

ADOPTION AND APPLICATION OF INFORMATION AND COMMUNICATION TECHNOLOGY IN HUMAN RESOURCES MANAGEMENT: THE UNIVERSITY OF NIGERIA EXPERIENCE

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Abstract

Excellent organizational arrangement single-handedly does not guarantee enhanced performance and increased productivity but with well-managed personnel. Human resource is therefore, a critical factor in the attainment of organizational goals. This is because all the organizational activities are initiated and determined by the persons who make up that institution; as plants, offices, computers, automated equipments and all else that a modern firm uses are unproductive except for human effort and direction. The special abilities, skill and knowledge needed to turn thing around in any organization for good are embedded in human beings and to get things done well in the organization, those latent skills, talents, knowledge, skills abilities and capabilities are harnessed through a process called human resources management. The use of tools and technology has been argued to have helped the harnessing of the potentials of the persons in an organization. However, these abilities and capabilities of these persons to contribute significantly to the attainment of organizational goals have contemporarily, been hindered and hampered by some issues that are solvable by information communication technology (ICT). ICT has been said to have a significant relationship with human resources management. It is on this note that this paper seeks to x-ray the adoption and application of

ICT in human resources development, using the University of Nigeria as a study area.

Keywords: human resource, management, information technology, organizational goals, ICT.

INTRODUCTION

Although Information and communication Technology (ICT) provides enormous opportunities such as storing, processing, retrieving, disseminating and sharing of information in organization, its use within the University in the developing countries is still plagued with many problems that hinder effective and efficient management, even though its adoption has been shown to improve Universities' performances since ICT is known as a tool that improves organizations' competitiveness (Sheppard & Hooton, 2006; Alam et al, 2007 and Apulu & Latham, 2009). Universities world over, are highly reputed for and regarded as centres for training and production of high caliber manpower that every country requires for its development. This, however, is based on the level of information they poses, how they communicate it and what technology available to them. In Nigeria, one of such institutions is the University of Nigeria founded in 1960. The university has, at its disposal, personnel with enormous human resources, for the attainment of its aims and objectives in teaching and research which must as a matter of strategy and policy, be managed and administered well to ensure effective and efficient results. It is this quest for efficiency that necessitated the pursuit for better management of the staffs of the University necessitated also by the changes which modern organizations heralds and which call for changes in the modus operandi of the University of Nigeria hence these changes brought about by new technologies have had significant impact on the way the University staffs live and work. However, these changes-turned-challenges emanated from the pervasiveness of information

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and communication technology (ICT) in all sectors of human activity. Information and communication technology which refers to any technology that facilitates communication and assists in capturing, processing and transmitting information electronically, offers tremendously overwhelming opportunities and capabilities such as storing, processing, retrieving, disseminating and sharing of information in organization such as the University of Nigeria. Its adoption was to help the University achieve competitive advantage. However, its usage has been problematic as the majority of the University staffs are not computer literate or ICT compliant. Resultantly, some of them hate the idea and therefore oppose the changes that accompanied its adoption, leading to poor application of the ICT related tools and machines, and that makes this research work a necessity especially now that all aspect of work is digitalized. This is so because for a given institution, whatever the degree of its economic viability, the attainment of its objectives as well as the well being of its staff is proportional to the level of skills, knowledge and qualifications of its staffs as highly skilled workers have the tendency to increase the organizational competitive advantage and also increase their own job/professional competences. This is because well qualified workers are better adjusted to possible changes in job profiles; less vulnerable to possible loss of employment; able to update and upgrade their skills and competencies.

Suffice it therefore to say that the University of Nigeria has kept pace with technological trends since inception; trends that have brought about changes in the job profiles. In recent times, ICT has been avidly evolved as evidenced in the launching of the University of Nigeria Portal for all students and staffs profile management; the University of Nigeria Nsukka website for dissemination of information; the M.I.S for information and data management; Internet facility for free browsing; the University of Nigeria, Nsukka cybercafé and a digitalized Library. These developments were to help the University in the Management of her Human Resources especially in the area of staff recruitment vis-à-vis online recruitment advertisement, staff remuneration and general

staff profile management, as data management has become one of the critical issues in modern organizational management. Yet, ICT have not thrived in the University because of poor application and other related factors such as inadequate ICT related skilled manpower (Woherem, 1993; Kunda & Brooks, 2000).

Prior to the adoption of information and communication technology (ICT) in Nigeria, organizations have been functional and efficient. However, the complexity of modern organization which characterizes today's organization, the University of Nigeria inclusive, has warranted the adoption of ICT. This is in respect of the gains associated with the application of ICT in the organizations of the western world. Such expected gains have eluded us in this side of the world. Many scholars have averred that the reason is because ICT have not been fully incorporated into the operations of the African organizations (Okot-Uma, 1992; Kuteyi, 2009) such as the University of Nigeria, mainly because of lack of skilled manpower in the area of ICT and this explains why the much desired gains have not be obtainable in our society. In the University of Nigeria for instance, the expected gains of ICT have not been obvious because of poor application and other related factors, some of which are deeply rooted in the culture, history and administrative behaviours of the people so much so that measures put in place to enable efficient application of ICT in Nigerian Universities have not yielded much desired result.

On the basis of the above, the paper is guided by the three hypotheses below:

1. The efficient and effective management of human resources in Nigerian Universities is significantly correlated to the efficient and effective application of Information Communication Technology (ICT) in the management of the Universities.
2. Poor application of information communication technology (ICT) in Nigerian Universities significantly correlates with the structural, operational, economic and socio-cultural issues in the management of the Universities.

