

Evaluation of Technology Usage and Financial Performance of Selected Manufacturing Paint Sector in Nigeria

Yinus Saliu .O*¹, Oladejo, M.O*² Adebayo A.A*³

*¹Department of Accounting, Open and Distance Learning Centre, Ladoke Akintola University of Technology, Nigeria.
School of E-Learning, Kampala International University, Kampala, Uganda.
Email: oluwaseun.yinusa@kiu.ac.ug; soyinusa@lodlc.lautech.edu.ng:

*²Department of Management and Accounting,
Ladoke Akintola University of Technology Ogbomosho,
Oyo State, Nigeria.
Email: Moolad@lautech.edu.ng

*³Department of Business Education, Tai Solarin University of Education
Ijagun-Ijebu Ode, Ogun State, Nigeria.
email: adebayoaa@tasued.edu.ng

*E-mail of correspondence Author: soyinusa@lodlc.lautech.edu.ng

Abstract

Evidence from the report revealed that the relevance of manufacturing firms to sustainable economic development cannot be overemphasized, and the recent increase in technological usage is expected to enhance the operational efficiency of a manufacturing firm. Due to lack of knowledge about the benefits of using technology in day-to-day operations, one of the challenges faced by manufacturing firms in developing countries is the use of technology to increase productivity and performance. The rate at which technology usage can solve inherent problems, such as time and cost overruns, inefficiency, safety and quality issues in manufacturing firms, has drawn increasing interest from both practitioners and academics over the past decade, and is worthy of exploration. This study assesses determinant factors of technology usage and their effects on the performance of the selected manufacturing paint sector in Nigeria. Both primary and secondary data was employed. The collected data was analyzed using descriptive tools such as percentages and tables, as well as inferential statistical analysis using panel regression analysis. All the study hypotheses were tested at a 95% confidence level. The study concluded that firm size, cost of technology deployment, industry environment, technology progress, market demand, and perceived benefit are determinant factors of technology usage and significantly influence the financial performance of selected manufacturing paint sector. It is recommended that the manufacturing paint sector put more effort into developing mechanisms that can strengthen the full usage of technology, such as investment in modern technologies and capacity-building of human resources.

Keywords: *Technology Usage, determinant factors of Technology Usage, Financial Performance, Manufacturing Paint Sector, Return on Capital Employed (ROCE)*

1. Introduction

In a global world, the use of technology to increase productivity and performance is one of the challenges being faced by manufacturing firms presently in developing countries due to the lack of knowledge on the benefit of technology usage in their day to day operation activities. However, there is the need for changing roles of Manufacturing firm operation (painting sector), to meet the global challenges. Report revealed that the economic relevance of Paint companies to the Nigerian economy cannot be overemphasized because it's serve as one of the major players in the employment of labor and economic advancement (Kiwamu, 2018). Despite the relevance of Paint companies to the Nigerian economy, the mechanism that can enhance the effective operation of the firm in the digital era has not been fully explored. Akinboade, (2020) observed that manufacturing sector is embedded with the potential of transforming the economy of any nation. Its place in economic development can never be downplayed. In a developing nation such as Nigeria, the sector has diverse potential for development, which will invariably reduce the dependence of the economy of the country on crude oil. Paint manufacturing companies have been in Nigeria as early as the 1960s. Kiwamu, (2018) reported that Nigeria's paint industry serves as a player to the Nigerian economy through employment generation, value creation, and increased Gross Domestic Product (GDP). Despite that, the industry has been facing several challenges especially in the area of technology implementation, thus affecting the operational efficiency of this sub sector in Nigeria. In a nutshell, the extent to which technology usage can effectively enhanced day to day activities of a manufacturing firm, especially the paint sector call for empirical investigation in the Nigerian context. Evidence from scholars (Anamakin, 2004; Adewoye *et al*, 2017; Oladejo and yinus, 2020) revealed that technology pave way for knowledge and facts and serve as a modern approach of handling information by electronic means, which involves access, storage, processing, transportation or transfer and delivery of information through the use of components that process inputs and produces output for individual organizational uses. All the feature of technology are expected to serve as a driven tools for achieving effective performance in any establishment. Despite the relevance of Paint manufacturing sector to the Nigerian economy, the mechanism that can enhance the effective operation of the firm in the digital era has not been fully explored. The level at which technology usage can solve inherent problems, such as time and cost overruns, inefficiency, safety and quality issues in manufacturing firms, has drawn increasing interest from both practitioners and academics over the past decade, and is worthy of exploration. The thrust of this study is to examine the effect of technology usage on the financial performance of a selected manufacturing paint sector in Nigeria.

