

Effect of Information and Communication Technology Adoption on Non-Financial Performance of Quoted Manufacturing Industries in Nigeria

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Received: November 12, 2017 Accepted: November 30, 2017 Published: December 12, 2017

doi:10.5296/ijaf.v7i2.12287

URL: <https://doi.org/10.5296/ijaf.v7i2.12287>

Abstract

This study examined the effectiveness of ICT adoption on Non-Financial Performance of quoted manufacturing industries in Nigeria. The study adopted stratified sampling technique for the selection of 76 respondents from the study area. Primary data was used for this study. Regression analysis model was used to establish the extent of the relationship between observed variables. The variables include ICT, growth and efficiency. The Adj. R- squared (0.3402, 0.2167) revealed that there is a feeble relationship between ICT and Non-Financial Performance of quoted manufacturing industries. The hypotheses of this study are measured at level of 95% confidence interval. In continuation to the findings from this research, it revealed that the adoption of ICT in quoted manufacturing companies operations over the years has really contributed to the effectiveness, quality of service as well as customer satisfaction. It was recommended that ICT should be align with business plan in order to enhance manufacturing company effectiveness, quality of service and customer satisfaction in order to enhance organizational objectives.

Keywords: manufacturing sector, information communication technology, growth, quality service, borrowing, profitability

1. Introduction

Evidence from literature showed that information has always played an important role in human life but the emergence of social progress and the dynamic development in science and technology has immeasurably increased the role of information in every aspect of human

endeavour, both customers and industries have been increasingly profited from the adoption of IT during the last two decades in order to deliver effectively. Customer service, branch productivity, innovation in service delivery, fast and reliable service, risk management and real time information system are some of the benefit derived through the information technology. Manufacturing company are sectors of the economy that creates the investment capital at a faster rate compare to any other sector of the economy therefore promoting more effective linkages among different sectors and the growth in manufacturing output is also a key element in the successful transformation of most countries that have witnessed sustained rises in their per capital incomes (Olumuyiwa *et al.*, 2014). Adejugbe, M O A. (2004) stated that the ICT adoption has also contributed majorly on customer satisfaction in which the following recommendations are made: banks and manufacturing industries should persistently explore the possibility of raising the standard of ICT based systems and services, intensify efforts in meeting up with global operational systems and high sense of reliability should be demonstrated, responsiveness and credibility in the use of ICT in their operations.

1.1 Research Objective

This study examined the effectiveness of ICT Adoption on non-financial performance of quoted manufacturing industries in Nigeria while other objectives were to:

- i. determine the effects of ICT on quality of service of manufacturing industry
- ii. determine the effects of ICT on customer satisfaction of manufacturing company

1.2 Research Hypotheses

The underlisted hypotheses were tested:

H₀₁: ICT adoption does not have significant influence on the non-financial performance in manufacturing quoted companies.

H₀₂: there is no significant relationship between ICT and non-financial performances of manufacturing quoted companies

2. Literature Review

2.1 Concept of ICT

In order to expatiate what ICT implies, some literatures are review on the concept of ICT. It is an extended term for information technology (IT) which explain the role of integration of telecommunications (telephone lines and wireless signals) and unified communications, computers as well as necessary enterprise software, middleware, storage, and audio (Wikipedia, 2017). Akanbi and Aruwaji (2016) emphasized that AIS as a system that combines the methodologies, controls and accounting techniques with ICT to provides internal reporting and external reporting data, track transactions, financial statements and trend analysis capabilities to improve organization's performance. Gokhe emphasized that ICT is technology that supports activities involving information. Such activities include gathering, processing, storing and presenting data which also involve alignment of collaboration and communication. Hence, IT has become ICT. Technology does not exist in

isolation ICT contributes at various points along a line of activity ICT is used in activities – the ICT use depends on the activities. The cogent outputs of educational activities context include knowledge, experience and products. The output should be useful to the users (self and others). Thus, using ICT to support creativity is commonly found in small, democratic, high value economies focused on smartening up. On the other hand, economies that are large and low value (focused on minimising costs including labour costs) tend to be focused on using ICT to support productivity (at least in the short term).