3. That the expected gains of effective and proper application of information communication technology (ICT) in the Nigerian Universities have eluded the University of Nigeria relates significantly the poor application of ICT in the University.

CONCEPTUAL DISCOURSE

Information and communication technology

Information has always played a very important role in human life, but in the mid-20th century, it increased immeasurably as a result of social progress and the vigorous development in science and technology" (Ogunsola & Aboyade, 2005). Such increased role suffices the assertion that rapid expansion of a mass of diversified information is occurring, which has received the name "information explosion". As a result the need has arisen for a scientific approach to information and for elucidation of its most characteristic properties which has led to two principal changes in interpretation of the concept of information. First, it was broadened to include information exchange not only between man and man but also between machine and machine. The pace of change brought by new technologies has had a significant effect on the way people live, work, and play worldwide (Trostnikov, 1970).

Information and Communications Technology or information and communication technology, usually abbreviated as ICT, is often used as an extended synonym for information technology (IT), but is usually a more general term that stresses the role of unified communications and the integration of telecommunications (telephone lines and wireless signals), computers, middleware as well as necessary software, storage- and audio-visual systems, which enable users to create, access, store, transmit, and manipulate information. In other words, Information and Communications Technology (ICT) consists of Information Technology (IT) as well as telecommunication, broadcast media, all types of audio and video processing and transmission and network based control and monitoring functions. The expression was first used in 1997 in a report by Dennis Stevenson to the UK government and

promoted by the new National Curriculum documents for the UK in 2000.

The term Information and Communications Technology (ICT) is now also used to refer to the merging (convergence) of audio-visual and telephone networks with computer networks through a single cabling or link system (Wikipedia, 2010). There are large economic incentives (huge cost savings due to elimination of the telephone network) to merge the audio-visual, building management and telephone network with the computer network system using a single unified system of cabling, signal distribution and management. This in turn has spurred the growth of organizations with the term ICT in their names to indicate their specialization in the process of merging the different network systems.

The Parliamentary Office of Science and Technology, (2006) defined Information and Communication Technology (ICT) as any technology that facilitates communication and assists in capturing, processing and transmitting information electronically, hence some commonly used ICT in many developing countries include Radio, television and print media. Accordingly, it averred that modern ICT such as software, mobile phones and associated applications such as 'VOIP' (transmitting telephone calls over the internet) have become available to many countries worldwide in recent years. However, the most rapid growth is in mobile phone usage. Again, Trostnikov (1970) opined that rapid communication, plus increased access to IT in the home, at work, and in educational establishments, could mean that learning becomes a truly lifelong activity- an activity in which the pace of technological change forces constant evaluation of the learning process itself. Communication can be described as the process of transmitting and receiving ideas, information, and messages. In keeping with their complex nature and multiple applications, Information and Communication Technologies (ICTs) may be viewed in different ways. The World Bank defines ICTs as "the set of activities which facilitate by electronic means the processing, transmission and display of information (Rodriguez and Wilson, 2000). ICTs "refers to technologies people use to share, distribute, gather information and to

communicate through computers and computer networks" (ESCAP, 2000). ICTs can be described as a complex varied set of goods, applications and services used for producing, distributing, processing, transforming information- (including) telecoms, TV and radio broadcasting, hardware and software, computer services and electronic media" (Marcelle, 2000). ICTs represent a cluster of associated technologies defined by their functional usage in information access and communication, of which one embodiment is the Internet. Hargittai (1999) defines the Internet technically and functionally as follows: "the Internet is a worldwide network of computers, but sociologically it is also important to consider it as a network of people using computers that make vast amounts of information available.

Given the two basic services of the system communication and information retrieval- the multitude of services allowed....is unprecedented." ICT, represented by the Internet, deliver "at once a worldwide broadcasting capacity, a mechanism for information dissemination, a medium for interaction between individuals and a marketplace for goods and services (Kiiski and Pohjole, 2000). As pointed out by Capron (2000), mails, telephone, TV and radio, books newspapers and periodicals are the traditional ways users send and receive information. However, data communications system-computer system that transmits data over communications lines such as telephone lines or cables have been evolving since the mid-1960s.

One of the most dramatic advances in communication potential- data communications- is found in the field of computer technology. Since the first development of the modern electronic digital computers in the 1940s, computerization has infiltrated almost every area of society in nations with advanced technology. Computers are available in many formats for use in industries, businesses, hospitals, schools, universities, transport networks and individual homes. Small or large, a computer network exists to provide computer users with the means of communicating and transferring information electronically. The use of Internet has revolutionized access to information for the business world, libraries,

education and individuals. A few of the most popular include E-mail (electronic mail), World Wide Web, FTP (File Transfer Protocol), Usenet, and Telnet. The Internet and its technology continues to have a profound effect in promoting the sharing of information especially in academic world, making possible rapid transactions among businesses, and supporting global collaboration among individuals and organizations. Learning resource centres now often contain learning materials published on CD-ROM and most colleges are connected to the Internet. These technologies have the potential to develop "virtual campuses" and thus increase student access and participation. Information technology provides access to mainstream materials and enables students to express their thoughts in words, designs and activities despite their disabilities. World Wide Web can be described as a library of resources available to computer users through the global Internet. It enables users to view a wide variety of information, including magazine, archives, public and college library resources, and current world and business news. CAFRAD (2010) says that ICT stands for Information & Communications Technology; a phrase used to describe a range of technologies for gathering, storing, retrieving, processing, analyzing, and transmitting information.

