

ICT ADOPTION AND INTEGRATIONIST IMPACT ON PERFORMANCE OF BUSINESS UNITS OF UNIVERSITIES IN SOUTH WEST NIGERIA

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ABSTRACT

The study examined the influence of human action on the effect of the adoption of ICT solutions on the performance of business units of Universities in South West Nigeria. To do this, the entire population of Universities in South Western Nigeria comprising of seven Federal, ten state and twenty private Universities were sampled for the study. Both primary and secondary data were employed for the study. One hundred and fifty two questionnaires were administered out of which one hundred and forty two were returned representing 93% response rate. The secondary data were derived from the annual reports of each of the Universities covered by the study. The variables of interest from the secondary data were: Return on Capital employed (ROCE), Net Profit Margin (NPM), and ICT Cost Efficiency (ICTCE). Data collected were analysed using both inferential as well as descriptive statistics especially the Multiple Regression technique. The study found out that there is a significant relationship between ICT use and Performance of business units of the said Universities [$F(1,40) = 9.452; P < 0.05$]. The study concluded that if properly managed, the use of ICT solutions has a significant potential to boost considerably the performance of business units of Universities in South-western Nigeria. Furthermore, competent hands engaged should be trained and retrained for effective use of the facility to exploit to the optimum the benefits of ICT.

Key Words: ICT, Adoption, Performance

1. INTRODUCTION

All over the world, the ways of doing business has continued to change in the last two decades and what is happening in Nigeria is not an exception. Evidence of change is shown in the involvement and

utilization of modern technology in virtually every aspect of business transactions. Technology is developed to solve problems associated with human needs in more productive ways. If there is no problem to solve, the technology will neither be developed nor adopted (Huda, Tabassum, & Ahmed, 2009). Since 2005, the use of ICT to enhance service delivery in business units of Nigerian Universities has been quite remarkable. ICT products, devices and services are available everywhere (CBN, 2007). The adoption of relevant technologies facilitates the enhancement of the modernisation of the payment system, allows greater mobility, and flexibility in capital and financial movement as well as “trans boarder data flows”. In addition, ICT increases the pace of economic transactions and enhance business practices. In other words, ICT aids prompt decision and action which borders on increasing efficiency and performance (Bamidele, 2006). In developed countries, ICTs are generally believed to have a dramatic influence and are however conceptualised to continually determine the competitive nature of virtually all businesses. Conversely, in the context of developing countries, Ojo (1994) submitted that ICTs have brought a technological revolution whose utilization and production has been somewhat limited but whose potentials for diffusion holds a great promise in accelerating the socio economic development of these countries. However, advances in ICTs were pivotal to the recent social and economic transformation in both the developed and developing countries. Its tremendous effect is obvious in both the educational as well as non-educational organizations. The focus of this study however is more on the effect of ICT on the management of business units of Universities in South-western Nigeria.

ICTs effect on the administration of University education can be viewed from four broad perspectives which are as follows:

1. General Administration. Application of the ICT in this instance include use of ICT to coordinate and monitor various aspects of University Administration such as:
 - Students enrolment monitoring
 - Students’ record keeping
 - Management of students’ accounts
 - Students’ course registration
 - Students verification of exam results
 - Library operations and maintenance – provision of e-journals and the likes
 - Operational activities of varying Units, Sections, Departments and Divisions of the University
2. Instructional purposes: Application of ICT for instructional purposes can be seen in the usage of ICT to facilitate various instructional activities which the aid of such items which include:
 - Overhead projector
 - Multimedia projector
 - Virtual classrooms
3. Research purposes: Application of ICT for research purposes is seen in the following ways:
 - Researchers are enabled to access works of other researchers for reference purposes.
 - Researchers are enabled to upload their research works to be referenced by other researchers.
 - Researchers are enabled to constructively criticise from logical perspectives the works of other researchers to advance the course of knowledge.
 - Through ICT, the finishing point of one research could serve as a starting point of another research.
4. Management of University Profit Centres: Application of ICT for management of University Profit Centres is seen in the following ways among others:
 - Control of authorisation limits of workers in each of the centres.

- Monitoring of stock records of the various centres.
- Capturing of details of every transaction in the various centres.
- Surveillance and security coverage of the centres.
- Preparation of financial reports covering the various centres.
- Prevention and detection of fraudulent activities in the various centres.
- Facilitation of information flow between all stake holders both internally and externally.

