INTERNATIONAL JOURNAL OF RESEARCH IN COMMERCE, IT & MANAGEMENT

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CONTENTS

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STATEMENT OF THE PROBLEM

OBJECTIVES

HYPOTHESES

RESEARCH METHODOLOGY

RESULTS & DISCUSSION

FINDINGS

RECOMMENDATIONS/SUGGESTIONS

CONCLUSIONS

SCOPE FOR FURTHER RESEARCH

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APPENDIX/ANNEXURE

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CONTRIBUTIONS TO BOOKS

- Sharma T., Kwatra, G. (2008) Effectiveness of Social Advertising: A Study of Selected Campaigns, Corporate Social Responsibility, Edited by David Crowther & Nicholas Capaldi, Ashgate Research Companion to Corporate Social Responsibility, Chapter 15, pp 287-303.

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- Schemenner, R.W., Huber, J.C. and Cook, R.L. (1987), "Geographic Differences and the Location of New Manufacturing Facilities," Journal of Urban Economics, Vol. 21, No. 1, pp. 83-104.

CONFERENCE PAPERS

- Garg, Sambhav (2011): "Business Ethics" Paper presented at the Annual International Conference for the All India Management Association, New Delhi, India, 19–22 June.

UNPUBLISHED DISSERTATIONS AND THESES

- Kumar S. (2011): "Customer Value: A Comparative Study of Rural and Urban Customers," Thesis, Kurukshetra University, Kurukshetra.

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WEBSITE

- Garg, Bhavet (2011): Towards a New Natural Gas Policy, Political Weekly, Viewed on January 01, 2012 http://epw.in/user/viewabstract.jsp

INFORMATION AND COMMUNICATION TECHNOLOGY (ICT) AND ORGANIZATIONAL PRODUCTIVITY AND GROWTH: UNIVERSITY OF BENIN IN PERSPECTIVE

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ABSTRACT

Information and Communication Technology (ICT) provides enormous potential for enhancing productivity of human resources in organization. The study investigates the relationship between ICT, organizational productivity and growth in the University. Data generated were analyzed and the various hypotheses were subjected to descriptive and inferential statistics. The main findings were that ICT is an enabler of broad based social and economic development and must therefore be accessible and affordable to all the citizens of the institution. Also, ICT infrastructure, accessibility and connectivity vary greatly from area to area. For instance, some departments/units enjoy to some extent fairly affordable Internet access while some departments/units by contrast, have little or no access to telecommunications infrastructure. It was discovered that ICT has a positive relationship with organizational productivity as work load is reduced, good utilization of labour, and the efficient satisfaction of students. The paper recommends that the administration and regulating body of the institution should facilitate an enabling environment that will ensure availability and affordability of ICT infrastructure across various units of the institution. There is the need to commit more financial resources for training, retraining and improving on the present state of ICT development in the institution.

KEYWORDS
Information and Communication Technology, Productivity and Growth.

INTRODUCTION

In today's business world, for organization to compete effectively, it requires information. This was manifested during the administration of Professor Nwaze as the Vice Chancellor of the University of Benin. He made a strong commitment in improving, sustaining and consolidating on the gains and achievements of his predecessor, one of the gains was the development in Information and Communication Technology (ICT) sector which received foremost attention in the scheme of things in the institution. ICT is one of the valuable resources to increase the organizational productivity and customer satisfaction. Information and communication technology (ICT) is the acquisition, processing, storage and dissemination of vocal, pictorial, textual and numerical information by a microelectronics-based combination of computing and telecommunications (Lonely & Shain, 1985). Wikipedia (2010) is of the view that ICT is the area of managing technology and spans wide variety of areas that include but are not limited to things such as processes, computer software, information systems, computer hardware, programming languages, and data constructs. In short, anything that renders data, information or perceived knowledge in any visual format whatsoever, via any multimedia distribution mechanism, is considered part of the domain space known as Information and Communication Technology (ICT).

ICT has a potential to influence the structures of organizations and improve the quality of organizational performance significantly. In today's world, telecommunications has become a vital element in the building of infrastructure of nations and economies (Akinboyo, 2008). No modern economy can be sustained today without an adequate and pervasive ICT. Importantly, the advances in Information and Communication Technology (ICT) have compressed the world into a global village. In this era of globalization, ICT has become a very key component in the emergence of new economies of high reckoning. A vast majority of the people, lack access to access to ICT services. This exclusion and missed opportunities have continuously become a frustrating bane in the nation's effort to bridge the gap in its human development quotient (Akinboyo, 2008). Against this background, these developments have made ICT a vital engine of any economy as it is an essential infrastructure that promotes the development of other sectors as education, health and banking among others.

