Innovations

# The Effect of Business Ethics Practices on Manufacturing Firms Sustainability: A Non-Parametric Approach

1. **Dr. Anisiuba, Chika Anastesia** [2]**Dr.Ojukwu, Chioma Obianuju**
[3]**Akwue, Ojore Solomon** [4]**Dr Edith, Ogoegbunam Onyeanu**

[1,3] Department of Accountancy, Faculty of Business Administration, University of Nigeria, Enugu Campus
[2]Department of Accounting, Faculty of Management Sciences, University of Port Harcourt. Choba Rivers State Nigeria
[4]United States Army Chaplain Corps. USA

Corresponding Author : **Dr Edith, Ogoegbunam Onyeanu**

***Abstract***:

*Wide attention is currently being paid to organisational sustainability. This development can be attributed to the recent business leader's realisation that the organisation needs societal recognition and environmental preservation in addition to protecting the interests of shareholders. Despite the advantages of sustainable business practices, of which ethical business is a part, almost every economic sector has experienced business scandals. Most organisations now have weak corporate governance and unethical business practices as a result of corruption and profiteering, which has negatively impacted customers, society, and the long-term viability of the company. Remarkably, the study examines the relationship between business ethics practices and the sustainability of manufacturing firms in Nigeria. This study utilised a survey research design. A five-point Likert scale questionnaire was used for data collection. The data collected were analysed using the non-parametric approach, ordinal regression, and Spearman Rank Correlation. The study reveals that, jointly and individually, Business ethical practices have a significant positive association with the manufacturing firms' economic, social, and environmental performance. This implies that as Business ethical practices increase, manufacturing firms' sustainability also increases. This makes business ethics an indispensable antidote to manufacturing firms' sustainability in Nigeria. We recommend that manufacturing firms make business sustainability an integral part of strategic planning and incorporate business ethics codes into the firm's mission and vision. They should imbibe the culture of employee training and retraining on business ethics and reward ethical employees. They should also ensure strict adherence to ethical business practices by the management and the employees through promoting accountability, integrity, and sincere supervision. Furthermore, the government should strengthen and implement business laws/regulations, reward ethical firms, and punish unscrupulous firms.*

***Keywords***: *ethical business practices, firms sustainability, non-parametric approach, manufacturing firms, economic-related practice, social-related practice, environmental-related practices*

## 1. Introduction

Organisational sustainability has become a growing priority in the business world, both in developed and developing economies, with many companies actively integrating sustainability principles into their long-term plan (Ugoani, 2019). This priority came into being as a result of the growing level of corporate wrongdoing, changing societal expectations, technological advancement, and increasing awareness of the need for social and environmental responsiveness/conservation across the globe, as well as their potential to ensure firms' credibility and profitability (Adda, Azigwe, &Awuni, 2016; Ugoani, 2019).

In Nigeria, organisational sustainability is currently receiving wide attention. This development can be attributed to the recent business leader's realisation that the organisation exists to protect the shareholder's interest(s) and needs societal recognition and environmental preservation. Besides organisational sustainability, the need for business ethics is also gaining ground as a result of the high rate of corruption and unhealthy business practices/competition, which is causing harm to the customers as well as to societal values and morals (Anupam, Dangayach & Rakesh, 2011; Wiid, Cant, & Niekerk, 2013). Based on these researchers' views, it is evident that most business organisations in Nigeria, including manufacturing firms, have a problem with unethical business practices and unsustainability. The alarming rate of business failures and closures in the country evidences this. According to Dim and Dapper (2016), when businesses behave unethically, they act morally unacceptable to society, causing considerable damage to the customers, societal values/morals, and the business organisation itself.

All firms must uphold high ethical standards and adhere to laws and regulations in their operation areas. Manufacturing companies are particularly challenged because of the risk of endangering customers and employees. The chance of worker damage and the likelihood of the products being dangerous for consumers exist while working on the production line. It is not only morally right, but it is frequently also required by law to put policies, processes, and controls in place to reduce these risks. Safety in the workplace is a priority for ethical enterprises. The presence of machines and raw materials in a manufacturing environment makes adequate safety procedures ethically and legally necessary, in addition to basic safety precautions like wearing protective gear and abstaining from risky behaviour. The main concerns revolve around balancing productivity, inconvenience, and safety (Bert, 2019).