Human Resource Management

Human Resources Management as a concept has two key words- management and human resources. Management is the act of handling or controlling something successfully. It could be the skillful handling or use of something such as resources. Management in simple terms means the act of getting people together to accomplish desired goals. It comprises planning, organizing, resourcing, leading or directing, and controlling an organization (a group of two or more people or entities) or effort for the purpose of accomplishing a goal. Resourcing encompasses the deployment and manipulation of human resources, financial resources, technological resources, and natural resources (Microsoft Encarta 2009).

The importance of human resources in any organization cannot be overemphasized. In fact, the ability of any organization to achieve its

goals depends on the caliber of its human resources and more importantly, on how effectively they are managed (Ezeani, 2002). There is no doubt that the ability of any organization or society to achieve its goals depends to a large extent on the caliber, organization and motivation of its human resources. This point was succinctly captured by Likert (1974).

...all the activities of any enterprise are initiated and determined by the persons who make up that institution. Plant, offices, computers, automated equipments, and all else that a modern firm uses are unproductive except for human efforts and direction.

Similarly, Harbison (1974) opined that "human resource and not any other, constitutes the ultimate basis for the wealth of a nations. According to Drucker (1978)...good organizational structure does not by itself guarantee good performance. Human resource is as important to the existence, survival and development of an organization as food is to man". Accordingly, Onah (2003) averred that the efficiency with which an organization can perform depends, to a large extent, on how its human resources are managed and utilized. Hence every manager must, therefore be able to work effectively with people and also be able to solve the various problems the management of people may entail. The type of leadership, which characterized our organizations in the first half of the 20th century, is no longer sustainable in the present working environment. The leadership was arbitrary and autocratic in its relationship with subordinates. Today, things have changed. Employees are better educated and their orientation and value system are no longer the same as those of the past. In addition, most organizations are becoming more expected to have greater technical competence and a better understanding of human behaviour. Organizational human resources have become of strategic interest to the top management recently because the effective use of people in organizations can provide a competitive advantage (Mathis & Jackson, 1997).

Human resources, easily recognized as the most important of the resources required for the

production of goods and services, are the key to rapid socio-economic development and efficient service delivery. According to Barney (1995), human resources include all the experiences, skills, judgment, abilities, knowledge, contacts, risk-taking and wisdom of individuals and associates in an organization. Without an adequate, skilled and well-motivated workforce operating within a sound human resource management programme, development is not possible. A manager or an employee, whether in the private or public sector, which underrates the critical role and underplays the importance of people in goal achievement, can neither be effective nor efficient.

These and such other statements by human resources management experts and practitioners alike are pointers to the importance and critical role of the human element in organization. Indeed, the human resource is a critical factor in the attainment of the goals of any organization. However, the ability of the human resources to contribute to the attainment of the goals of an organization depends to a great extent on how well they are managed. This is why, Likert (1974) opined "of all the task of management, managing the human component is central and most important task because all else depends on how well it is done". Therefore, a review of Human resources management becomes necessary.

According to Onah (2008), the goal of Human Resource management is to develop the workers in the organization to contribute to goal achievement in the organization by management improved productivity, quality and service. In addition, Human Resource management has some specific roles to play in an organization. These are strategic and operational roles. Its role strategically, Human resources are critical for effective organizational functioning. Human resources must be viewed in the same context as the financial, technological and other resources that are managed in organization. Mathis and Jackson (1997) see operational activities of the human resource management as both tactical and administrative in nature. Griffin (1997) sees this aspect from the legal perspective because some have regulated various aspects of employee-employer relations. Human Resources

Management is therefore interested in compliance with equal employment opportunities and observation of labour laws. Unfortunately, the compliance and observance of these laws are unduly interfered with in Nigerian Public Institutions, including the University of Nsukka.

Misra (2008) writing on the role of human resource in information technology alignment in organizations: a metric based strategic assessment framework observed that Information technology (IT) is recognized as a critical infrastructure in many organizations. IT is also emerging as an effective contributor to organizational performance. It is often argued that success of the IT induction is attributed to strategy, consistent delivery and systems usability. Again, Information technology (IT) is increasingly becoming an important factor and fundamental to support business processes in organizations. Its acquisitions are quite productive in supporting transactions and in aiding coordination mechanism provided the organizational resources and business processes are properly aligned with the IT. However, many Information Technology acquisition projects fail due to improper alignment of the business process with Information Technology. The role of human resource (HR) is quite critical to such alignment process. It is important that acquiring the Information technology, organizations display Human Resources capability to support alignment process especially in the pre-acquisition stage to minimize the post acquisition shocks.

Armstrong (2001) posits that nothing has changed in the way people in work organizations are managed, but Human Resources Management has had to adjust itself to the changing environment of global competition, new technology, and new methods of working and organizing work.

PROBLEMS OF ICT ADOPTION IN DEVELOPING COUNTRIES

Even though ICT has been used to change the way businesses are conducted in order to have a strategic advantage in their various operations especially in developed countries, its adoption and applicability has been problematic as the investment returns of ICT have fallen short of

the potential. Hence researchers have attributed this problem to organizational and environmental factors and lack of technical skills, among others. Okot-uma in Kunda & Brooks, (2000) argued that the problems in adopting ICT in developing countries can be classified into three generic categories, namely: contextual, strategic and operational. Contextual problems are due to poor match of models of developed countries' design and applications to the developing countries context, semantic discrepancies in the wording and understanding of phenomena as well as references to different value systems and different concepts of rationality. Strategic problems relate to local, national and regional policy initiatives, as reflected in the institutional intervention mechanisms of influence, regulation and implementation whilst technical and economic constraints and lack of skilled personnel are operational problems faced by developing countries (Kunda & Brooks, 2000).