Technological applications, such as relational database technology, computer-aided designing, word processing, spreadsheets and other software programming, increase productivity and growth of businesses. Productivity and growth are identified as the foundation for economic prosperity, a prerequisite for organizational development and an important indicator for organizational competitiveness (Dedrick, Gurbaxani & Kraemer, 2003).

STATEMENT OF THE RESEARCH PROBLEM

Information has become the live wire of the modern society. With information, man has and will always have a completely new lifestyle. The importance of ICT is not the technology as such, rather its role as an enabler for accessing knowledge, information and communications, which are increasingly vital elements in today's economic and social interactions between people, firms and nations. Against this background, the researcher sought to know:

(i) How important are ICT infrastructures to improved organizational growth and productivity?
(ii) Does the institution organize training in ICT knowledge, skills and expertise for staff and students alike?
(iii) What are the most critical work activities requiring the use of ICT in the institution?

(iv) Is the data/information processing of records properly managed with the deployment of ICT infrastructures in the University?
(v) Does the deployment of ICT infrastructures in the University reduce the cost of processing of data/information and volume of paper work?
(vi) ICT infrastructures are readily available and accessible within the institution?

HISTORICAL BACKGROUND OF INFORMATION AND COMMUNICATION TECHNOLOGY (ICT) IN UNIVERSITY OF BENIN

On the 23rd November, 1970, University of Benin was founded by the then Midwestern State Government. It started as Midwest Institute of Technology and was accorded the status of a full-fledged university by National Universities Commission (NUC) on 1st July, 1971 and became the University of Benin. The university has marked many years of solid achievements and expanding national and international reputation built upon a sense of enterprise, resourcefulness, creativity, innovativeness, astute diplomacy, patriotism, excellence and service.

Since its inception, the institution adopted the use of ICT for various purposes. The University first introduced the Prime Computer in the early 1970s to process various official documents. In an effort to improve on ICT applications the university took its core processes online in a bold initiative in 2003/2004 academic session by laying a fiber optic cable network in Ugbowo Campus of the University. The birth of these online services made the university the first higher institution in Nigeria to go online.

The institution has some existing ICT infrastructure in place consisting of approximately 260 networked computers distributed across 8 digital centres with at least two very small aperture terminal (VSAT) link to the Internet (providing a combined bandwidth of more than 2mbps down and 512kbps up), and Internet cafes located around the campuses. Student's registration, admission, processing of result and other record-keeping functions that use to be done manually are now being done online.

Building on top of the existing infrastructure, Socket Works (SW) Ltd and Global Payment Services (GPS) Ltd deployed new software and training of ICT personnel. The software to power the part-time and post-graduate programmes was provided by Socket Works Ltd while the software to power the full-time programmes was provided by GPS Ltd. There are customized portals with specialized websites such as http://www.unibenportal.com, which manages records for the university's internal programs, course registration, payment of school fees, online display of results, online application for accommodation in the University's hostels, online application and processes for admission into diploma, part-time and post-graduate programmes and students results reporting are enabled and streamlined with cards available for purchase from designated banks. While http://www.uniben.edu is used for information dissemination and public relations within and outside the University community. This is the first deployment of Socket Works and Global Payment Services College Portal software in a production environment.

The deployment was a resounding success. One year later, the students' database comprised records of 1,000 full time students, 6,000 part-time undergraduate students had successfully registered for the courses online, grades for 5,000 undergraduate part-time students had been successfully uploaded, the admission process was fully online for all internal programs, and payment of school fees was online for all programs. The introduction of College Portal brought about an increased awareness of ICT and improved productivity across the university, especially among users who had not previously used a computer in the past.

In 2004, the ICT unit was split into two unit that were: University Networking Unit (UNU) and Central Records Processing Unit (CRPU). The UNU handled the network infrastructure, bandwidth management and distribution of Internet facilities while the CRPU was in charge of processing of students records. Presently, all the units have been merged and it is now called "ICTU-CRPU".

From the foregoing, it can be seen that the deployment of ICT infrastructure in the institution is to ensure an effective and efficient information dissemination to enhance productivity and growth of the organization. This deployment of ICT infrastructure promotes purposeful learning, teaching and working condition of all and sundry in the institution.

Despite these feats with the use of ICT infrastructure the institution is still saddled with some challenges such as epileptic power supply, inadequate supply and accessibility of ICT infrastructure, poor weather condition causing the destruction of vital ICT infrastructure such as MODEM, power supply unit, VSAT, and so on and disruption of services.