The sustainability concerns should be accepted by businesses and addressed. Achieving this might not be simple. However, ignoring the opinions and views of internal and external stakeholders may indirectly impede the company's development (Boesso, Favotto, & Michelon, 2015; Boesso and Kumar, 2016). The external environment profit when companies implement a solid and rigid sustainability strategy. Companies gain legitimacy and a better reputation by engaging in this moral behaviour (Cho and Patten, 2007; Lai, Melloni, and Stacchezzini, 2016). Irrespective of the benefits of sustainable business practices, which ethical business practices are part of, virtually every economic sector has a business scandal. The organisation appears to have violated the law, rules, or standard of behaviour or failed to heed compliance warnings (Jaeger, 2019). The violations are seen in areas of the company not being conscious of the environment where they operate, finances being manipulated to show a better Statement of financial position, bribes being given to secure a business deal, child labour being used to assemble a product, discriminatory practices being perpetuated to prevent the employment or promotion of members of a particular group, secret company information has been stolen to outsmart the rivalry, and competitor's image has been dented to increase market share (Dim & Dapper, 2016; Jaeger, 2019).

In reviewing works of literature, it was seen that some of the earlier studies attempted to address the issue of business ethics. They aimed to ascertain the effect of business ethics on different dimensions of corporate image/business type such as performance, management practice/sustainability; business success and growth; organisational sustainability; environmental sustainability; moral behaviour; small and medium scale enterprises (SMEs) sustainability; hospitality and tourism businesses sustainability as well as on entrepreneurial survival and sustainable growth (Enuoh, Okoh, Iheanacho, Ekpe, & Pepple 2020; Ugoani, 2019; Wiid, Cant, & Niekerk, 2013; Ma, Cao, Jiang, Gao, & Du, 2020). However, this study

exploits business ethics as an antidote to the sustainability of manufacturing firms in Enugu, Eastern Nigeria. It focused on ethical business practices and their association with manufacturing firms' sustainability. This study jointly examines the relationship between ethical business practices and the sustainability of manufacturing firms in Nigeria using economic, social, and environmental practices as sustainability measures. Moreover, most of the related studies used multivariate linear regression models, multiple regression analysis, and percentage distribution to analyse the data collected (Ugoani (2019) and Ma, el ta (2020), but this study utilised a non-parametric approach for data analysis to ascertain the relationship between the respective variables of interest. In light of this, the following hypotheses are presented:

**H1:** Business ethical practices have a significant relationship with the economic-related practices of manufacturing firms in Enugu State, Eastern Nigeria

**H2:** Business ethical practices are significantly related to the social-related practices in Enugu State, Eastern Nigeria.

**H3:** There is a significant positive association between Business ethical practices and environmental-related practices in Enugu State, Eastern Nigeria

## 2.1 Literature review

### 2.1.1 Organisational sustainability

Organisational sustainability is viewed chiefly as achieving business success while allowing future generations to accomplish theirs. The essence of sustainability in the organisation context is to enhance a business's economic, social, and environmental systems (Ugoani, 2019). According to Ugoani (2019), organisational sustainability is directly linked to sustainability growth. This encompasses a business model that creates long-term preservation and enhances ethical, economic, environmental, and social capital values. This new dimension in business thinking shows that the worldview about business organisation expectations has changed from one-dimensional economic (profit) expectations to three-dimensional expectations of satisfying economic, social, and environmental needs. Today's innovative business leaders have keyed into the organisational sustainability goal, knowing that they are operating in a world where everything their business does is on display since social media enables news and information to travel worldwide in seconds (Posner, 2014).

Dim and Dapper (2016) believed that organisational sustainability has three dimensions: economic, social, and environmental sustainability, which are usually referred to as profit, people, and planet (triple bottom line). It was pointed out that organisations should determine the right balance among the three dimensions when making a business decision. The economic dimension consists of being profitable, managing costs effectively so that customers/consumers can afford the product(s), making the product(s) that people want, supporting the community by buying local goods and services, paying taxes, and participating in local activities. The social dimension consists of making products that improve people's lives, supporting the communities in which the business exists, maintaining a quality work environment, and sourcing materials responsibly. The environmental dimension consists of using resources wisely, complying with laws, minimising the facilities' impact by operating safely, responsibly, and efficiently, and reducing the products' adverse effects.