Some other problems that affect developing countries from adopting ICT are lack of skilled human resources, economic constraints, lack of systems infrastructure and application problems. Lack of skilled human resources has been described as a principal barrier blocking the diffusion and effective exploitation of ICT in developing countries (Woherem, 1993). Economic constraints such as the non-existence of reliable background statistical information and inadequate capital to finance ICT have been identified as another set of factors (Okot-uma, 1992 in Kunda & Brooks, 2000). Several developing countries suffer from both lack of resources and limited domestic market. Some developing countries import ICTs due to lack of an indigenous ICT industries. Kunda and Brooks (2000) averred that scarcity of foreign currency makes developing countries dependant on donor agencies for much of their ICT imports. Furthermore, developing countries often lack adequate telecommunication infrastructures. There is also the issue of systems infrastructure deficiency and application problem (Kunda & Brooks, 2000), and in most developing countries like Nigeria, there is still the problem of irregular electrical power supply. Many organizations in developing countries are in the early stage of information and

communication technology (ICT) adoption. Hence the transition of organization's human resources management in developing countries to more sophisticated levels of ICT use depends partly on the extent to which they are inclined to use these new technologies for their businesses (Tarafdar and Vaidya, 2006). Not all organizations are strongly inclined towards adopting ICT (Dexter et.al 1995, Mills et.al 2001). Premkumar, et al (1994), Iacovou et al. (1995), Crook and Kumar (1998), Payton (2000) and Beatty, Shim and Jones (2001) have suggested that the extent of ICT adoption depends on the attitude of the organization towards ICT technologies and the inclination or the propensity to deploy and use them. Hence, Tarafdar and Vaidya (2006) recommended that it is important for organizations to understand the fundamental factors behind technology adoption and the differences in organizational inclination as this would enable organizations to assess the extent to which they are inclined to develop, deploy and use technologies.

During the last few years, computer access and internet penetration has increasingly grown around the world, especially in developing countries. Different reasons may explain this notable growth such as government-led computer technology initiatives, information and communication technology projects supported by international agencies and private efforts, either at the organizational level or at the individual level (Andrade & Urquhart, 2009). Indeed, the growth of internet access in the world was 305.5% on average between 2000 and the first quarter of 2008 (Andrade & Urquhart, 2009). North America was the lowest with 129.6%, and Middle East the highest with 1176.8% (Miniwatts Marketing Group, 2008). However, a closer examination of the distribution of Internet users around the globe reveals some persistent disparities as shown in the table above. Hence, the low level of internet penetration in Africa has been a major impediment to the adoption of ICT. It is a known fact that the adoption of ICT increases market reach, enhances customer service, and reduces both marketing and distribution cost (Golding et al., 2008). However, its adoption within Nigerian organization has been slow due to some factors that affect ICT adoption.

PROSPECTS OF ICT ADOPTION AND APPLICATION IN DEVELOPING SOCIETY'S ORGANIZATIONS

Ginsberg and Venkatraman (1992) have averred that different managers and organizations adopt different attitudes towards ICT depending on its perceived usefulness in the context of their work. Four broad aspects that influence organizations to adopt ICT are discussed. They include the role of top management in organizational leadership, the effect of organizational culture, availability of resources and level of internet penetration.

Firstly, top management attitudes play a vital role towards the adoption of ICT in organizations. According to Grover (1993), Beatty et al., (2001) and Tarafdar and Vaidya (2006), an enthusiastic approach on the part of top managers can lead to the adoption of ICT. Yap, Soh and Raman (1992) found that management involvement is crucial to ICT success in organization's human resources management. The support from top management is the precondition for successful ICT adoption and application in organization's human resources management (Sarkar, 2008). According to Payton (2000), top management often provides the forward motion for the initiation of technology projects.

Secondly, studies have suggested that the core values of an organization can influence the organization towards a particular strategic alternative or technology (Tarafdar & Vaidya, 2006). In particular, their technical expertise and their attitude towards ICT can affect their organization's ability and willingness to engage with ICT matters (Harindranath, Dyerson & Barnes, 2008). There are two aspects of organizational culture that can influence the tendency to adopt ICT. Firstly, managers' experience with ICT, interactions with vendors and professional associations increases their awareness and understanding is aspects of organizational culture which can influence the tendency to adopt ICT. Chibelushi and Costello (2009) also state that lack of awareness could hinder in developing countries from understanding the potential benefits associated

