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Use of ICT and Data Preservation by School

Administrators

Uporaba informacijsko komunikacijskih tehnologij in ohranjanje podatkov

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Abstract

This paper investigated the extent to which use of ICT predicts data preservation by secondary school administrators. The kinds of data preserved and challenges faced by the administrators were also investigated. An ex-post facto design was adopted for the study; three research questions and a null hypothesis were formulated to guide the study. The sample size of 396 public secondary school administrators was randomly selected from the total population of 696. The instruments used for this study were Administrators' Use of ICT Questionnaire (AUIQ) and Data Preservation Questionnaire (DPQ). The instruments were validated by the researchers, and the corrected versions were subjected to the test of reliability using Cronbach alpha where the indices of .757 and .773 were obtained. The data obtained through these instruments were analyzed using mean, standard deviation, and simple linear regression analysis. The null hypothesis was tested at .05 alpha level and

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the result showed that school administrators' use of ICT significantly predicted preservation of data; the types of data preserved and challenges faced by the administrators were also revealed. Therefore, it was concluded that the use of ICT is a predictor of the criterion variable, data preservation. Based on the finding, it was recommended that the government and well meaning individuals should ensure the provision of ICT tools in all secondary schools in Akwa Ibom State and that all administrators should be encouraged to use ICT in their school management.

Key words: Use of ICT, Data Preservation, School Administrators

Povzetek

Prispevek raziskuje uporabo komunikacijskih tehnologij v administrativnih postopkih sekundarnega izobraževanja. Avtorja ugotavljata, da uporaba tovrstnih tehnologij zahteva kriterijske spremenljivke. Priporočata, da mora tako vlada kot tudi posamezniki zagotavljati večjo uporabo komunikacijskih tehnologij v administrativnih postopkih in jo uporabljati v šolskem menedžmentu.

Ključne besede: Uporaba IKT, ohranjenje podatkov, šolska administracija

Introduction

The process of information gathering and communication has advanced greatly in recent times. Humanity is currently in an electronic age (i.e. the e-age) –an age characterized by bridging the gap between distance and time, giving way to information revolution built around information and communication (Ola, 2004; Ukwegbu, 2005). Never in human history has such a revolution been witnessed in which digital data has

transformed the way we communicate in our homes, offices, market places, hospitals, churches, sports arena, legal environments and more importantly schools or educational concerns.

UNESCO (2002) defined information and communication technology (ICT) as the range of technologies that are applied in the process of collecting, storing, editing, retrieving and transfer of information in various forms. ICT could therefore be understood as all those electronic devices that are used in broadcasting telecommunication and all other electronically mediated information gathering and dissemination processes.

The Association of Africa University (2001) observed that as a complex organization, the universities' high rate of utilization of ICTs has helped to handle large volume of data which they must process speedily in order to provide information for management decision-making as well as meeting the information requirements of the various clientele – students, parents, alumni, government, information community, the general public. Okoli (2007) in Bassey, Okodoko and Akpanumoh (2009) classifies university records into two broad categories, namely management and administrative records. Management records are generated at the top management level (vice chancellor, deputies, bursar, librarian, and registrar) in the form of meeting records, procedures, decisions and resolutions. On the other hand, administrative records take the form of admission records, personnel records (employment, leave and duty records), and physical resource records. It seems that the growing complexities of universities in Nigeria and the challenges they pose to management makes the application of Hi-Tech information and ICTs indispensable for quality assurance (Okorie, Agabi & Uche, 2005 in Bassey et al., 2009).

In Anamuah-Mensah's (2009) observation, record keeping was also enhanced through the use of ICT, hence enhancing productivity and

cost-effectiveness. Hook (2004) found that the use of ICTs enhanced the transformation of learning outcomes for the gifted and talented. With ICTs, teachers were able to teach, communicate, maintain good records and evaluate these groups of children with high level of potentialities in them. According to Obeng (2004), ICT is an important tool in facilitating filling/recording system in the university since it is the nerve centre of knowledge and innovation. Besides, ACT HEALTH (2007) recognized the importance of using ICT in organizations and asserted that business communications that are sent electronically (e.g. email messages) become official records, subject to statutory record keeping requirements; and such must not be inappropriately deleted.

From the account Borg (n.d.), apart from using ICT and computer equipment in primary schools to teach the rest of the curriculum in an efficient way; to present content in an entertaining way; to offer children better opportunities for self expression; to familiarize children with a tool which is constantly imposing itself as a major part of their everyday life, ICT equally enhances record keeping. Records such as certificates, prize lists, scores, minutes etc are kept via ICT to enable the teachers monitor and keep track of developments in children. It also facilitates the teachers' ability to have a clear snapshot of the individual child's continuous development of skills, character and personality. The ICT is equally made for effective measuring, monitoring and recording progress (Borg. n.d).