Research Hypotheses

Ho¹: There is no significant difference in the factors determining Technology Usage in the selected listed paint manufacturing firms in Nigeria

Ho²: Technology Usage has no significant effect on the Performance of selected listed paint manufacturing firms in Nigeria

2. Literature Review

2.1.1 Technology and Implementation Phases

Technology offer the promise of fundamentally changing the lives of much of the world's population. In its various forms, technology affects many of the processes of business and government, how individuals live, work, and interact, and the quality of the natural and built environment (Adewoye, 2007: Oladejo and Yinus, 2020). The development of internationally comparable technology adoption statistics is essential for governments to be able to adequately design, implement, monitor, and evaluate technology usage policies. Sustainable economic development can be achieved through the use of technologies. Richardsson and Kraemmergaard (2006) outlined five main areas of technology applications in support of firm and rural development. These are: economic development of products, community development, research and education. The increasing use of technology in enterprises leads to a substitution of IT equipment for other forms of capital and labour which may generate substantial returns for enterprises that invest technology.

Implementation of technology over the years has become important not only for business but for governance and personal use. Technology has not only altered the way people live, work and play but has also created a new infrastructure for business, scientific advances and social interaction. At the same time, it has brought about complex issues that transcend mechanical boundaries including the emergence of the digital divide among nations, races and communities. Technology implementation is a process that encompasses the phases from which an enterprise identifies the need in using technology in capturing and process all relevant activities. Most scholars in the field of technology embraces Cooper and Zmud's model in explaining Technology implementation because it comprehensively classifies the implementation process of an innovation sequentially. In addition to this, a number of studies adopted this model, and it was found very suitable. Cooper and Zmud (1990) model described the Technology implementation process for innovation into six stages, which include: Initiation, Adoption, Adaptation, Acceptance, Routinization, and Infusion.

The first phase is the initiation; this phase concerns a thorough evaluation of the organization need and a resulting aspiration in meeting this need. The organization need can be propelled by a necessity for improvement (pull) or/and by the instance of technology innovation (push). The second phase, which is the adoption occurs when the organization makes an apparent decision to implement and invest resources in the technology. The Third phase is the adaptation. At this phase, the technology is developed, installed and maintained having revised the organizational structures and organizational processes. The acceptance stage represents the fourth stage; at this stage, the organizational members are encouraged to be committed in the use of technology application deploy. The last phase is routinization and diffusion at this level, the technology has become a normal activity as such loses its identity as an innovation. Understanding the multifaceted process involved in technology

implementation stage is vital in adopting technology toward achieving effective performance in an organisation.

2.1.2 Technology Application and Financial Performance Indices of Firm

Financial performance has been described by Tungo (2014) as an objective measure of how well a firm can use assets from its primary mode of business and generate profits. This term is also used as a general measure of a firm's overall financial health over a given period of time and can be used to compare industries or sectors in aggregation. There are many different ways to measure financial performance, but all measures should be taken in aggregate. This is based on Beisland's (2009) observation of the ability to capture firm value. Firm KPIs include key performance indicators such as investment return metrics like, Return on equity, return on capital employed and others. Financial performance of a firm can be measure based on return on Sales (ROS) or Return on Capital employed (ROCE). Return on Capital employed (ROCE) is a profitability ratio that provides how much profit a company is able to generate from its capital employed by comparing net operating to capital employed into the business. Return on sales (ROS) is a ratio used in evaluating an entity's operating performance. It is also known as "operating profit margin. Literatures revealed (Akanbi,2017: Oladejo andYinus2014) that the use of technology has a significant positive correlation, as well as a strong causal relationship on the financial performance of organisations; this implies that a marginal change in the level of the investment and adoption technology will result to a proportionate increase in the profit level of organisations as it positively affects customer satisfaction. More s,

2.1.3 Economic Importance of Paint Manufacturing Firms.

Report revealed that the economic relevance of paint companies to the Nigerian economy cannot be overemphasized. The Nigerian paint manufacturing sector serves as one of the major players in the employment of labor and economic advancement (Kiwamu, 2018). In order to achieve sustainable development in the paint industry, embracing technology to solve inherent problems, such as time and cost overruns, inefficiency, and safety and quality issues, has drawn increasing interest from both practitioners and academics over the past decade. However, the deployment of technology in manufacturing firms in developed countries such as the US has been very high and has led to productivity gains. The extent to which this can be observable in the Nigerian paint manufacturing sector form gaps filled by this present study. Furthermore, the relevance of paint companies to the Nigerian economy has been identify and the extent to which Technology deployment can enhance the effective operation of the firm in this digital era form another gap intend to filled by this study.