with new technologies that could enhance their efficiency and increase productivity. Awareness has a positive influence on organization inclination to consider new ICT (Tarafdar & Vaidya, 2006). Secondly, some organizations have cultures that support discussion of new and innovative ideas related to ICT. This has a positive influence on managers as it increases the tendency for them to develop and adopt applications with new technology (Apulu & Latham, 2009). Hoffman and Klepper (2000) state that the organizational inclination towards new ICT adoption can be strengthened, if there is a culture where ideas and innovations related to ICT are freely shared. Thus, a positive organizational attitude regarding systems innovation would increase the adoption of ICT. Thirdly, the availability of resources enhances the adoption of ICT within developing countries. Factors that include the cost of ICT equipment and networks, software and re-organization are barriers to ICT adoption in most developing countries (Arendt, 2008). In many developing countries, organization, capital resources, in addition to intangible assets such as knowledge, expertise and time, are scarce. Organizational managers spend a great deal of their time trying to stretch a firm's limited resources as far as possible. Therefore, allocating scarce resources to a new initiative, such as ICT adoption, requires a serious commitment (Pool, Parnell, Spillan & Carraher, 2006). For firms, including Universities, to have competitive advantage, there needs to be a combination of resources and capabilities (Priem & Butler, 2001). Furthermore, Andrade and Urquhart (2009) stated that Universities which are prepared to integrate ICT technology and applications must overcome resource and scale economy challenges.

METHODOLOGY

The study was carried out in the University of Nigeria, Nsukka Campus in Enugu State of Nigeria and it is a quantitative research as it utilized research questionnaire. The paper adopted the probability sampling method for the purpose of the convenience of the researchers. The probability sampling

technique deployed for this study is the simple random sampling technique through which questionnaires were administered to workers in the University.

The target population of this study is 270 staffs both academic and administrative staffs, as 300 questionnaires were made available and distributed but the total 270 was returned intact. In the administrative staff category, cadre was not considered as the questionnaires were randomly distributed.

The paper deployed chi-square (X^2) test analysis in analyzing the data generation from the questionnaire. This method was considered appropriate because it tests the significant relationship in the hypotheses.

ANALYSIS AND DISCUSSION OF FINDINGS

Below is the formula for the use of chi-square;

$$X^2 = \frac{(fo-fe)}{fe}$$

Where:

X^2 = Chi-square

fo = Observed frequency

fe = Expected frequency

$\frac{(\text{Row total} \times \text{Column total})}{\text{Grand total}}$

The expected frequency was shown in parenthesis

R = Row total

C = Column total

GT = Grand total

The expected frequencies (fe) in the tables were approximated.

Insert table-1 here

Concerning the proposition that the efficient and effective management of human resources in Nigerian Universities is significantly correlated to the efficient and effective application of Information Communication Technology (ICT) in the management of the Universities, the above table i displays the responses of the respondents

Test of Hypothesis one

H1: The efficient and effective management of human resources in Nigerian Universities is significantly correlated to the efficient and effective

application of Information Communication Technology (ICT) in the management of the Universities.

H0: The efficient and effective management of human resources in Nigerian Universities is not significantly correlated to the efficient and effective application of Information Communication Technology (ICT) in the management of the Universities.

Test

Level of freedom adopted or chosen = 0.05
Degree of freedom = (R -1) (C -1)
= (5 -1) (5 -1)
= 4 x 4 =16, 0.05 (26.2962) (Udom, 2005)
For the application of chi-square test to table below given the formula;
$$X^2 = \sum \frac{(f_o - f_e)^2}{f_e}$$

Insert table-2 here

Execution/Decision Guide Rule

Reject H0 (null) hypothesis if calculated X² value is greater than tabulated value and accept H1 (alternative) hypothesis

Decision

Since the calculated X² value (4,757.96) is greater than the critical X² (tabulated) value (26.2962), we reject H0 (null) hypothesis and accept H1 (alternative) hypothesis.

Conclusion

Since the X² cal > X² tab, we reject H₀ and accept the alternative (H₁). Therefore, we conclude that the efficient and effective management of human resources in Nigerian Universities is significantly correlated to the efficient and effective application of Information Communication Technology (ICT) in the management of the Universities.

Insert table-3 here

Concerning the postulation that the poor application of information communication technology (ICT) in Nigerian Universities significantly correlates with the structural, operational, economic and socio-cultural issues in the management of the Universities” the

above table iii shows the responses of the respondents.

Test of Hypothesis two

H1: Poor application of information communication technology (ICT) in Nigerian Universities significantly correlates with the structural, operational, economic and socio-cultural issues in the management of the Universities.

H0: Poor application of information communication technology (ICT) in Nigerian Universities does not significantly correlate with the structural, operational, economic and socio-cultural issues in the management of the Universities.

Test

Level of freedom adopted or chosen = 0.05
Degree of freedom = (R-1) (C-1)
= (5 -1) (5 -1)
= 4 x 4 =16 (26.2962)

Insert table-4 here

From chi-square distribution table, we have (0.05, 16) = 26.2962

Execution/Decision Guide Rule

Reject H0 (null) hypothesis if calculated X² value is greater than tabulated value; and accept H1 (alternative) hypothesis.

Decision

Since the calculated X² value (5,246.85) is greater than the critical X² tabulated value (26.2962), we reject H0 (null) hypothesis and accept H1 (alternative) hypothesis.

Conclusion

Since the X² cal > X² tab, we reject H₀ and accept the alternative (H_i). Therefore, we conclude that Poor application of information communication technology (ICT) in Nigerian Universities significantly correlates with the structural, operational, economic and socio-cultural issues in the management of the Universities.

Insert table-5 here

In respect of the hypothesis “the expected gains of effective and proper application of information communication technology (ICT) in the Nigerian Universities have eluded the University of Nigeria relates significantly the poor application of ICT in the University” the above table shows the responses of the respondents.

Test of Hypothesis three

H1: That the expected gains of effective and proper application of information communication technology (ICT) in the Nigerian Universities have eluded the University of Nigeria relates significantly the poor application of ICT in the University.