The focus of this thesis however shall be on the fourth effect of ICT just mentioned as it is the centre point of the thesis. In Nigeria, development of ICTs is becoming more and more important in both the services such as Banks, Insurance companies, Educational Institutions etc. Prior to the seventies, ICTs are relatively unknown as virtually every sector of the economy is manually operated. However, as time went by ICTs began to gain gradual acceptance and now ICTs has entered virtually almost every sector of the economy though this is in varying degrees. The objectives of this study are as follows:

- (i) determine the impact of ICT adoption on personnel of the business units of Universities in South West Nigeria.
- (ii) establish the effects of ICT adoption on performance of the business units of Universities in the SouthWest Nigeria.

2. LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

Information and Communication Technology has permeated virtually every area of business activities of both developing and developed countries (Akomea-Bonsu&Sampong, 2012). This is evident in the ongoing diffusion of ICT and e-business technologies and services among firms which is a striking example of the possible dynamics of technological change and economic development. Economic theory (Breshnahan&Trajtenberg, 2002, Helpman, 1999) suggests that the adoption and diffusion of new technologies can be spurred by many factors and can have far reaching consequences. Virtually all economic spheres can be affected by technologically induced changes, including innovation dynamics, productivity and growth, the development of market structures, and the composition of labor demand.

While it is generally accepted that ICT affects firms' performance and characteristics as well as the environment in which firms operate, different firms in different sectors exhibit varying payoffs despite similar investments in ICT. Therefore, one of the areas this work tried to address is to find out why firms adopt ICT, what they do with it and how this affects their performance. ICT impacts on a firm's performance by triggering innovative processes, which in turn depend on the firm's internal and external characteristics. The starting point of this analysis is the premise that ICT is an enabler of innovation. In other words, the adoption and use of ICT per se does not automatically induce innovations. However, ICT can contribute indirectly to firm performance by enabling them to improve labor productivity, rethink processes and develop new products. Adetayo et al. (1999) and Boyett (1995) emphasized the effect of ICT on business as well as the effect of business on ICT. Oyebisi et al. (2000) declared that only organizations that overhaul the whole of their activities and operations by ICT adoption and diffusion are more likely to survive and prosper in the new millennium. Technological innovation is acknowledged to be a key source of industrial competitiveness and economic growth. There is a growing appreciation of the role of technology in enhancing productivity and competitive advantage. Advancements in ICT have undoubtedly and will continue to have in the foreseeable future a major influence in revolutionising the national

economy and indeed the global economy within which developing countries like Nigeria struggle for survival. Developments in the services of manufacturing firms should not be considered merely on the basis of increase in the number of their branches and firms generally. In addition, developments within the theme of this work relates in addition to procedures, processes, and methods of doing things to ensure greater efficiency cum productivity and profitability alike. Therefore, the resulting efficiency from development must be demonstrated by cost minimisation, increased profitability for the intermediaries, better service delivery for customer satisfaction and improved support for sustainable economic growth and development, for stakeholders' benefits (Anao, et. al. 1993) and for which reason firms inclusive of business units of Nigerian Universities deploy ICT to aid their operations. ICT is now deployed by countries to drive economic growth. Since the advent of ICT in the world, incredible advancement has been recorded and is still being recorded on a daily basis. We have digital technologies like fibre optic networks, instant messaging, cellular phones, new data networks, automated recording, 2.5G technology, and 3G technology to mention a few (Kwong, 2004). The fact that technology can be used to champion local economic development, health, education, social justice, human development, and reduction of poverty is no longer in doubt.

Some scholars have investigated the impact of ICT on productivity and development (Daveri, 2000; Black & Lynch, 2000). They found a positive relationship between ICT capital and economic development. Both Black and Lynch, on further enquiry on interaction between ICT and other factors within firms concluded that two main changes must be implemented by firms adopting these new technologies. Higher demand for skilled workers and work-place reorganization (re-engineering) is however an unavoidable feature of adoption diffusion of ICT. In order to make use of computers and related technologies more productive, firms need well educated labour force that are able to use or learn to use computers efficiently. In evaluating the contribution of ICT to economic growth, Oliner&Sichel (2000) attributed the effect of capital deepening almost entirely to ICT. Jorgenson &Stiroh (2000) claimed instead that ICT contribution is lightly smaller than that of other capital. Akomea-Bonsu&Sampong (2012) found that most SMEs reported a positive performance and other benefits by utilizing ICT in their businesses. Lack of internal capabilities, lack of financial support, non – availability of infrastructure and personal reasons were the major barriers in adopting ICT. Bharadwaj (2000) also argued that ICT becomes really effective when it is handled proactively by management, and also maintained that capacity for technical management allows firms to achieve better business results than their competitors. Pillat (2004) showed that firms operating in dynamic business environments need to process information more rapidly. These firms are more likely to adopt real-time communication technologies such as pagers and video conferencing, and they are more likely to have EDI connections. The important role which ICT plays for enabling product and service innovations as well as outsourcing of non-core activities is also demonstrated in several of the case studies.