ICT AS STRATEGY AND COROLLARY FOR ORGANIZATIONAL PRODUCTIVITY AND ECONOMIC GROWTH

Access to telecommunication and information technology holds the key to the organization's ability to respond to the demands of its position in the new world order. Access to modern telecommunications services should necessarily be within easy reach of every person that lives within shores of the institution. This is essential to drive socio-economic development, growth and improve the productivity of the organization (Englama & Bamidele, 2002). Information and communication technologies can substitutes for other forms of communication (mainly data processing with typewriters, postal service and personal travel) and are often more effective and more efficient than other forms in their use of time, energy and materials and in their effect on the quality of the environment. Electronic networks now make it possible for people to interact, coordinate action, gain access to and exchange information from computers. The networks provide numerous services including the e-mail, the World Wide Web, information retrieval, e-commerce, students' portals, news groups, intranets, extranets, games and chats. Staff and students in the institution can freely share ideas, data, opinions and products. Rapid expansion of the Internet holds substantial promise for organizations, which can benefit greatly from the Internet's communication and information delivery capabilities to help meet their needs. Many organizations operate on-line through the use of very small aperture terminal (VSAT). This helps to promote the goal of paperless transaction in the institution.

In the views of Caesar & Cororaton (2002) productivity refers to the additional output generated through enhancements in efficiency arising from advancements in workers education, skills and expertise, improvements in an organization's gains from specialization, introduction of new technology and innovation or upgrading of existing technology and enhancement in information and communication technology (ICT) as well as a shift towards higher added-value processes. ICT has the potential to accelerate economic development by promoting economic growth by facilitating the generation or increase of another source of income and investment, thus enhancing sustainable development and welfare economy. In addition the spread of computing power has reduced radically the costs for companies of collecting, analyzing, retrieving and re-using information (Harker, 2000).

In terms of increasing effective management, the decentralized availability of information through ICT allows the reduction of hierarchical structures within firms and greater empowerment and capabilities for work teams and individual workers (Morrison & Berndt, 1990). They added that it can transform a firm's relations with its customers, providing increased scope to tailor products to individual requirements. In other words, investment appears to have a greater beneficial impact if complemented by organizational changes, greater use of delegated decision-making and improvements in related workforce skills. These benefits from ICT to improved productivity can be categorized as tangible and intangible (Sheng, Nah & Siau, 2005). The tangible benefits include reduced cost, improved productivity, increased market share, saving in labour, increased consumer surplus (i.e. the accumulated difference between consumer demand and market price), improved customer service quality, improved organizational efficiency, quicker response to customers, deeper knowledge and understanding of customers. On the other hand, the intangible benefits include, improved decision-making ability, superior product quality, knowledge/information management and sharing, improved coordination/relationships with partners and other forms of competitive advantages.

Also, ICT enablers are crucial for technology to work. Specifically, the ICT enablers include appropriate education, skills training, research and development (R&D), access to venture capital, affordability of Internet access, security of Internet infrastructure, government support for ICT development, and quality of ICT supporting services (Chandra, 2007). Another equally important enabler is the recruitment as well as promotion processes and recognition of professional skills attainment. Thus, for ICT to enhance productivity effectively, firms ought to invest in ICT infrastructure and in ICT enablers if benefits from ICT are to translate into higher organizational productivity on sustainable basis (Englama & Bamidele, 2002).

HYPOTHESES

This study is set to test the following hypotheses:

(i) Ho: There is no positive relationship between the current level of ICT adoption and the level of productivity in University of Benin

H_1: There is a positive relationship between the current level of ICT adoption and the level of productivity in University of Benin

(ii) Ho: The ICT personnel are not educated enough in the area of skills and expertise in handling ICT infrastructures

H_1: The ICT personnel are educated enough in the area of skills and expertise in handling ICT infrastructures

METHODOLOGY

Primary and secondary data constitute the sources of data in the form of questionnaire, personal interview, direct observation, textbooks, journals, seminar papers, magazines as well as materials from the Internet. The target population of study is the academic and non-academic staff as well as students of University of Benin. A sample size of three hundred and fifty respondents (using stratified random sampling technique) was selected for the study in order to obtain a representative sample of the population under consideration.