### 2.1.2 Business ethics/ethical business practices

Ethics is a moral philosophy that deals with rules of conduct, behavioural standards, and moral principles. It is a system of moral principles and a branch of philosophy that create the rules and standards that guide the moral behaviour of individuals and groups (Wiid, Cant, & Niekerk, 2013). Being ethical means knowing the difference between right and wrong, good and evil in any situation, and choosing the right and reasonable option.

In the business world, ethics is seen as a standard that applies to all aspects of business activities, mainly to the conduct of the employees and the organisation's business dealings. It deals with internal values that are part of corporate culture and guides daily transactions with stakeholders, including shareholders, employees, customers, suppliers, creditors, and society (Adda, Azigwe, & Awuni, 2016). Ugoani (2019) highlighted the importance of business ethics by emphasising that ethical business practices enhance overall corporate performance and sustainability in three essential areas: productivity, satisfaction, and profitability.

**2.1.3 Business Ethics and organisational sustainability**

Business ethics is applying morality in the performance of business functions. The principle guides an organisation's and its employees' conduct while conducting business activities. It also means thinking about others and the future (Bulog & Grančić, 2017). Business ethics is recently receiving wide attention in the business circle due to the need for profitability and global business sustainability (Ugoani, 2019). Business organisations that aim at sustainability develop a set of principles and policies that guide their conduct and activities. Eccles, Ioannou, and Serafeim (2011) further explained this by pointing out that high-sustainability companies primarily develop policies that reflect the critical culture and values of the organisation where environmental, social, and financial performance is essential.

Wesarat, Sharif, and Majid (2017) pointed out that organisational growth and sustainability lie on a sound ethical code of conduct set to guide its relationship with stakeholders whose interests must be protected without harming other members of society. In line with this, Dim and Dapper (2016) highlighted the benefits of an ethical code of conduct. They argued that business ethics in an organisation attracts customers to the firm's product(s), sustaining employees' stay in the organisation, reducing labour turnover, increasing productivity, ensuring long-term business success and boosting profit. Moreover, Mahajan and Bose (2018) mentioned the benefits of sustainability practices as gaining competitive advantage, customer loyalty, higher yield, and creating more excellent value for different stakeholders.

In organisations where business ethics do not flourish, there are bound to be unethical business practices that the customers, society, and the organisation would have to contend with. Though it can be tempting for management to act unlawfully in pursuit of profit by engaging in unethical business practices, the resulting negative effect of the practices can cause long-run damage to the firm's reputation, affecting both the short-term and long-term profitability of the organisation.

**2.2 Empirical review**

Some authors researched the subject to ascertain the relationship between business ethics and organisational success/sustainability. Adda, Azigwe, and Awuni (2016) studied business ethics and corporate social responsibility for business success and growth in Ghana. They collected data through an online questionnaire administered to students and business managers. It was found that business ethics and corporate social responsibility are essential for organisational growth and success. Ugoani (2019) examined business ethics and its effect on organisational sustainability to evaluate the relationship between business ethics and corporate sustainability. Data were analysed using descriptive, multiple correlations, and statistical regression techniques. The study revealed a strong positive relationship between business ethics and organisational sustainability. Through institutional perspective and the moderating role of firm visibility, Ma, Cao, Jiang, Gao, and Du (2020) investigated 'if ethics matter to the sustainability of new ventures. The study explored whether entrepreneurial ethics can improve new ventures' entrepreneurial performance. The questionnaires were collected and analysed using multivariate linear regression models. It was found that entrepreneurial ethics is adverse to the survival of new ventures but conducive to the sustainable growth of new ventures.

Furthermore, Wales (2013) investigated organisational sustainability: what is it, and why does it matter? The researcher analysed the role of human resource management in contributing to the sustainability agenda in the organisation. It was found that, at least over a reasonable timeframe, high-sustainability organisations can outperform their competitors regarding financial measures and environmental concerns.

## 3. Methodology

The study adopted the survey research design. The study's population comprises 456 small-scale manufacturing firms in the Enugu metropolis, Eastern Nigeria. With the adoption of the Kreijce and Morgan (1970) sampling technique, a sample of 208 small-scale manufacturing firms was obtained. Judgementally, the questionnaire was admitted to 3 management staff members in each of the 208 small-scale manufacturing firms. In all, a total of 624 questionnaires were administered. The data collected were analysed using the non-parametric approach.