Keakope (2003) reported that the adoption of ICT in government has helped services performance and work done in proximity. Public officers can create, store, retrieve and disseminate information with ease; more records are now produced and kept in electronic form. With this development, management functions in the government such as in personnel, electrical process, land registration, payroll, auditing and accounting are now done without pressure. Also with record keeping

through ICT, Keakope (2003) pointed out that decision-making and accountability are made possible as they continue to provide evidence of transactions in the organization. According to Rhodes (2009), China developed Chinese software to boost the governments' record keeping. This according to Rhodes ensured a risk free record and archival system for the office of the prime minister and the country's public service.

The literature on use of ICT for data preservation reviewed so far revealed that many researchers found that use of ICT is significantly relevant in data preservation. However, many of the studies were done in the foreign countries of the world, while a few were found in Nigeria and Akwa Ibom State in particular. Besides, many of those literatures found were from the study of other parasatals like companies, hospitals among others, hence the study of the use of ICT for data preservation by school administrators in Akwa Ibom State. The findings in this study would increase the available literature on the subject matter, especially in the study area, which is Akwa Ibom State. The study, therefore, investigated three research questions and one hypothesis thus:

Research Questions

1. What are the typical student's and staff's data preserved by the school administrators in the study?
2. What are the other data preserved by the school administrators?
3. What are the issues faced by school administrators due to lack of ICT support?

Hypothesis

The use of ICT does not significantly predict data preservation among secondary school administrators.

Method

This study used an ex-post-facto research design. This design was considered appropriate because the researcher had no direct control of the variables of the study since they had already occurred. They were inherently not manipulable. Besides, the study was non-experimental and required a large sample size. The population of the study consisted of all public secondary schools in Akwa Ibom State. There were 232 public schools with at least 3 administrators each (i.e. the principal and two vice principals) which gave a total of 696. This figure did not include those in private secondary schools and technical colleges. The sample of the study consisted of 396 school administrators representing 57% of the population. A cluster sampling technique was used in selecting the sample. Each of the three senatorial districts of the state was taken as a cluster, and then from each of the cluster, local governments were randomly sampled before selecting the schools from each sampled Local Government Area. Fifty-seven (57) percent of the administrators were selected from each senatorial district. This ensured that districts with more administrators also provided a greater number in the sample. The available administrators in each senatorial district were asked to pick from a bag of papers marked "Yes and No" The ones who picked "Yes" automatically become a subject for a study. From each sample school, two teachers who had worked under each administrator for at least three years were also purposely selected to assess each administrator.

A researcher-designed instruments known as "Administrators" Use of ICT Questionnaire (AUIQ) and Data Preservation Questionnaire (DPQ) were used for data collection for the study. The instruments were placed on a 4 – point rating scale of:

- | | |
|---------------------|------------|
| Strongly agree (SA) | - 4 points |
| Agree (A) | - 3 points |

Strongly disagree (SA) - 2 points

Disagree (D) - 1 point

for positively worded items.

Reverse scoring order was used for the negative items as follows:

Strongly disagree (SD) - 4 points

Disagree (D) - 3 points

Agree (A) - 2 points

Strongly agree (SA) - 1 point

In order to ascertain the validity of the instruments, the items were critically examined by the researchers to ensure the face validity.

To determine the reliability of the instruments, the AUIQ and DPQ were tested on 20 administrators and 20 teachers who were not involved in the main study respectively. Cronbach alpha coefficient was used in determining the reliability of the instrument. Cronbach alpha enabled the assessment of the internal consistency of the instrument which options were strongly agreed, agreed, disagreed and strongly disagreed. The data analysis yielded the alpha coefficient of .757 and .773 for AUIQ and DPQ respectively. These were considered adequate, that the instruments were reliable to achieve their objective.

Result and Discussion

Table 1: Result of Simple Linear Regression Analysis for use of ICT and data preservation among Secondary School Administrators

Variable	Mean	SD	N
Use of ICT	15.8056	3.27168	396
Data preservation	14.8763	4.42116	396

Model	Sum of Squares	df	Mean square	F	Sig.
Regression	1714.428	1	171.428	16.650*	.000
Residual	4056.600	394	10.296		
Total	4228.028	395			

R = .201; R² = .041

Significant at .05 alpha level; df= F_{1,394}; critical F= 3.89; N=396

Table 1 shows an F-value of 16.650 which is greater than the critical F-value of 3.89 at .05 level of significance with 1 and 394 degrees of freedom. The result is significant hence the null hypothesis that the use of ICT does not significantly predict data preservation by administrators is rejected. However, the simple linear regression correlation (R) of .201 and .041 indicates that only 04% of total variance in data preservation scores is predicted by the use of ICT. In other words, the test of the hypothesis reveals that each unit change in the use of ICT causes changes in data preservation. This result, therefore, implies that preservation of any form of data could be enhanced by the use of ICT.

