, 6-10years represent 24 (24.0%), 47(47.0%) 11-20 years, lastly 11(11.0%) accounts for 21years and above.

Inferential Statistics:

To scrutinize the gathered data and evaluate the level of multicollinearity, correlation analysis was used. Finally to test for the specified hypotheses the Ordinary Least Square (OLS) assessment technique was also utilized for the study.

Table 2: Correlation Analysis.

Variable	MF	SOD	ECD	END
MF	1.000000			
SOD	0.317601	1.000000		
ECD	0.191749	0.362571	1.000000	
END	0.191749	0.303557	0.375963	1.000000

Note: Significant at the 5% level, Manufacturing Firms (MS), Social Development (SOD), Economic Development (ECD) & Environmental Development (END)
Source: Researchers' computation (2024)

The table demonstrates the correlation analysis utilized to determine the variables of the study. When the correlation coefficient is 0.90 and exceeding, statistically multicollinearity among exogenous latent constructs is existing (Hair Jr., Black, Babin and Anderson, 2014). The dependent variable of manufacturing firms and the independent variables of social, economic and environmental development are positively with values of 0.317601, 0.191749 and 0.247008 Indicating that they are judiciously correlated, underneath the benchmark of 0.90. In conclusion it affirm that the issue of multicollinearity is not present

Table 3: Ordinary Least Square (OLS)

Variable	Coefficient	Standard Error	t-Statistic	Probability Value	Hypotheses
(Constant)	1.130894	0.373275	3.029656	0.0000	Significant
SOD	0.326750	0.068953	4.738724	0.0068	Significant
ECD	0.216078	0.079322	2.724046	0.5142	Insignificant
END	0.042989	0.065840	0.652933	0.0026	Significant
(SUMMARY STATISTICS) R-squared = 0.846384; Adjusted R-squared = 0.302111; F-statistic 33.72663 = Prob(F-statistic) = 0.000000; Durbin-Watson Stat = 1.894629					

Note: Significant at the 5% level, Manufacturing Firms (MS), Social Development (SOD), Economic Development (ECD) & Environmental Development (END)
Source: Researchers' computation (2024*)*

The table shows that the (R-squared) coefficient of determination having an evaluation on the selected manufacturing firms of 0.846384 which indicates analytically alterations of 85% in the dependent variable were accredited by influences in the independent variables, indicating the strength of the model. The error term accounted for the remaining 15% factors not included in the regression model. After the model has been adjusted for the degree of freedom, the R-square value of 0.302111was obtained. The model also revealed that 30% inequalities occur after adjusting the degree of freedom by the independent variables. The F-statistics of 33.72663 is significant at Prob (F-statistic) value of 0.000000 which is less than the significant level of 1%, 5% and 10%, which disclose that there is a linear significant association of between the dependent variable and independent variables. 1.894629 of the Durbin-Watson Statistics unveils the nonappearance of multicollinearity.

Test of Research Hypotheses

Hypothesis One

The table above shows that there is positive and significant relationship. This is affirmed by the t-statistic of 4.738724 and at *p*-value of 0.0068 which is lower than 5% level of significance. Based on the result, the formulated null hypothesis was rejected. Accordingly, Social development is statistically significant.

Hypothesis Two
The table also revealed that there is positive, but insignificant relationship. This is established by the t-statistic of 2.724046 and at *p*-value of 0.5142 which is higher than 5% level of significance. The specified null hypothesis was accepted. Consequently, economic development is statistically insignificant.

Hypothesis Three
Lastly the table proves that there is positive and significant relationship. This is asserted by the t-statistic of 0.652933 and at *p*-value of 0.0026 which is lesser than 5% level of significance. The decision was to reject the null hypothesis. In conclusion, environmental development is statistically significant.

Discussion of Findings
Firstly, it was discovered that social development is statistically significant. This result harmonized with Brown and Bessent (2003) who opined that justice and equity are equivalent ideologies upon which social component of sustainable development facet depends on. Secondly, the study also revealed that economic development is statistically insignificant. It contradicts the study of Caradonna (2014) that economic sustainability demands the establishment of a system capable of consistently producing goods and services, avoiding excessive indebtedness and striking a balance among various sectors of the economy. Lastly, the study exposed that environmental development is statistically significant. Accordingly, it validate the study Karpagam (2014) who ascertain that the module of the environment similarly requires the use of sustainable resources, functions that are efficiently sunk and the maintenance stock, including natural capital.

5. Conclusion
This study on sustainable development within manufacturing firms contributes significantly to our comprehension of the multi-dimensional impacts of development in the manufacturing industry. Comprehensively, this study proposes sustainable development and manufacturing firms, as a theoretical and empirical framework that identified the dimensions employed for the study. It reinforces the notion that social development plays a pivotal role in enhancing customer relationships and positively influencing manufacturing firms. Furthermore, notwithstanding the statistical insignificance, the positive influence of economic development on the manufacturing sector highlights the importance of economic stability and growth. In conclusion, the statistical significant and positive effect of environmental development underscores the need for on-going efforts in environmental sustainability.
This research underlines the interconnected nature of social, economic, and environmental factors in achieving sustainable development within manufacturing firms, offering valuable insights for policymakers and industry leaders striving to balance these dimensions effectively.

6. Recommendations
The following recommendations were suggested, based on our findings.
- Manufacturing firms should exemplify social development program as core values; this will necessitate the need to invest in staff welfare, engaging in Corporate Social Responsibility (CSR) activities.
- Also, they should formulate and implement economic development policies that will foster the growth of their firms, in turn enhance profitability.

- In conclusion, they should take proactive measures to minimize their environmental approach by adopting eco-friendly initiatives, embracing renewable energy sources and be committed sustainability development.

7. Further Studies

The followings were proposed for further studies.

- In order to augment a broader perspective, other researchers should embark on with additional representative of the sample size of respondents.
- Furthermore, the scope of study should be expanded to encompass a larger and more diverse sample of manufacturing firms thus, enhancing the generalizability of the findings.
- Lastly, other studies should be extended to other industries in relation to sustainable development dimensions.

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