### 3.1 Model specification

The models for the study are expressed as follows:

$MFS = f(BEP)$ (1)

Specifically,

$EcRP_t = \beta_0 + \beta_1 BEP_t + \varepsilon_t$ (2)

$SoSRP_t = \beta_0 + \beta_1 BEP_t + \varepsilon_t$ (3)

$EnRP_t = \beta_0 + \beta_1 BEP_t + \varepsilon_t$ (4)

Where: $MFS_t$ = Manufacturing Firms Sustainability
$EcRP_t$ = Economic Related practice of the Manufacturing Firms
$SoSMF_t$ = Social Related Practice of the Manufacturing Firms
$EnSMF_t$ = Environmental Related Practice of the Manufacturing Firms
$BEP_t$ = Business Ethical Practices
$\beta_0$ = intercept
$\beta_1$ = coefficient of the independent variable
$\varepsilon_t$ = Error term

## 4. Test of Hypotheses Pre-test

There is a need for a pre-test before the main test. The essence is to check if the data set is normally distributed and to know the right analytical tool for our analysis. If the data set is normally distributed, we adopt a parametric method: linear regression and Pearson correlation. However, if the data set is not normally distributed, we rely on the non-parametric approach to run the ordinal regression and Spearman Rank Correlation. The outcomes of the pre-test are shown in the next section.

**Table 1: Descriptive Statistics**

| | **Hypothesis One: Descriptive Statistics** | | | | | | |
|---|---|---|---|---|---|---|---|
| **Before Transformation** | | | | | | **After Transformation** | |
| **Variables** | | **Statistics** | **Std. Error** | | | **Statistics** | **Std. Error** |
| EcRP | Skewness | .228 | .105 | Log_ EcRP | Skewness | -.472 | .105 |
| | Kurtosis | .151 | .209 | | Kurtosis | .050 | .209 |
| BEP | Skewness | .218 | .105 | Log_ BEP | Skewness | -.306 | .105 |
| | Kurtosis | -.421 | .209 | | Kurtosis | -.556 | .209 |
| **The result from the skewness and Kurtosis computation** | | | | | | | |
| EcRP | Sta/Std Error | Ske = .228/.105 | 2.17 | Log_ EcRP | Ske =-.472/.105 | 4.50 | Non-parametric approach |
| | Sta/Std Error | Kurt = .151/.209 | 0.17 | | Kurt = .050/.209 | 0.24 | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| BEP | Sta/Std Error | Ske = .218/.105 | 2.08 | Log_ BEP | Ske = -.306/.105 | -2.91 | |
| | Sta/Std Error | Kurt =-.421/.209 | 2.01 | | Kurt= -.556/.209 | -2.66 | |

The test of normality is shown in Table 2. In this test, we have two test statistics, Kolmogorov-Smirnov and Shapiro-Wilk. The Kolmogorov-Smirnov is used when the data set is large, more than 50. In contrast, the Shapiro-Wilk is used when the data set is below a hundred (Wikipedia). In this study, our data set is large, above a hundred, so we rely on Kolmogorov-Smirnov.

**Table 2: Normality Test**

| | **Test of Normality** | | | | |
|---|---|---|---|---|---|
| **Before Transformation** | | | **After Transformation** | | |
| **Kolmogorov-Smirnov** | | | | **Kolmogorov-Smirnov** | |
| | Statistic | Sig. | | Statistic | Sig. |
| EcRP | .131 | .000 | Log_ EcRP | .178 | .000 |
| BEP | .114 | .000 | Log_ BEP | .157 | .000 |

Table 1 shows the extract from the result of the descriptive statistics. Here, we are interested in skewness and kurtosis. This is done by dividing the statistics by the Standard Error. If the result falls between -1.96 and +1.96, our data set is normally distributed.

The result in Table 1 after computation shows that our data set is not normally distributed. The result at first shows our data set is not normally distributed. However, to be sure that our result is accurate, we transform our data set by taking the log of each variable. The result also revealed that our data set is not normally distributed.