H0: That the expected gains of effective and proper application of information communication technology (ICT) in the Nigerian Universities have eluded the University of Nigeria does not relate significantly the poor application of ICT in the University.

Test

Level of freedom adopted or chosen = 0.05

Degree of freedom = (R -1) (C -1)

= (5 -1) (5 -1)

= 4 x 4 =16 (26.2962)

For the application of chi-square test to table below given the formula;

$$X^2 = \sum \frac{(f_o - f_e)^2}{f_e} \text{ (for each cell)}$$

Insert table-6 here

Execution/Decision Guide Rule

Reject H0 (null) hypothesis if calculated X² value is greater than tabulated value; and accept H1 (alternative) hypothesis.

Decision

Since the calculated X² calculated value (2,562.85) is greater than the critical X² tabulated value (26.2962), we reject H0 (null) hypothesis and accept H1 (alternative) hypothesis.

Conclusion:

Since the X² cal > X² tab, we reject H₀ and accept the alternative (H1). Therefore, we conclude thus: that the expected gains of effective and proper application of information communication technology (ICT) in the Nigerian Universities have eluded the University of

Nigeria relates significantly the poor application of ICT in the University.

FINDINGS

Considering the application of chi-square in the test of hypothesis one, it was discovered that calculated X² value (4,757.96) is greater than the critical X² value (26.2962), thus, leading to the rejection of H0 (null) hypothesis and the acceptance of H1 (alternative) hypothesis. Consequently, the test of hypothesis proved that the efficient and effective management of human resources in Nigerian Universities is significantly correlated to the efficient and effective application of Information Communication Technology (ICT) in the management of the Universities.

Secondly, taking into account the application of chi-square in testing hypothesis two, it was found out that the calculated X² value (5,246.85) is greater than the critical X² value (26.2962), thus, leading to the rejection of H0 (null) hypothesis and the acceptance of H1 (alternative) hypothesis. Consequently, the test of hypothesis proved that poor application of information communication technology (ICT) in Nigerian Universities significantly correlates with the structural, operational, economic and socio-cultural issues in the management of the Universities.

Finally, following the application of chi-square in the testing of Hypothesis three, it was revealed that the calculated X² value (2,562.85) is greater than the critical tabulated X² value (26.2962), thus leading to the rejection of H0 (null) hypothesis and then accept H1 (alternative) hypothesis. As a result, the test of the hypothesis shows that that the expected gains of effective and proper application of information communication technology (ICT) in the Nigerian Universities have eluded the University of Nigeria relates significantly the poor application of ICT in the University.

RECOMMENDATIONS

Based on the research findings on the role of information and communication technology (ICT) in human resources management (HRM) in the University of Nigeria, the following are recommended:

1. That management should employ an enthusiastic approach toward the adoption and proper application of ICT in the University. This

is because management involvement is crucial to ICT success in organization's human resources management. The support from top management is the precondition for successful ICT in organization's human resources management. Bartholomew Okolo, the Vice Chancellor of the University is advised to be more proactive and pragmatic in the adoption and proper application of information and communication technology. This is not in any ways suggesting that the management of the University is not trying in the adoption and application of ICT in the University but as the findings revealed, more are still to be done. For instance, the internet facility should be made very strong so as to be fast and accessible any part of the University community so that any staff or student who have subscribed will access it as at when needed. Again, students' results/certificates should be uploaded on the student's profile so as to help employers access the results online as the University's website is assessable worldwide. Recruitment processes should be online based so as to avoid mediocrity and enhance merit in the university's recruitment processes. There should also a website where the lecturers' papers can be published and accessed at all times. Future researchers can subscribe to access them.

2. That the structural, operational, economic and socio-cultural issues in the management of the Universities that efface the easy adoption and application of information and communication technology in human resources management of the university should be obliterated. Some of these factors are the technical expertise and attitude towards ICT. There is also organizational culture. There are two aspects of organizational culture that can influence the tendency to adopt ICT. Firstly, managers' experience with ICT, interactions with vendors and professional associations increases their awareness and understanding and are aspects of organizational culture which can influence the tendency to adopt ICT. Again, lack of awareness could hinder in developing countries from understanding the potential benefits associated with new technologies that could enhance their efficiency and increase productivity. Awareness has a positive influence on organization inclination to consider new ICT. Secondly, some

organizations have cultures that support discussion of new and innovative ideas related to ICT. This has a positive influence on managers as it increases the tendency for them to develop and adopt applications with new technology. The organizational inclination towards new ICT adoption can be strengthened, if there is a culture where ideas and innovations related to ICT are freely shared. Thus, a positive organizational attitude regarding systems innovation would increase the adoption of ICT technologies. And it is recommended that the university acquire such culture so as to help the adoption and proper application of ICT in the University to enhance its human resources management.

3. That lack of up-to-date infrastructures, unstable power supply and Lack of financial resources are the major problems of ICT adoption in Human Resource management and therefore should be enhanced. These factors have been identified as factors that have consistently affected adversely, the adoption and proper application of ICT in the University especially in the area of its human resources management. The availability of resources enhances the adoption of ICT within developing countries. Factors that include the cost of ICT equipment and networks, software and re-organization are barriers to ICT adoption in most developing countries. In many developing countries, organization, capital resources, in addition to intangible assets such as knowledge, expertise and time, are scare. Organizational managers spend a great deal of their time trying to stretch a firm's limited resources as far as possible. Therefore, allocating scarce resources to a new initiative, such as ICT adoption, requires a serious commitment on the side of the management team of the university. For Universities, to have competitive advantage, there needs to be a combination of resources and capabilities and such as thus recommended.