Different models have been postulated by different scholars to explain the impact of ICT on organizations performance. The first model by Preece (1994) is the Technological Deterministic Model which asserts that technology like the ICT is the single most important factor in determining the success of an organization. The second model also by Preece (1994) known as the Social Action Model sees technology as enabling rather than deterministic. A third model by Kimble &McLoughlin (1995), the Integrationist Impact Model seeks to conceptualize the links between context, process and human action and to highlight the mechanisms through which such

impacts evolve. This model, introduces a new and very important concept in looking at the ICTs and their impact on SMEs. It stresses the need for the inclusion of the “human input” in the whole setup a phenomenon that has received scanty attention. So, we therefore hypothesize that;

H₀₁: There is no significant impact of ICT adoption on personnel of the Business Units of Universities in South West Nigeria.

H₀₂ Adoption of ICT Solution has no significant effect on performance of business units of Universities in South West Nigeria.

The research questions addressed by this study are:

1. What is the impact of ICT adoption on personnel of the business units of Universities in South West Nigeria?
2. What effect has ICT adoption on Performance of Business Units of Universities in South Western Nigeria?

3. METHODOLOGY

The exploratory research design was adopted for this study. Both primary and secondary data were employed for the study. The population of the study covers all the thirty seven Universities accredited by the Nigerian Universities Commission. These comprise of seven Federal, ten State and twenty private Universities located in the South West zone of the country. A total of one hundred and fifty two structured questionnaires were administered to the concerned officers of the Universities namely: Bursar, Deputy Bursar, Managers, Accountants and Administrative Officers. One hundred and forty two were completed and returned giving a response rate of approximately 93%. All items were subjected to reliability test, the resulting Cronbach’s alpha value ranges from 0.70 to 0.88 which is reliable enough for an applied research of this nature (Nunnally, 1978). Likert-type scale was used for each item (1 = Strongly Disagree, 2 = Disagree, 3 = Partially Disagree, 4 = Partially Agree, 5 = Agree and 6 = Strongly Agree. The responses were analyzed through difference of mean, analysis of variance (ANOVA), Pearson’s moment correlation coefficient, Partial correlation simple linear regression and factor analysis. Secondary were collected from the available Annual Reports and Accounts of the Universities covered by the study. Information of concern to the study from the secondary data are as follows: Net Profit Margin (NPM), Return on Capital Employed (ROCE) and ICT Cost Efficiency (ICTCE).

4. RESULTS

Descriptive Statistics:

Table 4.1 Percentage Distribution of Respondents by Status

		Respondent			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Administrative Officer	6	4.2	4.2	4.2
	Accountant	32	22.5	22.5	26.8
	Principal Accountant	70	49.3	49.3	76.1
	Deputy Bursar	29	20.4	20.4	96.5
	Bursar	5	3.5	3.5	100.0
	Total	142	100.0	100.0	

Source: Field survey, 2011

Table 4.2 Percentage Distribution of Respondents by Institution

		Type			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Private Universities	44	31.0	31.0	31.0
	State Universities	36	25.4	25.4	56.3
	Federal Universities	62	43.7	43.7	100.0
	Total	142	100.0	100.0	

Source: Field Survey, 2011.

Table 4.3 Analysis of Effect of ICT adoption and diffusion on Personnel

Fear of Retrenchment

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Hardly Agree	17	12.0	12.0	12.0
	Agree	79	55.6	55.6	67.6
	Strongly Agree	46	32.4	32.4	100.0
	Total	142	100.0	100.0	

Alter Skills for Employment

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Hardly Agree	11	7.7	7.7	7.7
	Agree	66	46.5	46.5	54.2
	Strongly Agree	64	45.1	45.1	99.3
	45.00	1	.7	.7	100.0
	Total	142	100.0	100.0	

Reduce Workforce

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid				
Hardly Agree	19	13.4	13.4	13.4
Agree	79	55.6	55.6	69.0
Strongly Agree	41	28.9	28.9	97.9
34.00	1	.7	.7	98.6
43.00	1	.7	.7	99.3
44.00	1	.7	.7	100.0
Total	142	100.0	100.0	