Table 2 shows the result of the normality test. Our interest is in each of the variables not being statistically significant. From the table, our variables are less than 0.05, meaning they are statistically significant. This also supports the fact that our data set is not normally distributed. The results in Tables 1 and 2 show that ordinal regression and Spearman Rank Correlation are the right analytical tool. We, therefore, adopt the Non-parametric approach of the ordinal regression and Spearman Rank Correlation.

### 4.1 Hypothesis 1

**H1:** Business ethical practices have a significant relationship with the economic-related practices of manufacturing firms in Enugu State, Eastern Nigeria

**Table 3: Spearman Rank Correlation**

| | | | EcRP | BEP |
|---|---|---|---|---|
| Spearman's rho | EcRP | Correlation | 1.000 | .342** |
| | | Coefficient Sig. (2-tailed) | . | .000 |
| | | N | 545 | 545 |
| | BEP | Correlation | .342** | 1.000 |
| | | Coefficient Sig. (2-tailed) | .000 | . |
| | | N | 545 | 545 |

Table 3 contains the result of the Spearman Rank Correlation. From the result, there is a

moderate correlation between the variables. The correlation between Business ethical practices and the sustainability of manufacturing firms is moderate. It has a value of .342 and is statistically significant.

**Table 4: The Main Test**

| **Model Fitting Information** | | | | **Goodness of Fit** | |
|---|---|---|---|---|---|
| Model | | | | Chi-Square | Sig. |
| | Chi-Square | Sig. | Pearson | 470.957 | .543 |
| Final | 370.427 | .000 | Deviance | 892.954 | .243 |
| **Pseudo R-Square** | | | **Test of Parallel Lines** | | |
| Cox and Snell | .121 | | Model | Chi-Square | Sig. |
| Nagelkerke | .122 | | General | 27.877 | .309 |
| McFadden | .027 | | | | |
| **Parameter Estimates**<br>**Dependent Variable:** EcRP | | | | | |
| | | Estimate | Std. Error | Sig. | |
| Threshold | BEP | 6.703 | .559 | .000 | |
| Location | EcRP | .816 | .103 | .000 | |

Table 4 contains the outcome of the model fitting information, the goodness of fit, the Pseudo R-square, the test of parallel lines, and the parameter estimate for hypothesis 1. The model-fitting information tells us how well the model fits our data. The information in the table is statistically significant because its p.value is less than 0.05, implying our model fits the data very well.

The Pearson and Deviance Chi-Square tests help determine if a model fits the data well. The non-significant result is an indicator that the model fits the data well. From the outcome, the Pearson and Deviance are non-significant (0.543 and 0.243).

These values are clearly above 0.05, which clearly shows that the model fits the data set well. Our interest as regards the Pseudo R-Square is the Nagelkerke. This is more of the R-square for linear regression. The value of 0.122 indicates a 12% change in the economic-related practices of manufacturing firms in Enugu State; the dependent variable is due to the Business ethical practices of the manufacturing firms, the independent variable.

The test of parallel lines test for the assumption of proportional odds. The outcome must not be statistically significant not to violate the test of proportional odds. From the outcome above, our result has not violated the assumption as the probability is greater than the 0.05 significant level. With this outcome, we can discuss the main result; Parameter Estimates.

The outcome of the parameter estimate is in Table 4. The independent variable, Business ethical practices (BEP), is positive from the result. It has a significant relationship with economic-related practices of manufacturing firms in Enugu, Eastern Nigeria (.816, .000). Based on the outcome, we reject ($H_0$) and accept ($H_1$). Therefore, we state that the Business ethical practices of manufacturing firms has a significant positive relationship with economic-related practices in Enugu, Eastern Nigeria.

## 4.2 Hypothesis 2

**Table 5: Descriptive Statistics**

| | | Hypothesis Two: Descriptive Statistics | | | | | |
|---|---|---|---|---|---|---|---|
| **Before Transformation** | | | | **After Transformation** | | | |
| **Variables** | | Statistic | Std. Error | | | Statistic | Std. Error |
| SoSRP | Skewness | 1.326 | .105 | **Log_** SoSRP | Skewness | .532 | .105 |
| | Kurtosis | 2.592 | .209 | | Kurtosis | -.887 | .209 |
| BEP | Skewness | .990 | .105 | **Log_** BEP | Skewness | .590 | .105 |
| | Kurtosis | 2.314 | .209 | | Kurtosis | -.737 | .209 |