CONCLUSION

Technological innovations engender intensified competition with the attendant rapid changes in many organizations. Many jobs, procedures and organizational structures are not only changing but are becoming obsolete overnight. The emerging trends in organizational management are a paradigm shift towards the adoption and

application of information communication technology (ICT). This is in recognition of the fact that information has always played a very important role in human life, but in the mid-20th century, the role of information increased immeasurably as a result of social progress and the vigorous development in science and technology. However, the abilities and capabilities of staffs to contribute significantly to the attainment of organizational goals have been hindered and hampered by some issues which are solvable by adoption and proper application of information and communication technology. Information and communication technology (ICT) has been ear-marked as the means that will give human resources management its new face in line with the expectations of new millennium. This is because the last years of this century have been rich in changes in most regions of the world which affected the organization of production, the distribution of products, the interaction between states, the evolution of market, the rules of employment, interpersonal relation and even the fabric of society. Some of these changes are the result of globalization, of the increasing mobility of individuals, goods, information and ideas; of the pervasiveness of information and communication technologies in almost all sectors of human activity. The pace of change brought by new technologies has had a significant effect on the way people live, work and play worldwide. ICT offers wide and enormous opportunities such as storing, processing, retrieving, disseminating and sharing of information. Because of these obvious advantages, the University of Nigeria, Nsukka adopted it. However, its usage in the university has been plagued with many problems, even when it has been shown to improve organization's performance and competitiveness.

To ensure organizational competitive advantage of the University of Nigeria, the level of management of the staffs becomes of paramount important. This is because, organizational survivability and individual wellbeing are proportional to the average level of skills, knowledge and qualifications of the active populations hence, highly qualified staffs have a higher capacity for earning good salaries; for

contributing to increase the competitiveness of their organization. Well-qualified persons are also better adjusted to possible changes in job profile; less vulnerable to possible loss of employment; able to promote their own up-dating, upgrading or re-conversion of skills and competencies. This is why the University of Nigeria, Nsukka has as a deliberate policy the training and re-training of her staffs to keep pace with the changes in the world of work. The training has been said to be near adequate in the university leading to coping in the adoption and proper application of ICT in the University of Nigeria Nsukka.

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Table-1 The Distribution of Respondents as to Whether the efficient and effective management of human resources in Nigerian Universities is significantly correlated to the efficient and effective application of Information Communication Technology (ICT) in the management of the Universities.

Item	Question	Strongly Agree.	Agree.	Undecided	Strongly Disagree.	Disagree.	Total
1	You are ICT compliant	150 (141) 49.01%	125 (101) 40.84%	20 (35) 6.53%	5 (17) 1.63%	6 (12) 1.96%	306 100%
2	Many staffs of the University are not ICT compliant?	140 (141)	110 (101)	30 (35)	10 (17)	16 (12)	306 100%

Adoption and Application of Information and Communicational Technology

		45.75%	35.94%	9.80%	3.26%	5.22%	
3	Many staffs of the University hate ICT related jobs	140 (141) 45.75%	100 (101) 32.67%	40 (35) 13.07%	16 (17) 5.22%	10 (12) 3.26%	306 100%
4	Many jobs in the university are ICT related	110 (141) 35.94%	125 (101) 40.84%	16 (35) 5.22%	45 (17) 14.70%	10 (12) 3.26%	306 100%
5	work in the University has been made easier with ICT	170 (141) 55.55%	50 (101) 16.33%	70 (35) 22.87%	10 (17) 3.26%	6 (12) 1.96%	306 100%
Total		710	510	176	86	58	1540

Source: Field Study, 2011

Table-2 Calculation of X² Test on Data of Table 4.6 Which States That the efficient and effective management of human resources in Nigerian Universities is significantly correlated to the efficient and effective application of Information Communication Technology (ICT) in the management of the Universities.

Fo	Fe	Fo-fe	(fo-fe) ²	$\left(\frac{fo-fe}{fe}\right)^2$
150	141	9	81	0.57
125	141	-16	253	1.82
20	141	-121	14641	103.84
5	141	-136	18496	131.18
6	141	-135	18225	129.26
140	101	39	1521	15.06
110	101	9	81	0.80
30	101	-71	5041	49.91
10	101	-91	8281	81.99
16	101	-85	7225	71.53
140	35	105	11025	315
100	35	65	4225	120.71
40	35	5	25	0.66
16	35	-19	361	10.31
10	35	-25	625	17.86
110	17	93	8649	508.76
125	17	108	11664	686.12
16	17	-1	1	0.06
45	17	28	784	46.18
10	17	-7	49	2.88
170	12	158	24964	2080.33
50	12	38	1444	120.33
70	12	58	3364	280.33
10	12	-2	4	0.33
6	12	-6	36	3
			Total	4,757.96

Source: Field Study, 2011

From chi-square distribution table, we have (0.05, 16) = X² = 26.2962

Adoption and Application of Information and Communicational Technology

Table-3 The Distribution of Respondents on Whether the Poor application of information communication technology (ICT) in Nigerian Universities significantly correlates with the structural, operational, economic and socio-cultural issues in the management of the Universities.