2.2 Theoretical Framework Adopted

The construct of this study is embedded in production theory, activity theory, and TAM. Adoption of the TAM model is based on the expected fitness of the model for ICT usage, establishing its influence on the performance of selected listed paint manufacturing firms in

Nigeria. According to Khalifa and Shen (2008), historically, technology acceptance models have been used to investigate the adoption of information technology by individuals. The technology acceptance model (TAM) focuses on technology characteristics, such as perceived usefulness and perceived ease of use. It is an established fact that TAM focused on different determinants to explain consumers' behavior in technology adoption. These theories share the same similarities. For instance, TAM models assume an attitude–intention–behavior relationship. This means that cognitive and normative or affective beliefs form attitudes, which in turn have an influence on behavioral intention and actual behavior. The Technology Acceptance Model (TAM) provides the theoretical basis for explaining how individuals perceive technology usage and its effect on their operational activities. TAM attempts not only to predict but also to explain to help researchers and practitioners identify why a particular system may be unacceptable and pursue appropriate steps. Furthermore, the application of activity theory is based on its goal of understanding how human ideology interacts with technology and its effects on the overall performance of their operational activities. Production theory was embedded on due to the emphasis that firm should possess a method for transforming various inputs into outputs represented by a production function and the extent to which use of technology ease way of achieving efficiency remain germane to the study.

2.3 Empirical Review

Sekyere, Amoateng, and Frimpong (2017) investigate the determinants of the accuracy of published financial reports in Ghana stock exchange-listed banks. Cross-sectional survey design involving quantitative approaches was employed for this study, and the findings from the study revealed a strong positive correlation (84%) between computerized accounting systems and accurate financial reporting. Shao and Lin (2001) used a stochastic frontier production function on a firm-level panel dataset of US firms to demonstrate that ICT contributes to organizational productivity growth. Oladejo et al (2014) investigate the strength of ICT adoption on the performance of food and beverage SME operations in Nigeria, using a multi-stage sampling technique, The study concludes that ICT has a positive effect on the performance of selected food, fruit drink, and beverage SMEs' operations. Matambalya, Francis; Wolf, Susanna (2001) examined the role of Technology implementation on the performance of SMEs in East Africa with a sample of 300 SMEs using regression and findings showed that the use of ICT by SMEs in Kenya as well as in Tanzania is increasing over time. In another study, Onaolapo and Odetayo (2015) examined the effect of the accounting information system on organizational effectiveness with special reference to selected construction firms in the Ibadan metropolis. A purposive sampling technique was adopted in selecting a total of ten personnel from each of the selected companies as samples for the study.. The results show that the accounting information system has an effect on organizational effectiveness, Akinboade (2020), investigates the impact of the usage of ICT on the financial performance of manufacturing companies in Lagos State, Nigeria. A survey design was adopted in conducting this study using primary and secondary data. Linear Regression Analysis were used to test the hypotheses at a 0.05 level of significance. Findings showed that investment in ICT had a positive relationship with financial performance.

2.4 Gaps in the Literature

Having looked at different literature like Sekyere et al. (2017) on determinant factors for technology implementation by Ghanaian listed banks. Variables such as perceived usefulness, perceived ease of use form the major determinant. Likewise, Munasinghe (2015) identifies business size, cost, and external environment as major influencing factors for the use of the technology by SMEs in North Central Province. The extent to which all evaluated determinant factors for technology adoption and usage, such as perceived usefulness, perceived ease of use, cost of technology deployment, bank size, and others can be considered as factors influencing technology implementation in paint manufacturing firms constitutes another gap filled by this study. Furthermore, focusing on different literatures like (Shao *et al.*, 2001; Oladejo *et al.*, 2014; Maliranta and Rouvinen, 2006; Matambalya, Francis and Wolf, 2001; Koellinger) on Technology and firm performance. The variables of their studies were measured based on perception and expected qualitative characteristics of financial report quality. Whereas this present study makes an expression on both quantitative and qualitative characteristics of technology and Performance indices of selected paint manufacturing in Nigeria. Finally, according to the review, none of the related studies on technology implementation practice and firm performance in both developed and developing countries, including Nigeria, were able to present comprehensive approaches to measuring the technology influence on the financial performance of manufacturing firms, specifically the paint sector, as explored in this study.

