Information and Communication Technology Utilization and Administrative Effectiveness in Polytechnics in South-West, Nigeria

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Abstract  
The quest for Information and Communication Technology utilization in the administration of higher institutions these days cannot be over-emphasized. It is against this background that this paper investigated information and communication technology utilization (ICTU) and administrative effectiveness in polytechnics in south-west, Nigeria. The study adopted the descriptive research design of the survey type. The study population comprised all the 22 polytechnics in South-West Nigeria. Out of this population, a sample of 10 polytechnics in South-West Nigeria was taken and selected through purposive sampling technique. The principal officers, Deans, Heads of Departments, HND II Course Advisers and Staff of ICT units were purposely selected from each of the sampled schools, making a total of 700 respondents. The instruments used to collect data for the study were a validated questionnaire and a proforma while the data collected were analyzed using frequency counts, percentages and Pearson Product Moment Correlation analysis. It was found that computers and internet facilities were available in all the polytechnics sampled in this study. Findings further revealed that ICT facilities are widely utilized for e-payment, online registration, admission processing and record keeping. It was also revealed from the study that ICT utilization and administrative effectiveness had a strong positive significant relationship.
(r = .739, p < .05). Based on the findings of the study, it was recommended that Information and communication technology facilities which were not available in the polytechnics should be provided as this would go a long way in making the work of administrators to be more effective and efficient. Furthermore, ICT facilities should be utilized to the fullest for conducting examinations in the polytechnics. This is because when used it makes it easier and faster to conduct examinations. In addition, ICT facilities should be utilized for compilation of results of students as this will make students transcript to be properly stored and easily retrieved as at when needed.

**Keywords:** Information and Communication Technology Utilization, Administrative Effectiveness, Polytechnics, South-West

**Introduction**

Information and Communication Technology (ICT) is making dynamic changes in society. It is influencing all aspects of life. The influences are felt more and more at schools. The introduction of Information and Communication Technology (ICT) in tertiary institutions has far reaching effects on school administration. This is so because ICT helps the schools especially tertiary institutions to provide fast, easiest, accurate, timely, efficient and more convenient services to their staff, students and community in general. The application of Information and Communication Technology facilities actually create easiest services to the management, staff and students in the campus over monotonous daily routine work performed manually before the advent of Information and Communication Technology (ICT). Nowadays, most institutions of learning see the need to be connected to the internet for efficient and effective administration.

Keeping in line with the aim of the study, the objectives which the study seeks to achieve are: to find out the Information and Communication Technology facilities available in the polytechnics in South-West, Nigeria and to investigate the level of utilization of Information and Communication Technology facilities in the polytechnics in South-West, Nigeria.

**Literature Review**

According to Centre for Technical Agricultural and Rural Cooperation (CTA) (2003), ICT are technologies which facilitate communication and thus the processing and transmission of information electronically. ICT includes technologies and methods for storing, managing and processing as well as communicating information. Scholars like Adebayo and Adesope (2007) described ICT as scientific, technological and engineering disciplines and the management technologies used in the handling of information, processing and applications related to computers. ICT as an extension tool could enhance the flow of information in the application of school administration. Information administration consists of three main components namely Student administration, Staff Administration and General administration with Communication as an integral part of these three components. According to Purnomo and Lee (2010)
ICT has tremendous potential to revolutionise the way information, knowledge and new technology is managed, developed and delivered.

According to Ikelegbe (2007), the Nigerian National Policy for Information Technology (IT) in its executive summary stated that IT is the bedrock of national survival and development in a rapidly changing global environment and defined it as computers, ancillary equipment, software and hardware and similar procedures, services and related resources. It was further defined by the policy to include any equipment or intercom muted system or subsystem of equipment that is used in the automatic acquisition, storage, manipulation, management, movement, control, display, switching, interchange, transmission or reception of data or information. Balogun and Lawal (2004) viewed ICT as the various technologies that enhance the creation, storage, processing, communication and dissemination of information. Simply put, ICTs can be referred to as the application of technology to information processing.

ICT is seen by Ayo (2001) as the use of computer system and telecommunication equipment in information processing. It is made up of three basic components namely; electronic processing using the computer transmission of information using telecommunication equipment, and dissemination of information in multimedia. It is usually expressed mathematically as computer + telecommunication = information technology. Some of the examples of ICT tools according to Akuegwu, Ntukidem; Ntukjidem & Jaga (2011) include computer laptops, video machines, multimedia projectors or power points, digital cameras, internet facilities, computer network, telephone (GSM and land phones), e-library, television programmes, data base among others.