The instrument used for the study was a survey questionnaire divided into two sections numbered A-B. Section A elicited background information of the respondents and the organization. Section B sought information on the skills, availability, accessibility etc of ICT infrastructure as a means of organizational growth and productivity. The questionnaire was tested for reliability and a coefficient of 0.84 was obtained by means of Product Moment Correlation Statistics. Of the three hundred and fifty questionnaire administered (100 to lecturers, 150 to non academic staff and 100 to students), three hundred and thirty-five were retrieved (95 from lecturers, 144 from non-academic staff and 96 from students) out of which five were not useable. This gave a percentage response of 94%. The method of data analysis and the techniques used were chosen based on the nature of the research problem and the data collected. Data analysis was descriptive and involved computing the percentages and averages of the responses. The hypotheses were tested by means of the chi-square test statistic.

RESULTS AND DISCUSSION

Research Question 1: How important are ICT infrastructures to improved organizational growth and productivity?

TABLE 1: IMPORTANCE OF ICT INFRASTRUCTURES TO IMPROVED ORGANIZATIONAL GROWTH AND PRODUCTIVITY

Rating (scale 5-1)	Frequency	Percentage (%)
Very Important	181	54.8
Important	102	30.9
Average Importance	35	10.6
Low Importance	12	3.6
Not Important	-	-
Total	**330**	**100**

Source: Field Survey, 2011

The table shows that most of the respondents (54.8%) were of the opinion that ICT infrastructures are very important to organizational growth and productivity. None of the respondents see ICT infrastructure as not important to organizational growth and productivity.

Research question 2: Does the institution organize training in ICT knowledge, skills and expertise for employees and students alike.

TABLE 2: TRAINING PROGAMMES IN ICT KNOWLEDGE, SKILLS AND EXPERTISE FOR EMPLOYEES AND STUDENTS ALIKE?

Response	Frequency	Percentage (%)
Yes	102	30.9
No	228	69.1
Total	330	100

Source: Field Survey, 2011

The table shows that 69.1% of the respondents is of the view that the institution do not train staff and student in the acquisition of knowledge, skills and expertise in the use of ICT infrastructure while 30.9% of the respondents disclosed that the institution train staff and students in ICT knowledge, skills and expertise. It must be emphasized that 30.9% is very low when considered against the need to move with the trend of technological advancement in the field of ICT infrastructure.

Research Question 3: What are the most critical work activities requiring the use of ICT in the institution?

TABLE 3: MOST CRITICAL WORK ACTIVITIES REQUIRING THE USE OF ICT IN THE INSTITUTION

Activities	Level of Involvement (%)
Managing the accounts/finance of the institution	75
Managing records for the institution's internal programs	70
Managing course registration	80
Payment of school fees	92
Online display of results	65
Online application for accommodation	81
Online application and processing of admission	90
Managing information dissemination and public relations	68
Teaching and e-learning	32

Source: Field Survey, 2011

Research Question 4: Is the data/information processing of records properly managed with the deployment of ICT infrastructures in the University?

TABLE 4: MANAGEMENT OF DATA/INFORMATION PROCESSING OF RECORDS WITH THE DEPLOYMENT OF ICT INFRASTRUCTURES

Response	Frequency	Percentage (%)
Yes	187	56.7
No	143	43.3
Total	**330**	**100**

Source: Field Survey, 2011

The table shows that 56.7% of the respondents are of the view that the institution is performing well with the management and processing of records with the deployment of ICT infrastructures while 43.3% of the respondents are still not satisfied with the level and management/processing of records with the deployment of ICT infrastructure.

Research Question 5: Does the deployment of ICT infrastructures in the University reduced the cost of processing of data/information and volume of paper work?

TABLE 5: THE COST OF PROCESSING OF DATA/INFORMATION WITH THE DEPLOYMENT OF ICT INFRASTRUCTURES

Response	Frequency	Percentage (%)
Yes	192	58.2
No	138	41.8
Total	**330**	**100**

Source: Field Survey, 2011

From the table above, 58.2% of the respondents are of the view that there is a reduction in the cost of processing data/information with the deployment of ICT infrastructure while 41.8% of the respondents are of the view that the deployment of ICT infrastructure did not reduce the cost of processing data/information.

Research Question 6: ICT infrastructures are readily available and accessible within the institution?

TABLE 6: AVAILABILITY AND ACCESSIBILITY OF ICT INFRASTRUCTURES WITHIN THE INSTITUTION

Response	Frequency	Percentage (%)
Yes	143	43.3
No	187	56.7
Total	330	100

Source: Field Survey, 2011

From the table above, 43.3% of the respondents agreed that the availability of ICT infrastructure are fully accessible by staff and students while 56.7% are of contrary view that the deployment of ICT infrastructure are not fully available for accessibility by staff and students.

TEST OF HYPOTHESIS

The two hypotheses formulated for this study are tested using the Chi-square test.