3. Methodology

Sequential transformative mixed research was employed using both primary and secondary data. This is based on the fact that sequential transformative mixed research involves qualitative and quantitative data, which allows the theoretical perspective of the researcher to guide the study and determine the order of data collection, and the results from both methods are integrated together at the end of the study during the interpretation stage. Primary data were collected through the use of 174 out (210) Questionnaire administered on the selected staff of the sampled paint firms. Secondary data covering years from 2010-2019 were collected through annual reports of the seven (7) selected firms purposively. The determinant factors of technology usage in the selected listed paint manufacturing firms in were analysed through descriptive statistics and OLS regression. Panel regression was employed to analyse extent of the effect of Technology usage on Performance of selected sampled paint firms. The financial performance of selected firm were measured based on Return on Capital Employed while technology usage were measured based on all components of technology adoption that is expect to facilitate effective Performance. Such as Firm Size (BS); Cost of Technology Deployment (CID); Maintenance cost, Training and Development Cost and Human resource cost

3.1 Model Specification

The study variables factored in regression model.
The regression model was specified as:

$$Y = \beta_0 + B_1 X_1 + B_2 X_2 + B_3 X_3 + B_4 X_4 + B_5 X_5 + \dots e$$

$$Y=f(CID, TDC, MROS, FS \text{ and } HRE) \dots\dots\dots (3.1)$$

Explicitly, the model is specified as:

$$Y_{it} = \alpha_0 + \beta_1 CID_{it} + \beta_2 TDC_{it} + \beta_3 MROS_{it} + \beta_4 FS_{it} + \beta_5 HRE_{it} + e_{it} \dots\dots\dots (3.2)$$

$$ROCE_{it} = \alpha_0 + \beta_1 CID_{it} + \beta_2 TDC_{it} + \beta_3 MROS_{it} + \beta_4 FS_{it} + \beta_5 HRE_{it} + e_{it} \dots\dots\dots (3.3)$$

Where Y = Financial Performance measured based on Return on Capital Employed or Return on Sales of the firm or (dependent variables).

β_0 = Constant: this shows that even if ICT is not used in facilitating the preparation and communicating of Performance

X_1 to X_5 are all components of ICT that facilitate that is expect to facilitate effective Performance. These include: Firm Size(BS); Cost of Technology Deployment (CTD); Maintenance cost, Training and Development Cost and Human resource cost

β_1 , to β_5 , are coefficients that determines the effect of technology usage on Performance)

e = Error terms: It takes care of other factors that influence performance of the selected firm that are not included in the model.

Table 1: Showing Approaches to the Achievement of Study Objectives

S/N	Research Objectives / Hypothesis	Dependent Variable	Independent Variable	Sources of Data	Analytical Tools
1	Identify the determinant factors of technology usage in the selected manufacturing paint sector in Nigeria.	Technology Deployment	Technology Usage Determinant Factors (FS, CTD, IE, GP, TP, PB, MD)	Questionnaire	Descriptive Analysis
2	Examine the influence of Technology usage on the Performance of selected selected manufacturing paint sector in Nigeria.	Firm Performance (ROCE) of selected manufacturing paint sector in Nigeria.	ICT usage : (FS, CID, MROS, TDC: and HRC:	Annual Report	Panel Regression

Source: Author Compilation, (2021)

4. Result and Discussion

Descriptive Statistics analysis of the Sampled Respondents on Determinant Factors of Technology Usage in the selected manufacturing Paint sector in Nigeria.