The findings by researchers such as Sambo (1992) and Omirin, (2007) shows that computers and internet facilities were adequate in higher institutions in Nigeria. In a similar vein, Fakeye (2010) and Oyejola (2007) in their studies found out that higher institutions in Nigeria are equipped with majority of the ICT facilities and this aid effective administration. Kolawole (1997) found out that some ICT facilities were not available in Nigerian schools. Egomo (2012) in his own study, asserted that the degree of utilization of ICT in most schools is not significantly low. Asiabaka (2010) revealed lack of usage of ICT by majority of principals in government secondary schools in his study. Most researchers, for example, Akuegwu et al (2011), Yusuf (2005), Enyi (2004), in their studies found out that ICT utilization in universities in Nigeria has been found to be very low.

Information and communication technology can make the school more efficient and productive, thereby engendering a variety of tools to enhance and facilitate administrators’ effectiveness (Kirschner and Woperies, 2003). Effectiveness requires that administrators should incorporate new ICT ideas to facilitate and meet the educational needs of their schools (Anderson, 2001). According to Ijaiya (2008), two
parameters that are commonly used to determine school effectiveness are students’ results especially in standardized tests, and their behaviour or performance after school. School effectiveness is the extent to which the set goals or objectives of a school programme are accomplished. A school would be regarded as effective if “school processes result in observable positive outcomes among its students, consistently over a period of time” (Iyer, 2011: 4). The parameters for measuring the effectiveness of educational institutions include the level of discipline tone of the school, school climate, teachers’ performance and the number of students who successfully pass their school leaving certificate examinations (Cohen, McCabe, Michelli & Pickeral, 2009).

**Statement of the Problem**

Presently, the world is experiencing change owing to advancement in information and communication technology (ICT) in various fields of human endeavours. It is a fact that there are series of related studies on the use of ICT in schools, but it appears that there is a dearth of research on it in the polytechnics in Nigeria. Asiabaka (2010) carried out a study on access and use of information and communication technology (ICT) for administrative purposes by principals of government secondary schools in Nigeria. Asiabaka’s study investigated the extent to which principals have access to broadcast technology, audio-visual technology, telecommunication technology and print technology for administrative purposes alone. Obakhume (2011) also carried out research on assessment of school teachers’ use of information and communication technology (ICT) in Oyo Metropolis of Nigeria. Obakhume’s study emphasized the availability of ICT facilities and level of knowledge possessed by teachers in the usage of ICT for teaching and learning while other areas of usage were neglected. Uchenna (2011) carried out a study on the impact of ICT on the administration of Mai Idris Alooma Polytechnic, Geidam, Yobe State, Nigeria. His study only focused on one aspect of the variables while the other variable is lacking. Also the study was limited to only one polytechnic in Yobe state. The gap identified by the researchers is that none of the earlier researchers focused on polytechnic education with respect to a combination of the two variables of this study. The researcher therefore considered it necessary to carry out a study on the relationship that exists between ICT utilization and administrative effectiveness in Polytechnics in South-West, Nigeria.

**Research Questions**
The following research questions were formulated for the study:

1. What are the Information and Communication Technology facilities available in the polytechnics in South-West, Nigeria?
2. What is the level of utilization of Information and Communication Technology facilities in the polytechnics in South-West, Nigeria?
3. What is the level of administrative effectiveness in polytechnics in South-West, Nigeria?
Research Hypothesis
Ho: There is no significant relationship between ICT utilization and administrative effectiveness in polytechnics in South-West Nigeria.

Research Design
The descriptive survey method was considered as the appropriate design because the study is directed towards people, their opinions, attitude and behaviors. The area covered by the study is Polytechnics in South-West, Nigeria.

Population and Sample
The population of the study comprised all the staff (academic and non-academic) of Polytechnics in South-West Nigeria, but the study sampled only the administrative staff through purposive sampling technique. The sample consisted of the Principal Officers, Deans, Heads of Departments, HND II Course Advisers and Staff from ICT units. In all, 700 respondents were selected for the study.

Instrumentation
The data for this study was gathered through the use of researcher-designed questionnaire and a proforma. The first instrument tagged ‘Information and Communication Technology Utilization Questionnaire’ (ICTUQ) was administered on all the respondents of the selected polytechnics. The structured questionnaire consisted of five sections. Section A was on demographic data of the respondents. Section B consisted of items to indicate the availability of ICT facilities with responses such as Available and Not Available. Section C was made up of items on the level of utilization of ICT facilities with responses such as Frequently Utilized and Not Utilized. The second instrument tagged ‘Administrative Effectiveness Proforma’ (AEP) was used to obtain data on students’ final year results in Higher National Diploma (HND) from 2006/2007 to 2010/2011 academic sessions. The final year results were used to measure administrative effectiveness.

In order to ascertain the validity of the instruments, the drafts of the instruments (ICTUQ and AEP) were given to experts at the University of Ilorin for both face and content validity. Those consulted included the Lecturers in the Department of Educational Management and Tests and Measurement specialists in the Faculty of Education. Their opinions and suggestions were incorporated into the final instruments that were administered on the respondents.