| | | The result from the skewness and Kurtosis computation | | | | | |
|---|---|---|---|---|---|---|---|
| **Variables** | | Computation | Results | | Computation | Results | **Analytical Tool** |
| SoSRP | Sta/Std Error | Ske = 1.326/.105 | 12.63 | **Log_** SoSRP | Ske = .532/.105 | 5.07 | Non- parametric approach |
| | Sta/Std Error | Kurt = 2.592/.209 | 12.04 | | Kurt = -.887/.209 | -4.24 | |
| BEP | Sta/Std Error | Ske = .990/.105 | 9.43 | **Log_** BEP | Ske = .590/.105 | 5.62 | |
| | Sta/Std Error | Kurt = 2.314/.209 | 11.07 | | Kurt = -.737/.209 | -3.53 | |

**Table 6:** Normality Test

| **Before Transformation** | | | | | **After Transformation** | |
|---|---|---|---|---|---|---|
| **Kolmogorov-Smirnov** | | | | | **Kolmogorov-Smirnov** | |
| | Statistic | Sig. | | | Statistic | Sig. |
| SoSRP | .226 | .000 | | log_ SoSRP | .889 | .000 |
| BEP | .226 | .000 | | log_ BEP | .883 | .000 |

The descriptive statistics result in Table 5 after computation shows that our data set is not normally distributed. The outcome after transformation also confirms this. Table 6 shows the result of the normality test. From the table, our variables are less than 0.05 supporting that our data set is not normally distributed.

**Hypothesis 2**

$H_0$: Business ethical practices are significantly related to the social-related practices in Enugu State, Eastern Nigeria.

**Table 7: Spearman Rank Correlation**

| | | | SoSRP | BEP |
|---|---|---|---|---|
| Spearman's rho | SoSRP | Correlation Coefficient | 1.000 | .210** |
| | | Sig. (2-tailed) | . | .000 |
| | | N | 545 | 545 |
| | BEP | Correlation Coefficient | .210** | 1.000 |
| | | Sig. (2-tailed) | .000 | . |
| | | N | 545 | 545 |

Table 7 contains the result of the Spearman Rank Correlation. The result shows a strong positive correlation (.210, p-value =.000), indicating a significant linear relationship between economic sustainability and ethical business practices.

**Table 8: The main Test; Hypothesis Two**

| **Model Fitting Information** | | | | **Goodness of Fit** | |
|---|---|---|---|---|---|
| Model | | | | Chi-Square | Sig. |
| | Chi-Square | Sig. | Pearson | 1037.414 | .063 |
| Final | 27.125 | .000 | Deviance | 698.666 | .081 |
| **Pseudo R-Square** | | | **Test of Parallel Lines** | | |
| Cox and Snell | .494 | | Model | Chi-Square | Sig. |
| Nagelkerke | .490 | | General | 550.925 | .098 |
| McFadden | .012 | | | | |
| **Parameter Estimates** **Dependent Variable:** SoSRP | | | | | |
| | | Estimate | Std. Error | Sig. | |
| Threshold | BEP | 6.056 | .552 | .000 | |
| Location | SoSRP | .544 | .102 | .000 | |

From the result in Table 8, with the p-value less than 0.05, we can tell how well our model fits our data.

The non-significant Pearson and Deviance Chi-Square test results indicate that the model fits the data well (.063 and .081). These values are clearly above 0.05, which clearly shows that the model fits the data set. The Spearman Rank Correlation coefficient results in Table 7 reveal a strong positive correlation of .210 with a p-value =.000. Indicating a significant linear relationship between Business ethical practices and social-related practices of the manufacturing companies in Enugu, Eastern Nigeria.
The outcome of the parameter estimate in Table 8 shows that the independent variable, Business ethical practices of manufacturing firms (BEP), is positive. It positively correlates with the social-related practices in Enugu, Eastern Nigeria. Based on this outcome, we reject $H_0$ and conclude that Business ethical practices have a significant positive relationship with the state's social-related practices of manufacturing firms.