Analysis in table 2 depicts the analysis of determinant factors of technology deployment in a sample of listed Nigerian paint manufacturing firms as drawn from firm workers. The result shows that 87% of the selected respondents opined that firm size has a high influence on technology usage. Also, 93% of the respondents are also of the opinion that the cost of technology deployment is also one of the major factors affecting the use technology by selected paint manufacturing firms in Nigeria. (80%) of the respondents opined that industry or the firm environment contributed to the implementation of technology in manufacturing. According to the findings of the survey, 93% of respondents believe that technological progress in the country is a major determinant of technology usage in Nigerian paint manufacturing firms .Analysis of the results also revealed that market demand was at 76%. Finally, the respondents opined that perceived benefit has a high influence on technology usage (97%). The implication of these results is that the size of a firm determines the adoption and usage of technology. The cost of technology deployment, industry environment, customer demand, technology progress, and perceived benefits of technology determine the usage of technology in selected manufacturing paint sector in Nigeria. This is in line with the opinions of scholars llike (Bariyah and Singh, 2012; Matambalya *et al.* 2001; Akande and Yinus, 2013; Maliranta and Rouvinen, 2006).

Table 2: Determinant Factors of Technology Usage in the Selected Manufacturing Paint sector in Nigeria.

Determinant Factors	Very High	High	Undecided	Low	No Influence
Firm Size (FS)	134 (77%)	18 (10%)	- -	- -	22 (13%)
Cost of technology Deployment (CTD)	151 (87)	10 (6%)	13 (7%)	- -	- -
Industry Environment(IE)	120 (69%)	20 (11%)	4 (2%)	20 (11%)	10 (6%)
Technology Progress(TP)	130 (75%)	31 (18%)	- -	- -	13 (7%)
Market Demand (MD)	114 (66%)	20 (11%)	- -	18 (10%)	22 (13%)
Perceived Benefit (PB)	147 (84%)	22 (13%)	5 (3%)	- -	- -

Source: Author Computation, (2021)

Regression Analysis of Differences in the Determinant Factors Influencing Technology Usage in the selected listed Paint Manufacturing Firms in Nigeria

Based on the regression result presented in Table 3, a unit increase in identified determinant factors of technology usage such as Firm Size (FS), Industry Environment (IE), Technology Progress (TP), Market Demand (MD), and Perceived Benefit (PB) increases information communication technology usage in the selected listed paint manufacturing firms by 12.7 units, 16.4 units, 23.5 units, 18.4 units, and 27.3 units, respectively. This shows that all the identified determinant variables (FS, IE, TP, MD, PB) exert a positive significant influence on the technology usage in the selected listed paint manufacturing firms at probability values of 0.002, 0.001, 0.003, and 0.004 respectively. Furthermore, the analysis revealed that a unit increase in all identified determinant factors such as Cost of Technology Deployment (CID) will decrease technology usage by (-9.8 units) in the selected listed paint manufacturing firms. This shows that the cost of technology deployment has a significant effect on usage and also decreases the implementation decision in the selected manufacturing paint firm. The analyses indicate that technology usage is significantly related to the cost of technology deployment at 0.004 percent.

Also, as shown in table 3, all combined variables of determinant factors variables had a strong relationship on technology usage, with a coefficient of determination (R²) of 0.7581 (approximately 76%) and a high adjusted (R²) value of 0.7379 (approximately 74%). result

indicates that technology usage in a selected paint manufacturing firm is attributed to variability in Firm Size (FS), Cost of technology deployment (CTD), Industry Environment (IE), Technology Progress (TP), Market Demand (MD) and Perceived Benefit (PB). Collectively, all the variables are statistically significant at a 5% level (0.05). The F-statistics (1310.21) and p-value (0.0000) also confirmed the significance of the model. Invariably, it is shown that all independent variables incorporated into this model have an influence on technology usage in the selected paint manufacturing firm. Due to the results of the analysis, the null hypothesis is rejected while the alternative hypothesis is accepted. That is, there is a significant difference in the factors determining technology usage in the selected listed paint manufacturing firms in Nigeria.

Table 3: Regression Analysis of Differences of Determinant factors Influencing Technology Usage in the Selected Manufacturing Paint Sector in Nigeria.