TEST OF HYPOTHESIS 1

The hypothesis was tested on the basis of field survey which relied on the questionnaire administered.

Ho : There is no positive relationship between the current level of ICT adoption and the level of productivity in University of Benin

H_1 : There is a positive relationship between the current level of ICT adoption and the level of productivity in University of Benin

Responses	Observed Frequency (Fo)	Expected Frequency (Fe)	Fo-Fe	$(Fo-Fe)^2$	$(Fo-Fe)^2/Fe$
Strongly Agree	150	66	84	7056	106.91
Agree	100	66	34	1156	17.52
Neutral	3	66	-63	3969	60.14
Disagree	60	66	-6	36	0.55
Strongly Disagree	17	66	-49	2401	36.38
Total	**330**	**330**			**χ^2_{cal} =221.5**

The table presented was analyzed using the chi-square test statistic, given as $\chi^2 = (Fo-Fe)^2/Fe$

Degree of freedom (df) = n- 1, where n is the number of categories

Degree of freedom (df) = 5-1 = 4

The calculated value is 221.50

The table value of $\chi^2_{0.05,4}$ = 9.488

Since the calculated value is higher than the tabulated value, we reject the null hypothesis (Ho) in favour of the alternative hypotheses (H1) which states that there is a positive relationship between the current level of ICT adoption and the level of productivity in University of Benin

HYPOTHESIS 2

Ho: The ICT personnel are not educated enough in the area of skills and expertise in handling ICT infrastructures

H_1: The ICT personnel are educated enough in the area of skills and expertise in handling ICT infrastructures.

Responses	Observed Frequency (Fo)	Expected Frequency (Fe)	Fo-Fe	$(Fo-Fe)^2$	$(Fo-Fe)^2/Fe$
Strongly Agree	88	66	22	484	7.33
Agree	92	66	26	676	10.24
Neutral	37	66	-29	841	12.74
Disagree	59	66	7	49	0.74
Strongly Disagree	54	66	-12	144	2.18
Total	**330**	**330**			**χ^2_{cal} =33.23**

Degree of freedom (df) n-1, 5-1 = 4

The calculated table is 33.23

The value of $\chi^2_{0.05,4}$ = 9.488

Since the calculated value is higher than the tabulated value, we reject the null hypothesis (Ho) in favour of the alternative hypotheses (H1) which states that the ICT personnel are educated enough in the area of skills and expertise in handling ICT infrastructures.

FINDINGS, RECOMMENDATIONS AND CONCLUSION

The study was carried out to determine the importance of ICT infrastructures in improving organizational growth and productivity, to determine whether the institution usually organize training in ICT knowledge, skills and expertise for employees and students alike, to ascertain the most critical work activities requiring the use of ICT in the institution, to determine whether there is proper management of data/information processing of records with the deployment of ICT infrastructures and if there is reduction in the cost of processing of data/information with the deployment of ICT infrastructures. It was also to determine if the availability of ICT infrastructures within the institution are accessible to staff and students.

The following empirical findings were made:

EMPIRICAL FINDINGS

1. ICT infrastructures are very important to the success and improvement of productivity in an organization.
2. A gap exist between the accessibility of available ICT infrastructure in the institution.
3. It was discovered that investing in ICT has a positive relationship with organizational productivity.
4. The cost of processing of data/information with the deployment of ICT infrastructures and volume of paper have reduced.
5. Not much has been done in the area of training in ICT knowledge, skills and expertise for employees and students in the institution.

6. The most critical work activities performed with the deployment of ICT infrastructures in the institution are managing the payment of school fees, online application and processing of admission, application for accommodation, information dissemination and public relations, application for accommodation, display of results, course registration, and so on.

RECOMMENDATIONS

1. There is the need to commit more financial resources for training, retraining and improving on the present state of ICT development in the institution to enable effective and efficient use of the ICT infrastructure.
2. A compulsory credit course should be introduced to all students of the institution that involves the use of the Internet in order to optimize e-learning.
3. The institution should facilitate an enabling environment that will ensure availability and affordability of ICT infrastructure across various units of the institution.

CONCLUSION

Increasing productivity is one of the critical prerequisite for economic development. The study has successfully investigated the relationship between ICT and organizational productivity. It is now clear that success stories are widely and readily available of organizations that have used ICT to drive the economic growth and increased productivity of their organization. Such successes would not have been achieved without a properly focused and consistent ICT policy orientation. The research work was constrained by restricted access to information. However, there is still room for improvement and it is hoped that the contributions made in terms of recommendations for the enrichment of institution would contribute to the development of ICT infrastructures.

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