To determine the reliability, the test re-test reliability method was adopted and Pearson product moment correlation statistics was used to calculate the co-efficient at 0.05 significance level. That is, the research instrument was administered twice on respondents of polytechnics that were not part of the sampled polytechnics with a time lag of three weeks and the scores gathered were correlated for a test of reliability. A
correlation of 0.83 was obtained which was considered high enough to justify the reliability of the questionnaire.

**Methods of Data Analysis**

Specifically, descriptive statistics such as frequency counts and percentages were used to analyze the data collected in order to answer the research questions raised for this study. Pearson product moment correlation statistics was used to test the hypothesis. The hypothesis was tested at 0.05 level of significance.

**Results:**

**Research Question 1:** What are the Information and Communication Technology facilities available in the polytechnics in South-West, Nigeria?

The analysis as it applies to the above research question is as shown on table 1 below:

<table>
<thead>
<tr>
<th>ICT FACILITIES</th>
<th>AVAILABLE Frequency (%)</th>
<th>NOT AVAILABLE Frequency (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Computer</td>
<td>700 (100)</td>
<td>0</td>
</tr>
<tr>
<td>Telephone</td>
<td>635 (90.7)</td>
<td>65 (9.3)</td>
</tr>
<tr>
<td>Intercom</td>
<td>70 (10.0)</td>
<td>630 (90.0)</td>
</tr>
<tr>
<td>Telex</td>
<td>31 (4.4)</td>
<td>669 (95.6)</td>
</tr>
<tr>
<td>Fax</td>
<td>115 (15.4)</td>
<td>585 (83.6)</td>
</tr>
<tr>
<td>E-mail</td>
<td>640 (91.4)</td>
<td>60 (8.6)</td>
</tr>
<tr>
<td>Comm. Satellite</td>
<td>630 (90.0)</td>
<td>70 (10.0)</td>
</tr>
<tr>
<td>Internet Facilities</td>
<td>700 (100)</td>
<td>0</td>
</tr>
<tr>
<td>Scanners</td>
<td>665 (93.6)</td>
<td>45 (6.4)</td>
</tr>
<tr>
<td>Photocopies</td>
<td>673 (96.1)</td>
<td>27 (3.9)</td>
</tr>
<tr>
<td>Printers</td>
<td>670 (95.7)</td>
<td>30 (4.3)</td>
</tr>
<tr>
<td>UPS</td>
<td>666 (95.1)</td>
<td>34 (4.9)</td>
</tr>
<tr>
<td>Handset</td>
<td>700 (100)</td>
<td>0</td>
</tr>
<tr>
<td>Multimedia Projector</td>
<td>35 (5)</td>
<td>665 (95)</td>
</tr>
<tr>
<td>Laptops</td>
<td>700 (100)</td>
<td>0</td>
</tr>
</tbody>
</table>

**Source: Survey**

Table 1 shows the ICT facilities in the polytechnics. It is shown from the table that, computer was available in all the 10 polytechnics with a frequency of 700 and percentage of (100). Findings also show that internet facilities were adequately available for effective administrative activities with the frequency of 700 and percentage of (100). It was also shown in the table that intercom and telex were not adequately available in the sampled polytechnics with the percentages of 90.0 and 95.6, respectively.
**Research Question 2:** What is the level of Information and Communication Technology Utilization in the polytechnics in South-West, Nigeria?

The analysis as it applies to the above research question is as shown on table 2 below:

**Table 2: Level of Information and Communication Technology utilization in Polytechnics in South-West, Nigeria**

<table>
<thead>
<tr>
<th>ICT UTILIZATION</th>
<th>Frequency(%) CBT</th>
<th>Frequently Utilized (%)</th>
<th>Not utilized (%)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>CBT</td>
<td>238</td>
<td>(34)</td>
<td>462</td>
<td>700</td>
</tr>
<tr>
<td>E-payment</td>
<td>700</td>
<td>(100)</td>
<td>-</td>
<td>700</td>
</tr>
<tr>
<td>Online registration</td>
<td>700</td>
<td>(100)</td>
<td>-</td>
<td>700</td>
</tr>
<tr>
<td>E-Library</td>
<td>140</td>
<td>(20)</td>
<td>560</td>
<td>700</td>
</tr>
<tr>
<td>Compilation of result</td>
<td>620</td>
<td>(90)</td>
<td>70</td>
<td>700</td>
</tr>
<tr>
<td>E-mail</td>
<td>420</td>
<td>(60)</td>
<td>280</td>
<td>700</td>
</tr>
<tr>
<td>Admission Processing</td>
<td>700</td>
<td>(100)</td>
<td>-</td>
<td>700</td>
</tr>
<tr>
<td>Record Keeping</td>
<td>700</td>
<td>(100)</td>
<td>-</td>
<td>700</td>
</tr>
</tbody>
</table>

*Source: Survey*

The responses given by the respondents to research question two indicates that ICT facilities were frequently utilized for e-payment, online registration, admission processing and record keeping purposes in the sampled polytechnics with frequencies of 700 each representing 100% each. The table also shows that ICT facilities were not utilized for e-library; e-mail and CBT purposes in those institutions among the staff.