Model	Coefficient	Std.Err	T	P>{ t }
(constant)	396.2216	18.38443	17.24	0.000
Firm Size (FS)	12.70941	3.677142	4.17	0.002
Cost of Deployment(CID)	-9.885714	3.812234	2.13	0.004
Industry Environment (IE)	16.46362	1.44303	5.40	0.001
Technology Progress	23.57143	3.034134	7.77	0.003
Market Demand	18.46398	3.334789	3.52	0.002
Perceived Benefit	27.35741	1.44303	2.19	0.004
F(6, 168) = Prob>F= 0.0000	R²= 0.7581	AdjR²=0.7379	Root MSE = 9.2390	@0.05% level
	1310.21			

Source: Author, Compilation (2021)

Descriptive Statistics of Firm Variables used for the study

Result in table 4, revealed the descriptive analysis of Firm variables used in the study. Statistical variables reported under this section include mean, standard deviation, minimum and maximum of the pooled observations of all variables across unit and time period i.e 7 selected paint Manufacturing firm, in Lagos state, Nigeria, over 10 years period covering 2010 to 2019. Summary of the descriptive statistics is presented in table 1. Analysis from the results revealed that the average value of Return on Capital Employed (ROCE) of the seven selected listed paint manufacturing firms stood at .1038777, while minimum stood at .0102 and the maximum .80965. The mean value of the Training and Development Cost (TDC) for the selected firms was 124811.2, while 23643 was the minimum and 1486646 was the maximum. The average value of Human Resources Cost (HRC) was 279029.7, while 34127 was the minimum and 565313 was the maximum. The average Maintenance, Running and Supply Cost (MRSC) stood at 54250.71 per annum, while 2034 was the minimum and maximum stood at 414862. The average Cost of Technology Deployed stood at 32338.4, while 3444 was the minimum and 189120 was the maximum. The average value of the Firm Size stood at 4.478225, while 2.7646 was the minimum and 7.6312 was the maximum.

Table 4: Summary of Descriptive Statistics of Firm Variables used for the study

Variables	Observation	Mean	Std. Dev.	Min.	Max.
ROCE	84	.1038777	.1554743	.0102	.80965
TDC	84	124811.2	264021.1	23643	1486646
HRC	84	279029.7	90777.56	34127	565313
MRSC	84	54250.71	74545.12	2034	414862
CTD	84	32338.4	22046.6	3444	189120
FS	84	4.478225	1.293388	2.7646	7.6312

Source: computed by researcher using data extracted from annual reports of selected firm (2021)

Regression Annalysis of Influence of Technology Usage on Financial Performance of Selected manufacturing Paint Sector in Nigeria.

For the purpose of assessing the influence of technology usage on financial performance of selected listed paint manufacturing firms in Nigeria, Panel Regression was employed. According to the results of the analysis as presented in table 5, the fixed effects model shows that the two tail P-values test the hypothesis that each coefficient is different from 0. The null hypothesis is rejected at the 5% level of significance, showing that one of the independent variables (cost of technology deployed) has a significant positive influence on the return on capital employed, which is used as a proxy for firm financial performance. The fixed effects model shows that the variable cost of technology deployed has a positive coefficient (8.09) and is statistically significant at the 5% level. This finding indicates that an increase in technology leads to an increase in firm performance. This is obvious because an increase in technology deployed can give room for work efficiency, thus leading to an increase in production capacity. The coefficient (6.57) for training and development shows a positive influence on the firm's performance, but it is not statistically significant. This finding indicates that training and development do not influence a paint manufacturing firm's financial performance in Nigeria. The coefficient (-3.28) related to various human resource costs incurred by paint manufacturing firms is negative and not statistically significant. The finding indicates that an increase in the cost of human resources has a negative influence on firm financial performance. The coefficient (-2.69) for maintenance, running, and supply costs of paint manufacturing firms is negative compared to The finding indicates that a high increase in maintenance, running, and supply costs has a negative influence on firm financial performance. The coefficient (0.0035913) connected to firm size shows a positive influence on the firm's financial performance, but it is not statistically significant.

The result presented in table 5 also presents the random effects regression. The coefficient (6.87) for the cost of technology deployed shows a positive influence on the firm's financial performance, and it is statistically significant at the 5% level. This finding indicates that an increase in technology deployed leads to an increase in firm financial performance. The coefficient (7.57) for training and development shows a positive influence on the firm's

performance, but it is not statistically significant. The coefficient related to human resources costs (-8.90) shows a negative influence on firm performance, although it is not statistically significant. This indicates that human resources costs do not influence firm performance. The coefficient (-2.42) for maintenance, running, and supply shows a negative influence on the firm's performance, but it is not statistically significant. The coefficient (0.0071046) connected to firm size shows a positive influence on the firm's performance, but it is not statistically significant. The R² value from the Fixed Effects model shows a 79% variation of the firm's performance. The F statistics value in both models shows that all the models are adequate at a 5% level of significance.