This is possible because it is given that Information Systems (IS) and Information and Communication Technologies (ICT) are the basic enabling tools for organisations to innovate with new or improved services. The finding of this study is in consonance with those of

Keakope (2003), Hook (2004), Obeng (2004), ACT HEALTH (2007), Anamuah-Mensah (2009) , Aldmour and Shannak (2009), Bassey, Okodoko and Akpanumoh (2009) and Rhodes (2009). The finding of Borg (n.d.) also agreed with the finding of this study and encouraged the use of ICT in schools as this eases and replaces in some cases and other cases the manual way of data preservation. Many types of data are preserved by secondary school administrators and the typical ones for student and staff were obtained during the study and presented thus:

Table 2: Typical Student's and Staff's Data Preserved by the School Administrators in the Study

A Typical Student's Data Preserved by School Administrators	A Typical Staff's Data Preserved by School Administrators
Name	Name
Sex	Sex
Age	Age
Place of birth	Place of birth
Date of birth	Date of birth
Father's name	Qualifications
Mother's name	Date of first appointment/reabsorption
Guardian's name	Residential address
Qualification	ID card number
Admission number	Computer number
Class	Staff number in the staff disposition
Address	Date of promotion
Phone number of parents or guardian	Date of retirement
Last school attended	Date posted to present school
State of origin	Annual salary
Local government of origin	Salary per month
Birth order	Rank
Fathers occupation	Salary grade level

Mothers occupation	Employer
Guardians occupation	Class taught
Sponsor	Number of periods
Nationality	Nationality

Other types of School Records Preserved by Administrators in the Study include the following:

1. Register
2. Continuous assessment
3. Minutes book
4. Scheme of work
5. Syllabus
6. Note of lessons
7. Movement register
8. Time book
9. Admission register
10. Log book
11. Duty roster
12. Time table
13. Examination time table
14. Counseling records
15. Visitors record books

The study also revealed that school administrators sometimes encounter some challenges in data preservation due to lack of ICT support. Those issues are enumerated here:

Issues faced by school administrators due to lack of ICT support

The primary purpose of collecting data is to fulfill an administrative

regulation, the concepts, definitions, and classifications used in administrative laws and regulations. These noble purposes are sometimes jeopardized by lack of ICT support as reported by the school administrators. These challenges post themselves in many ways including:

1. Changes in the definitions to suit administrative needs which may affect data comparability.
2. Records of administrative units are often incomplete or inaccurate, and may not represent the population of interest.
3. Data records could be subject to deliberate misreporting (overreporting or underreporting) due to financial incentives or disincentives.
4. Staff responsible for data collection and reporting may not be adequately trained leading to poor data quality.
5. Data sometimes limited to the population on whom the administrative records are generated and may not represent the population of interest.
6. Often the data from administrative systems will not match with statistical concepts.
7. Data management or Data warehousing systems to store, manage and analyze the data would not be effective.
8. Difficulty in working with and processing large data bases.
9. Disconnecting, incomparable and inconsistent data may occur during a change of management.
10. Data are mostly not collected through solid sampling design.
11. Time coverage and completeness may be questionable (i.e. informal/illegal activities data are not covered or underestimated).
12. Establishing an authorized environment for the use of administrative data is sometimes difficult.
13. Data that is available from administrative sources could be limited.
14. Applying statistical standards and classifications (e.g. geography) could be difficult.

15. Vulnerability to changes in administrative practice.
16. Administrative data may not be timely.
17. Data recording forms and registers are difficult to change given the large-scale changes to be implemented for the entire data reporting and recording system.
18. Record-keeping formats may not be conducive to extract data and link records with ease particularly when the related information is kept in multiple registers.
19. Many variables used in administrative data are not updated regularly.

Conclusions and Recommendations

Based on the findings of the study, it was concluded that the administrators' use of ICT has a linear relationship with data preservation. This implies that the variations in the use of ICT, whether to the positive or negative, can cause a variation in the effective data preservation by administrator. More so, secondary school administrators also encounter some challenges in the absence of ICT support. It was, therefore, recommended that:

1. Government should make ICT tools available for all secondary schools administrators.
2. Workshops on the use of ICT should be organized from time to time by the governments and NGOs for school administrators who are not still exposed. During such workshops, skilled man-power should be employed to teach the administrators in this regard.
3. A constant power supply should be made available to schools so that administrators would be able to make use of same for their administrative operations.
4. Packages, like the Microsoft word, Microsoft excel, Adobe reader, Corel draw to mention a few, that accompany the computer

should be provided by the government to secondary schools.

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