**Research Question 3:** What is the level of administrative effectiveness in polytechnics in South-West, Nigeria?

The analysis as it applies to the above research question is as shown on table 3 below:
Table 3: Level of administrative effectiveness in Polytechnics in South-West, Nigeria

<table>
<thead>
<tr>
<th>Level</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>157</td>
<td>22.4</td>
</tr>
<tr>
<td>Moderate</td>
<td>226</td>
<td>32.3</td>
</tr>
<tr>
<td>Low</td>
<td>317</td>
<td>45.3</td>
</tr>
<tr>
<td>Total</td>
<td>700</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: Survey

As indicated in table 3, on the level of administrative effectiveness in polytechnics in South-West, Nigeria 157 (22.4%) of the respondents perceived it to be high. While 226 (32.3%) of the respondents viewed it to be moderate and 317 (45.3%) are of the opinion that it is rather low.

Hypothesis testing

Table 4: Test of relationship between Information and Communication Technology Utilization and administrative effectiveness

<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>Df</th>
<th>Cal. r-value</th>
<th>p-value</th>
<th>Decision</th>
</tr>
</thead>
<tbody>
<tr>
<td>ICT Utilization</td>
<td>700</td>
<td>28.14</td>
<td>1.77</td>
<td>698</td>
<td>0.811</td>
<td>0.043</td>
<td>HO</td>
</tr>
<tr>
<td>Administrative Effectiveness</td>
<td>10</td>
<td>32.56</td>
<td>388.81</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note:
P<0.05 Ho Rejected

Table 4 shows that the p-value (0.04) is less than the significance level (0.05) for 698 degrees of freedom. Therefore, the null hypothesis is rejected. Therefore, there is significant relationship between ICT utilization and administrative effectiveness in polytechnics in South-West, Nigeria.

Discussion

The findings on the ICT facilities available in the polytechnics in south-west Nigeria shows that computers and internet facilities were available in all the polytechnics sampled in this study. The finding was consistent with the findings made in earlier studies by Sambo (1992) and Omirin (2007). This finding also supported that of Fakeye (2010) and Oyejola (2007) that higher institutions in Nigeria are equipped with majority of the ICT facilities. Findings also showed that telex and intercom as ICT facilities were not adequately available in the polytechnics in South-West, Nigeria. The
findings were however in agreement with those of Kolawole (1997) who found out that some ICT facilities were not available in Nigerian schools. The finding corroborates the findings of Fakeye (2010) who asserted that the non-availability of ICT facilities greatly hinder effective administration of schools. Moreover, findings on the level of utilization of ICT facilities shows that ICT facilities is widely utilized for e-payment, online registration, admission processing and record keeping. The result of this study gave credence to the assertion of Egomo (2012) who asserted that the degree of utilization of ICT in most schools is not significantly low. The study also showed that ICT facilities were not utilized in some of the polytechnics for E-library, computer based test and compilation of result. This finding is in line with the Akuegwu et al (2011), Yusuf (2005) and Enyi (2004) on the ICT utilization in universities in Nigeria which has been found to be very low.

Conclusion

Based on the findings and investigation which stemmed from the data collected and analyzed with the results obtained, the following conclusions were drawn: ICT utilization had a strong positive relationship with administrative effectiveness. This then means that utilization of ICT facilities aid administrators in effective discharge of their administrative duties and responsibilities. This suggests that information and communication technology is a critical variable in the effective administration of the polytechnics in South-West Nigeria. The use of information communication tools such as e-mail, fax, computer and video conferencing have made it possible to overcome barriers of space and time, and opens new possibilities for effective administration.

Recommendations

In view of the implication of the findings from this study for the effectiveness of polytechnics in Nigeria, the following recommendations are considered necessary.

- There should be increased financial allocation to polytechnics for the acquisition of ICT facilities for effective administration.
- Information and communication technology facilities which were not available in the polytechnics should be provided by the school heads as this would go a long way in making the work of administrators to be more effective and efficient.
- Information and communication technology facilities should be utilized to the fullest for conducting examinations in the polytechnics. This is because when used it makes it easier and faster to conduct examinations.
- Information and communication technology facilities should be effectively utilized to for compilation of results of students as this will make students transcript to be properly stored and easily retrieved as at when needed.
- There should be provision for steady supply of electricity in the polytechnics for effective utilization of ICT facilities.
References