Furthermore, Hausman test was performed to see if there is a significant difference between the estimates of the fixed effect estimator and that of the random effect estimator for the study in order to determine the most reliable estimation between the fixed effect estimation and that of the random effect estimation. The use of the Hausman test to compare the fixed and random effect models and subsequently make a choice between them becomes imperative. The result ($\chi^2 = 0.0443$; P.0.05) presented in Table 6 allows the random effect to be rejected. The P-value of the Hausman test between Fixed and Random is 0.0443. Since the P-value is less than 5% level of significance. Finally, analysis from panel regression indicates that all joined technology usage variables influence financial performance of selected manufacturing paint firm given the coefficient of determination (R²) of **0.7904**.

Table 5: Shows the results obtained from the regression analysis.

Dependent Variable: Return on Capital Employed		
Independent Variables	Fixed Effects	Random Effects
TDC	6.57	7.57
	0.388	0.292
HRC	-3.28	-8.90
	0.875	0.661
MRSC	-2.69	-2.42
	0.255	0.295
CTD	8.09	6.87
	0.012	0.006
FS	0.0035913	0.0071046
	0.895	0.731
R-squared	0.7904	0.3282
F-statistics	0.0159	0.0159

Source: Author Computation (2021)

Table 6: Hausman Test Result

---- Coefficients ----				
	(b)	(B)	(b-B)	sqrt(diag(V_b-V_B))
	Fixed1	Random2	Difference	S.E.
TDC	6.57e-08	9.03e-08	-2.46e-08	3.96e-08
HRC	-3.28e-08	-6.40e-07	6.07e-07	8.68e-08
MRSC	-2.69e-07	-2.28e-07	-4.19e-08	7.15e-08
CTD	8.09e-07	-6.72e-07	1.48e-06	3.39e-07
FS	.0035913	.0080854	-.0044941	.0244698

b = consistent under Ho and Ha; obtained from xtreg

B = inconsistent under Ha, efficient under Ho; obtained from xtreg

$$\begin{aligned} \text{chi2}(1) &= (b-B)'[(V_b-V_B)^{-1}](b-B) \\ &= 0.03, \text{ Prob}>\text{chi2} = 0.0443 \end{aligned}$$

Discussion on Findings

The results of the analysis revealed specific determinant factors toward usage of technology in the selected sampled paint industry in Nigeria, such as Firm Size (FS), Cost of technology Deployment (CID), Industry Environment (IE), Technology Progress (TP), Market Demand (MD), and Perceived Benefit (PB). The results showed that there is a significant difference in determinant factors for technology usage in the painting industry. These results are supported by earlier studies by Munasingbe (2015), Sekyere *et al.* (2017) shedding light on technology usage determinant variables and at different levels of their influence on organisational performance. Also in line with the argument of Shiels *et al.* (2003), they found that characteristics of the firm and industry sector are contributory factors to the exploitation of technology. Finally, results revealed that technology usage influences the performance of selected listed paint manufacturing firms in Nigeria. These results corroborate the findings of Shao *et al.* (2001), Rufai (2014), Akande and Yinus (2013), Oladejo *et al.* (2014), Oladejo and Yinus (2020), and Elias (2016) in the field of emerging trends in technology usage and firm performance with the argument that technology has an effect on technical efficiency, operational efficiency, and contributes to the performance of corporate organizations.

Conclusion and Recommendation

The study concluded that all the identified variables; Firm Size (FS), Cost of ICT Deployment (CID), Industry Environment (IE), Technology Progress (TP), Market Demand (MD) and Perceived Benefit are specific determinant factors for Technology Usage. Further, all joined technology usage variables influence the overall financial performance sampled Paint firms in Nigeria. It is recommended that the manufacturing paint sector put more effort into developing mechanisms that can strengthen the full usage of technology, such as investment in modern technologies and capacity-building of human resources.