Inferential Statistics

Table 4.4 Coefficients of Regression of the Predictors and Dependent Variables

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	44.878	10.362		4.331	.000
	Benefits	.867	.117	.529	7.430	.000
	Solutions	1.004	.288	.158	3.489	.001
	Investment	.124	.132	.070	.940	.349
	Effects	1.151	.073	.637	15.784	.000

a. Dependent Variable: Sum

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
Benefits	Between Groups	7867.799	29	271.303	7.258	.000
	Within Groups	4186.793	112	37.382		
	Total	12054.592	141			
Solutions	Between Groups	628.104	29	21.659	14.198	.000
	Within Groups	170.853	112	1.525		
	Total	798.958	141			
Investment	Between Groups	6812.089	29	234.900	7.216	.000
	Within Groups	3646.108	112	32.555		
	Total	10458.197	141			
Effects	Between Groups	7335.579	29	252.951	10.869	.000
	Within Groups	2606.619	112	23.273		
	Total	9942.197	141			

4.5 SUMMARY OF REGRESSION COEFFICIENTS OF NET PROFIT MARGIN OF THE UNIVERSITIES STUDIED

UNIVERSITIES	R ²	F	α_1	α_2	t ₁	t ₂
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FEDERAL	.759	11.031	1.19E-007	-.008	.92	-3.526
STATE	.574	4.724	.000	-14.429	.292	-1.129
PRIVATE	.934	49.699	-8.4E-010	.552	-.087	2.388

Table 4.6 SUMMARY OF REGRESSION COEFFICIENTS OF RETURN ON CAPITAL EMPLOYED (ROCE) OF THE UNIVERSITIES STUDIED

UNIVERSITIES	R ²	F	α_1	α_2	t ₁	t ₂
FEDERAL	.238	1.096	1.50E-008	1.81E-005	1.322	.087
STATE	.502	3.534	-2.8E006	-.060	-1.123	-2.094
PRIVATE	.995	668.873	1.58E-008	.38	4.232	4.271

Table 4.7 SUMMARY OF ANALYSIS OF VARIANCE (ANOVA) AND COEFFICIENTS OF ICT Cost Efficiency (ICTCE) OF THE UNIVERSITIES STUDIED

UNIVERSITIES	R ²	F	α_1	α_2	t ₁	t ₂
FEDERAL	.251	2.68	-2.7E005		-1.637	
STATE	.794	30.815	-7.6E-005		-5.551	
PRIVATE	.947	141.841	4.06E-008		11.910	

5. DISCUSSION

Table 4.1 revealed the distribution of respondents in which case the highest (49.3%) are the Principal Accountants being the officers who take direct responsibility for supervision of the business Units of the Universities.

Table 4.2 showed the % respondents by category of University with the Federal being the highest (43.7%) considering the staff strength of the various categories of Universities covered by the study.

From table 4.3, it could be seen that ICT adoption has such effects as: fear of retrenchment (88%), Alter skills for employment (92%), reduce workforce (83%). Thus H₀₁ is rejected. This finding is consistent with the findings of (Breshnahan&Trajtenberg, 2002, Helpman, 1999) which suggests that the adoption and diffusion of new technologies can be spurred by many factors and can have far reaching consequences including composition of labour demand.

From table 4.4, it is apparent that the effect of ICT adoption on personnel in turn impact performance considering the regression coefficient being 1.151, F-value = 10.869 and $P < 0.001$. Consequent upon these results, H_{02} is thus rejected. This result is in agreement with the findings of Kinmble&McLoughlin (1995) and Preece (1994) that opined that ICT adoption has a significant effect on performance of organizations.

Table 4.5 showed that ICT adoption has a significant effect on net profit of the business units of the universities covered by the study the highest effect being from private universities and the lowest being from State Universities. Similarly, from tables 4.6 & 4.7, it is apparent that ICT adoption has a significant effect on the return on capital employed as well as ICT cost Efficiency of the business Units of the Universities studied with private having the most significant effect followed by the State and then the Federal Universities in that order.

POLICY IMPLICATION, CONCLUSION AND RECOMMENDATION

This study has shown that ICT has been adopted by the business units of Universities in South West Nigeria albeit with varied returns on capital employed and ICT cost efficiencies.

The study therefore recommend as follows:

1. Business Units of Universities in South West Nigeria should not focus too much on adoption of ICT to the detriment of human capital upgrade. This is because following the integrationist model, the human element is most crucial in the translation of ICT adoption to improved performance. This is because, technology itself could not bring the desired improvement in performance without recourse to the human element whose duty is to monitor or operate the technology (Kimble &McLoughlin ,1995; Preece, 1994).
2. Universities in South West Nigeria should review their existing ICT adoption policies formulation and implementation. It is not enough to formulate policies but also equally important to implement the formulated policies according to the letter and spirit of the policy. This applies more importantly to the public Universities (both State owned and Federal owned Universities). This recommendation is predicated on the results obtained from Return on Capital Employed and ICT Cost Efficiency.

Further research could investigate the generalizability of the finding of this study to other geo-political zones in Nigeria.

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