2.2 Non-Financial Performance (NFP)

Non-financial metrics are quantitative measures that cannot be expressed in monetary units. Common financial measures include earnings, average order value, profit margin, and return on assets. Measures such as market share, customer satisfaction, and new product adoption rate fall into the non-financial metrics. Non-Financial performance measures the non-financial aspects of the firm such as product quality, workforce development, customer satisfaction, timely delivery, innovation measures, attainment of strategic objectives, efficiency, leadership and employee satisfaction (Davis et al., 1989). Non-financial performance measures have several important benefits compared to financial performance measures. Firstly, high performance on non-financial performance measures is positively related with future financial performance. In this way, it can instigate the manager to take actions that benefit the firm in the long term (Banker, Potter, & Srinivasan, 2000). Secondly, non-financial performance measures reduce the amount of earnings management (Ibrahim & Lloyd, 2011). One important limitation of non-financial performance measures is that they may be biased, that their computation may change over time and often differs between firms, which hamper comparison of performance between firms (Eccles & Mavrinac, 1995). Ittner et al. (1997) established that these non-financial performance measures can be easier manipulated than the financial measures because they are rarely subjected to public verification. As both financial and non-financial performance measures have pros and cons, combining both types of measures are often the best opinion. Said et al. (2003), for instance, find that combining both measures can leads to a significant higher mean level of return on assets and a higher level of market return.

2.3 Statement of the Problem

Existing literatures have shown that, some manufacturing companies in Nigeria have been characterized by declining productivity rate and extension employment generation, which is caused largely by inadequate electricity supply, smuggling of foreign products into the country, trade liberalization, globalization, high exchange rate and low government expenditure (Bayo-Moriones et. al., 2013). Thus, the inadequacy in the performance of manufacturing companies in Nigeria is because of; massive importation of finished goods, inadequate financial support and other exogenous variables which have resulted in the reduction in capacity utilization and output of the manufacturing companies of the economy. In comparison to the developed countries, the manufacturing sector of any developed economy is reputed to be the engine of growth and a catalyst for sustainable transformation and national development. This is due to its enormous potentials as a tool for creating wealth,

generating employment, contributing to the country's GDP as well as alleviating poverty among the citizenry. Presently, the extensive use of ICT is changing the way people or companies work in order to increase productivity rate and generate employment. Some authors have worked on the benefits of ICT to organizations. Mouelhi, (2009) stipulated that, the benefits of ICT for a firm includes saving of inputs, general cost reductions, higher flexibility and improvement in product quality. Bayo-Moriones et. al., (2013) ascertain that ICTs play a major role in networking and communication as firms use these technologies to facilitate communication among employees and reduce co-ordination costs. Furthermore, ICT contributed to the production process in any organizations as monitoring technologies could be used to reduce the number of supervisors required in the process (Hanna, 2003). ICT helps in areas such as information gathering and dissemination, inventory control and quality control. The manufacturing quoted companies has an important role to play in economic development, poverty reduction and employment creation in developing economies. Olugbenga (2006) stipulated that ICTs are being used for strategic management, communication and collaboration, customers' access, managerial decision making, data management and knowledge management since it helps to provide an effective means of organizational productivity and service delivery. Buhalis (2003) also noted that the ICT application in a firm leads to fundamental changes which provide powerful strategic and tactical tools for organizations if properly applied and used. These usually have great impact in strengthening organizational competitiveness and promotion. However, it is important to emphasize importance of long term investments in ICT because the positive effect of ICT occurs only after a period of adoption. Also, it is paramount to bear in mind that organizations adopting ICT should adjust their structure, make internal changes such as personnel training, and reorganize them. ICT effects on manufacturing quoted companies are identified and categorized into four groups: Performance, Growth, Expansion and New products.

This paper tends to bridge the gap between the important of ICT adoption to organizations in developing countries like Nigeria and developed countries, as established by authors such as Mouelhi, (2009), Moriones et. al., (2013), Agarwal, R., & Karahanna, E. (2000), Olugbenga (2006), Brynjolfsson and Hitt (2003), Buhalis (2003) and Bhavna, (2015).