Implications of the Study

- I. The study adds to the body of knowledge in the field of innovation development by providing empirical evidence on the determinants of technology deployment and their impact on performance in paint manufacturing companies.
- II. The study forms the basis for policy formulation in global society toward the achievement of an effective manufacturing firm and further research in the areas of business innovation management and manufacturing firm performance

References

- Adewoye, J.O, Abioro, M.A. and Adele, H.A. (2017): Information communication technology (ICT) and employee job security: evidence from selected manufacturing company in Nigeria. (*Ilorin Journal of Human Resource Management-IJHRM*).
- Akanbi. T.A. (2017) "Effect of ICT adoption on non-financial performance of quoted manufacturing industries in Nigeria," *International Journal of Accounting and Financial Reporting*, vol. 7, no. 2, pp. 336-345, 2017
- Akande, O.O, Yinus, Oluwaseun (2013):An Appraisal of the Impact of Information Technology (IT) on Nigeria Small and Medium Enterprises (SMEs) Performance. *International Journal of Academic Research in Management (IJARM)* Vol. 2, No. 4, 2013, Page: 140-152, ISSN:2296-1747©Helvetic Editions LTD, Switzerland.
- Akinboade A. A. (2020), Impact of ICT Usage on Financial Performance of Quoted Manufacturing Companies in Lagos State, Nigeria, *Afr. J. Comp. & ICT*, Vol. 13, No. 1, pp. 28– 42.
- Beisland, A. E. (2009). Essays on the Value Relevance of Accounting Information, *Working paper of Norwegian school of Economics and Business Administration*
- Chris, Kiwamu (2018): Strategic Roadmap for the growth of the Nigerian paint industry. 30th Annual General Meeting (AGM) of the Paint Manufacturers Association of Nigeria. *Vanguard Business Report* , September 26, 2018.
- Cooper, R. B. and Zmud, R. W. (1990). Information technology implementation research: A technological diffusion approach. *Management Science*, 36(2): 123-139.
- Khalifa, Mohamed and Shen, Kathy (2008): Drivers for transactional B2C M-commerce adoption: Extended theory of planned behavior. *Journal of Computer Information Systems* 48(3):111- 117
- Koellinger P (2006). Impact of ICT on Corporate Performance, Productivity and Employment Dynamics. Special Report of the European Commission Enterprise & Industry Directorate General No. 01/2006, European e-Business Market Watch.
- Koellinger, P. (2005). Why IT matters - An empirical study of e-business usage, innovation, and firm performance. DIW Berlin Discussion Paper 495.
- Maliranta M and Rouvinen P (2003). Productivity effect of ICT in Finnish business. Discussion Paper No. 852, Research Institute of the Finnish Economy.
- Maliranta M and Rouvinen P (2006). Informational mobility and productivity: Finnish evidence. *Economics of Innovation and New Technology*, Vol. 15(6), September.
- Matambalya, Francis, Wolf, Susanna (2001) the_role_of_ict_for_the_performance_of_smes_in_east_africa_empirical_evidence_from_kenya_and_tanzania <https://www.researchgate.net/publication/23516430>

- Munasinghe, P. G. (2015). Factors influence on usage of computerized accounting system on small and medium scale enterprises. <https://www.researchgate.net/publication/293172935>
- Oladejo M.O and Yinus Oluwaseun (2020); Electronic Accounting Practice: An effective means for financial reporting. International Journal of managerial Studies and Research Volume8, Number 3, March 2020. PP 01-09. IF: 69. ICV available at [www.arcjournals.org /indexing](http://www.arcjournals.org/indexing).
- Oladejo, M. O and Yinus, O (2014); An influential analysis of the Impact of Information Technology (IT) on Cooperative Services in Nigeria: *European Journal of Business and Innovation Research*, Vol,2,no3 pp11-24,june 2014
- Onaolapo, A. and Odetayo, T. (2015). Effect of Accounting Information System on Organisational Effectiveness: A Case Study of Selected Construction Companies in Ibadan, Nigeria”, *American Journal of Business and Management*, 1(4):183-189.
- Shao, B.B. and Lin, W.T. (2001) Measuring the Value of Information Technology in Technical Efficiency with Stochastic Production Frontier, *Information and Software Technology*, 43, 447-456
- Tungo, E.M (2014) The influence of inventory management practices on organizational financial performance: case study: National Microfinance Bank Headquarters dares salaam; *Annual Conference, Tanzania*.