### 4.3 Hypothesis 3

**Table 9: Descriptive Statistics**

| | **Hypothesis Three: Descriptive Statistics** | | | | | | |
|---|---|---|---|---|---|---|---|
| **Before Transformation** | | | | **After Transformation** | | | |
| **Variables** | | Statistic | Std. Error | | | Statistic | Std. Error |
| EnRP | Skewness | 1.326 | .105 | **Log_** EnRP | Skewness | -.877 | .209 |
| | Kurtosis | 2.592 | .209 | | Kurtosis | 1.1023 | .03180 |
| BEP | Skewness | .525 | .105 | **Log_** BEP | Skewness | 1.281 | .105 |
| | Kurtosis | -.806 | .209 | | Kurtosis | 1.517 | .209 |

| | **The result from the skewness and Kurtosis computation** | | | | | | |
|---|---|---|---|---|---|---|---|
| **Variables** | | Computation | Results | | Computation | Results | **Analytical Tool** |
| EnRP | Sta/Std Error | Ske = 1.326/.105 | 12.63 | **Log_** EnRP | Ske = .532/.105 | 5.07 | Non- parametric approach |
| | Sta/Std Error | Kurt = 2.592/.209 | 12.04 | | Kurt = -.887/.209 | -4.24 | |
| BEP | Sta/Std Error | Ske = .525/.105 | 9.43 | **Log_** BEP | Ske = .590/.105 | 5.62 | |
| | Sta/Std Error | Kurt = -.806/.209 | -11.07 | | Kurt = -.737/.209 | -3.53 | |

**Table 10: Normality Test**

| | Test of Normality | | | | | |
|---|---|---|---|---|---|---|
| **Before Transformation** | | | | **After Transformation** | | |
| **Kolmogorov-Smirnov** | | | | **Kolmogorov-Smirnov** | | |
| | Statistic | Sig. | | | Statistic | Sig. |
| EnRP | .139 | .000 | | log_EBP | .226 | .000 |
| BEP | .161 | .000 | | log_SoSMF | .188 | .000 |

After computation, the descriptive statistics result in Table 9 shows our data set is not normally distributed. The normality test results in Table 10 support this fact.

**Hypothesis Three**

**$H_0$:** There is a significant positive association between Business ethical practices and environmental-related practices in Enugu State, Eastern Nigeria

**Table 11: Spearman Rank Correlation**

| | | | EnRP | BEP |
|---|---|---|---|---|
| | | Correlation Coefficient | 1.000 | .382** |
| | EnRP | Sig. (2-tailed) | . | .000 |
| | | N | 545 | 545 |
| | | Correlation Coefficient | .382** | 1.000 |
| Spearman's rho | BEP | Sig. (2-tailed) | .000 | . |
| | | N | 545 | 545 |
| | | | | |

The Pearson correlation coefficient in Table 11 shows a moderate positive correlation indicating a significant linear relationship between social and environmental sustainability and ethical business practices.

**Table 12: The main Test; Hypothesis Three**

| **Model Fitting Information** | | | | **Goodness of Fit** | |
|---|---|---|---|---|---|
| Model | | | | Chi-Square | Sig. |
| | Chi-Square | Sig. | Pearson | 38797.887 | .093 |
| Final | 25.776 | .000 | Deviance | 1330.253 | .261 |
| **Pseudo R-Square** | | | **Test of Parallel Lines** | | |
| Cox and Snell | .990 | | Model | Chi-Square | Sig. |
| Nagelkerke | .996 | | General | 450.925 | 1.000 |
| McFadden | .896 | | | | |
| **Parameter Estimates** **Dependent Variable:** EnRP | | | | | |
| | | Estimate | Std. Error | Sig. | |
| Threshold | BEP | 1.467 | .644 | .023 | |
| Location | EnRP | .634 | .432 | .043 | |

The result in Table 12 shows our model fits our data. The p.value is less than 0.05, implying our model fits the data well.

The non-significant Pearson and Deviance Chi-Square test results indicate that the model fits the data well. The values above 0.05 clearly show that the model fits the data set well.

The value of the Nagelkerke is .996. This value indicates a 99% change in the environmental-related practices in the state; the dependent variable is due to the Business ethical practice of the manufacturing firms, the independent variable.

The Pearson correlation coefficient results in Table 11 reveal a strong positive correlation. This indicates a strong significant linear relationship between Business ethical practices and environmental-related practices of the manufacturing companies in the state.