3. Research Methodology

The study focuses on Cadbury Nigeria Plc. regression model. The study adopts stratified sampling technique for the selection of 76 respondents from the study area. Primary data was used for this study. Regression analysis model was used to establish the degree of relationship between observed variables. The variables includes ICT, growth and efficiency

3.1 Model Specification

$$\text{Gwt} = \beta_0 + \beta_1(x_1) + \beta_2(x_2) + \dots + \beta_n(x_n) + \varepsilon \quad (1)$$

$$\text{Eff} = \beta_0 + \beta_1(x_1) + \beta_2(x_2) + \dots + \beta_n(x_n) + \varepsilon \quad (2)$$

Where rk = record keeping through the use of ICT

Dc = accurate data communication through the use of ICT

Ed = easier data searching through internet facility

Ap = automated process

Qs = quality of services

Cs = Customer satisfaction

Eff = Efficiency

$x_1 \dots x_n$ = are the independent variables (Forensic Accounting)

β_0 = is the intercept.

$\beta_1 \dots \beta_n$ = are the coefficients of interest.

ε = is the error.

3.2 Validity Test Result

The Table 1 below is used to show the validity test result for the degree of the interrelationship among the variables used to examine the effect of ICT on non-financial performance.

Table 1. Table showing the validity test result

Item	Obs	Sign	Item-test correlation	Item-rest correlation	Average inter-item covariance	alpha Cronsbach
Eff	76	+	0.3986	0.1930	.0623158	0.7085
Qs	76	+	0.6023	0.4297	.0471228	0.5698
Cs	76	+	0.4774	0.2329	.056655	0.4947
Ap	76	+	0.7835	0.5856	.0249942	0.7653
Dc	76	+	0.2635	0.0294	.0733216	0.5612
Ds	76	+	0.3552	0.0376	.0717778	0.6848
Rk	76	+	0.6359	0.3620	.0416491	0.7831
Test scale					.0539766	0.8238

Source: Researcher computation, 2017.

However, the result revealed a positive interrelationship among the variables. Also, the test scale of approximately 0.8238 showed that the internal consistency is preferred and good reliability based on Cronbach's Alpha value which suggests that an internal consistency of $\alpha \geq 0.8$ is preferred and reliable acceptable.

4. Results and Discussion

4.1 Analysis of the Effects of ICT on Non- Financial Performance of Manufacturing Company

The models were estimated as shown in the table 2 below. It can be seen from the ordinary least square regression that AP, DC and DS have positive impact on Efficiency while only RK has negative effect on EF.

Table 2. The regression result of the effects of ICT on efficiency

<i>Dependent variable</i>	<i>Independent variables</i>	<i>Coefficient</i>	<i>Standard Error</i>	<i>T</i>	<i>P> t</i>	<i>[95%Conf. interval]</i>	
EF	<i>AP</i>	.407778	.1205688	3.34	0.001	0.1616856	0.64387
	<i>DC</i>	0.347222	0.1205688	2.88	0.005	0.10613	0.58831
	<i>DS</i>	0.0416667	0.1214874	0.34	0.733	-0.2012624	0.2845958
	<i>RK</i>	-0.75000	0.1947113	-3.85	0.000	-1.139349	-0.3606506
	<i>constant</i>	0.95833	.2677378	3.58	0.001	0.4229585	1.493708
R-squared	=	0.2649					
Adj R-squared	=	0.2167					
Prob> F	=	0.0008					
F(4, 61)	=	5.50					
Root MSE	=	3.8999					

Source: Researcher computation, 2017.

Putting all other variables constant, a unit rise in AP, DC and DS bring about .407778, 0.347222 and 0.0416667 units increase in EF respectively while a unit rise in RK leads to 31.54043 unit fall in EF. All the explanatory variables is statistically significant at 5% confidence level except DS. The variables however, give about 26% explanation for fluctuation in Efficiency and the model is fit considering the low probability value of F-statistic.

4.2 Analysis of the Effects of ICT on Quality of Service of Manufacturing Industry

The models were estimated as shown in the Table 3 below. It can be seen from the ordinary least square regression that AP, DC, DS and RK have positive impact on Efficiency.