Item	Question	Strongly Agree.	Agree.	Undecided	Strongly Disagree.	Disagree.	Total
6	The University's Personnel Department jobs are ICT related and they are treated as such	141 (133) 46.07%	125 (119) 40.84%	25 (24) 8.17%	5 (14) 1.63%	10 (13) 3.26%	306 100%
7	The free internet facility in the University is making job easier for the staffs	130 (133) 42.48%	130 (119) 42.48%	6 (24) 1.96	30 (14) 9.80%	10 (13) 3.26%	306 100%
8	There is a relationship between (ICT) and Human Resources management in the University	160 (133) 52.29%	110 (119) 35.95%	20 (24) 6.53%	11 (14) 3.59	5 (13) 1.63	306 100%
9	Payment of salaries and other remunerations in the University has been made easier and simpler with the inception of ICT	136 (133) 44.44%	112 (119) 36.60%	30 (24) 9.80%	26 (14) 8.50%	2 (13) 0.65%	306 100%
10	The adoption of ICT in the University call for training and re-training of staffs	114 (133) 37.25%	122 (119) 39.87%	40 (24) 13.07	17 (14) 5.56%	13 (13) 4.25%	306 100%
	Total	681	609	121	68	89	1568

Source: Field Study, 2011

Table-4 Calculation Of X² Test On Data Of Table 4.8 Which States That Poor application of information communication technology (ICT) in Nigerian Universities significantly correlates with the structural, operational, economic and socio-cultural issues in the management of the Universities.

Fo	Fe	fo-fe	(fo-fe) ²	$\frac{(fo-fe)^2}{fe}$
141	133	8	64	0.48
125	133	8	64	0.48
25	133	108	11664	87.69
5	133	128	16384	123.19
10	133	123	15129	113.75
130	119	11	121	1.02
130	119	11	121	1.02
6	119	113	17769	107.30
30	119	89	7921	66.56
10	119	109	11881	99.84
160	24	136	18496	770.67
110	24	86	7396	308.17
20	24	-4	16	0.67
11	24	-13	169	7.04
5	24	19	361	15.04
136	14	122	14884	1063.14
112	14	98	9604	686
30	14	16	265	18.29

Adoption and Application of Information and Communicational Technology

26	14	12	144	10.29
2	14	-12	144	10.29
114	13	101	10201	784.69
122	13	109	11881	913.92
40	13	27	729	56.08
17	13	4	16	1.23
13	13	0	0	0
			Total	5,246.85

From chi-square distribution table, we have $(0.05, 16) = 26.2962$

Table-5 The Distribution of Respondents on Whether that the expected gains of effective and proper application of information communication technology (ICT) in the Nigerian Universities have eluded the University of Nigeria relates significantly the poor application of ICT in the University.

Item	Question	Strongly Agree.	Agree.	Undecided	Strongly Disagree.	Disagree.	Total
11	Training and development of the University staffs, especially those of Personnel Department has been adequate since the advent of ICT.	100 (134) 32.68%	110 (91) 35.94%	54 (34) 17.64%	26 (26) 8.49%	16 (22) 5.23%	306 100%
12	Information Communication Technology (ICT) has connected/linked the University of Nigeria to other Universities within and outside the country	134 (134) 43.79%	108 (91) 35.29%	20 (34) 6.54%	25 (26) 8.16%	19 (22) 6.21%	306 100%
13	The University of Nigeria has experienced increased competitive advantage over other Universities since the introduction and adoption of ICT in the University	130 (134) 42.48%	110 (91) 35.95%	20 (34) 6.54%	28 (26) 9.15%	18 (22) 5.88%	306 100%
14	ICT has its limitations in enhancing Human Resources Management in the University of Nigeria Nsukka such as poor application.	131 (134) 42.81%	60 (91) 19.61%	62 (34) 20.26%	32 (26) 10.45%	21 (22) 6.86%	306 100%
15	With proper application, ICT will greatly enhance both job and human resources management in the University of Nigeria Nsukka	174 (134) 56.86%	65 (91) 21.24%	12 (34) 3.92%	17 (26) 5.55%	38 (22) 12.42%	306 100%
	Total	669	453	168	128	112	1530

Source: Field Study, 2011

Adoption and Application of Information and Communicational Technology

Table vi: Calculation of X² Test on Data of Table 4.10: That the expected gains of effective and proper application of information communication technology (ICT) in the Nigerian Universities have eluded the University of Nigeria relates significantly the poor application of ICT in the University.

Fo	Fe	fo-fe	(fo-fe) ²	$\left(\frac{fo-fe}{fe}\right)^2$
100	134	-34	1156	8.63
110	134	-24	576	4.30
54	134	-80	6600	47.76
26	134	-108	11664	87.04
16	134	188	13924	103.91
134	91	43	1849	20.32
108	91	17	289	3.18
20	91	-71	5041	55.40
25	91	-66	4356	47.87
19	91	-72	5184	56.97
130	34	96	9216	271.06
110	34	76	5776	189.88
20	34	-14	196	5.76
28	34	-6	36	1.06
18	34	-16	256	7.52
131	26	105	11025	424.04
60	26	34	1156	44.40
62	26	36	1296	49.85
32	26	6	36	1.38
21	26	-5	25	0.96
174	22	152	23104	1050.88
65	22	43	1849	84.05
12	22	-10	100	4.55
17	22	-5	25	1.14
38	22	16	256	11.64
			Total	2,562.85

Source: Field Study, 2011

From chi-square distribution table, we have (0.05, 16) = 26.2962