The parameter estimate's outcome shows that manufacturing firms' Business ethical practice is positive. It positively correlates with the environmental-related practices in the state. Based on the result, we reject $H_0$ and conclude that manufacturing firms' Business ethical practices have a significant positive relationship with environmental-related practices in Enugu, Eastern Nigeria.

## 5. Discussions and conclusions

The ordinal regression explains the relationship between Business ethical practices and manufacturing firms' sustainability. The result reveals that BEP has a significant positive relationship with MFS. These BEP include, among others, honesty, accountability, financial transparency, integrity, and policy/law-abiding. A manufacturing firm that added a unit of BEP (honesty, accountability, financial transparency, integrity, and policy/law-abiding) than another manufacturing firm will experience more sustainability. This implies BEP has a strong positive relationship with MFS in Enugu, Eastern Nigeria. This finding is consistent with Ugoani's (2019) study, which revealed a strong positive relationship between business ethics and organisational sustainability.

The Pearson correlation coefficient carried out for hypothesis one reveals a significant linear relationship between BEP and economic-related practice, which suggests that Business ethical practices are significantly and positively associated with economic-related EBP, such as profit-making target, cost control, and minimisation, production of demanded and quality product(s), prompt payment of tax/levies as well as financial uprightness. Similarly, hypothesis two shows a significant linear relationship between Business ethical practices and socially related practices, such as community financial and non-financial support, justice, truthfulness, and sourcing of raw materials religiously. This implies that Business ethical practices are significantly and positively associated with social-related practices. Moreover, the study reveals that Business ethical practices have a significant linear relationship with environment-related practices, which indicates that Business ethical practices are significantly and positively related to environmental-related practices, such as policies and law-abiding, environmental protection and preservation, efficient resource utilisation, and hazard-free production. The outcome analysis implies that as Business ethical practices increase, manufacturing firms' sustainability increases and vice versa. This finding is confirmed by the research outcome of Wann, Long, and Brockman (2016), which revealed that before the announcement of unethical behaviour, no significant difference existed between the sample firms' performance and the industry portfolio. Still, a significant underperformance was found for the firms relative to their respective industry portfolios over the five years following the announcement of ethical violations.

Moreover, the research finding is consistent with the result of Eccles, Ioannou, and Serafeim's (2011) research work which found that in the 18 years studied, the high

sustainability firms outperformed the low sustainability firms, exhibited low volatility than the low sustainability firms and also performed better on accounting/economic measures as regards return on assets (ROA) and return on equity (ROE) than the low sustainability firms. The firm's outstanding performance based on its sustainability activities is all confirmed by the research outcome of Wales (2013), which found that over a reasonable timeframe, high sustainability organisations can outperform their competitors regarding financial measures and environmental concerns. Furthermore, the result aligns with the research outcome of Adda, Azigwe, and Awuni (2016), which indicated that business ethics and social responsibility are essential for organisational growth and success. Also, better complaint management, accountability, effective service delivery, and understanding of the cognitive values sustain harmony, trust, brotherhood, loyalty, and morals in organisations.

Conclusively, from the study, it is acknowledged that Business ethical practices significantly Impact the manufacturing firms' economic, social, and environmental sustainability. Business ethical practices have a significant positive relationship/association with the three dimensions implying that as Business ethical practices increase, manufacturing firms' sustainability increases. In other words, the manufacturing firms' sustainability in Enugu, Eastern Nigeria, is a function of strict and sincere adherence to Business ethical practices.

## 6. Recommendations

Based on the findings, we recommend that manufacturing firms make business sustainability an integral part of strategic planning and incorporate business ethics codes such as accountability, profit-making target, honesty, fairness, loyalty, good customer relationship, community support, justice, policies/law-abiding, truthfulness, and environmental preservation/protection. They should imbibe the culture of employee training, retraining on business ethics, and rewarding ethical employees. They should also ensure strict adherence to ethical business practices by the management and the employees through promoting accountability, integrity, and sincere supervision. Furthermore, the government should strengthen and implement business laws/regulations, reward ethical firms, and punish unscrupulous firms.

## 7. Practical implications

Business ethics is an essential and indispensable antidote to manufacturing firms' economic, social, and environmental sustainability. The practice of business ethics will ensure manufacturing firms' long-term survival and national economic growth and sustainability.

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*Corresponding email:* ***nyoreofogbe2022@gmail.com***