Table 3. The regression result of the effects of ICT on quality of service delivery

<i>Dependent variable</i>	<i>Independent variables</i>	<i>Coefficient</i>	<i>Standard Error</i>	<i>T</i>	<i>P> t</i>	<i>[95% Conf. interval]</i>	
QS	<i>AP</i>	.495614	.0952429	5.20	0.000	0.3051642	.6860639
	<i>DC</i>	0.1622807	0.0942429	1.70	0.093	-0.0281692	0.3527306
	<i>DS</i>	0.2763158	0.959685	2.88	0.005	0.0844149	0.4682167
	<i>RK</i>	0.4473684	0.1538115	2.91	0.005	0.1398033	0.7549335
	<i>constant</i>	-.4868421	.2114985	-2.30	0.025	-0.9097598	-.063924
R-squared	=	0.5957					
Adj R-Squared	=	0.5691					
Prob> F	=	0.0000					
F(4, 61)	=	22.47					
Root MSE	=	0.30807					

Source: Researcher computation, 2017

Putting all other variables constant, a unit rise in AP, DC, DS and RK bring about .495614, 0.1622807, 0.2763158 and 0.4473684 units increase in EF respectively. All the explanatory variables are statistically significant at 5% confidence. The variables however, give about 57% explanation for fluctuation in Quality of service and the model is fit considering the low probability value of F-statistic i.e 0.0001.

4.3 Analysis of the Effects of ICT on Customer Satisfaction of Manufacturing Company

The models were estimated as shown in the Table 4 below. It can be seen from the ordinary least square regression that AP, DC, DS and RK have negative impact on customer satisfaction except DC.

Table 4. The regression result of the effects of ICT on customer satisfaction

<i>Dependent variable</i>	<i>Independent variables</i>	<i>Coefficient</i>	<i>Standard Error</i>	<i>T</i>	<i>P> t</i>	<i>[95% Conf. interval]</i>	
CS	<i>AP</i>	-.4152047	.1178595	-3.52	0.001	-.6508792	-.1795301
	<i>DC</i>	.3625731	.1178595	3.08	0.003	.1268986	0.5982476
	<i>DS</i>	-.1754386	.1187574	-1.48	0.004	0.0844149	0.4682167
	<i>RK</i>	-.3157895	0.1903359	-1.66	0.102	-.6963897	0.0648107
	<i>constant</i>	1.912281	.2617214	7.31	0.000	1.3989362	0.435625
R-squared	=	0.3808					
Adj R-Squared	=	0.3402					
Prob> F	=	0.0000					
F(4, 61)	=	9.38					
Root MSE	=	0.38123					

Source: Researcher computation, 2017.

Putting all other variables constant, a unit rise in AP, DS and RK bring about -.4152047-.1754386 and -.3157895 units decrease in CS respectively while a unit increase in DC brings about .3625731 unit increase in CS. All the explanatory variables are statistically significant at 5% confidence. The variables, however, give about 38% explanation for fluctuation in Quality of service and the model is fit considering the low probability value of F-statistic i.e 0.0001.

4. Conclusion and Recommendations

Firstly, customer satisfaction was discovered as the most potent factor in the adoption of ICT by quoted manufacturing companies in Nigeria. This is consistent with Adam (2003) finding which shows that customer satisfaction plays a critical role at an organization adoption of ICT. Secondly, organizational efficiency is also another important factor that inhibits the adoption of ICT by quoted manufacturing companies. If there is adequate ICT infrastructure in the country, it will be very easier for quoted manufacturing companies to adopt it rather than running away from ICT. The finding is in accordance with Kapurubandara *et al* (2006), which that quality of service of quoted manufacturing companies in Nigeria is improved if adequate ICT services are put in place. In continuation to the findings from this research, it has been concluded that the usage of ICT in manufacturing quoted companies operations over the years has really contributed to the efficiency, productivity, quality of service as well as satisfying the customers of these companies. In order to address the problem of continuous ICT adoption imbalances in the quoted manufacturing companies the following policy recommendations are being suggested: Align ICT plans with business for the improvement

on efficiency, quality of service and satisfying customer towards achieving organizational objectives of the firms and management should set realistic user expectations such as the initial efficiency tips.

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