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The Utilitarian Indexs of ICT in the Effective Administration Secondary School Education in Rivers State

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Abstract: ***This study investigated the impact of ICT for quality secondary school education delivery in River State. To address the issue raised therein, 36 item questionnaire titled questionnaire for Application of Information and Communication Technology for Quality secondary school Education Delivery (QAICTQSED). The responses were correlated and analysed using the Pearson Product Moment Correlation Co-efficient to establish the reliability co- efficient of 0.90. The study adopted descriptive survey design and Technology acceptance model theory. For the analysis of data mean (x) was used to answer the research questions, while Z-test was used for the testing of hypotheses of no significant difference. The findings from the analysis revealed that ICT application for the delivery of quality secondary school education to a minimal extent has been achieved. This study recommends that teachers in secondary schools should be armed with appropriate and requisite skills in ICT so as to be able to impact these skills in the students and especially help in trouble-shooting ICT related problems. Educational managers should ensure that students are provided with practical and functional knowledge of computers, the internet and associated areas of ICT. Adequate funds should be allocated and disbursed to public secondary schools for proper financing and maintenance of ICT appliances. This study has provided an empirical basis for problem solving on the application of ICT for quality secondary school education delivery in River State among others.***

Keywords: Quality secondary school education, ICT, Application, Educational managers, delivery.

I. INTRODUCTION

The society greatly relies on secondary school education to prepare young people for higher education and to provide knowledge and skills necessary for agricultural, industrial, commercial and economic development. The sudden increase in knowledge has made the society more dynamic that individuals need to continually develop themselves. Therefore, secondary schools and educational institutions at various levels are continuously reorganized to accept and deal with these challenges. For this reason, managers of secondary schools are faced with the difficult task of promoting better learning and teaching across the curriculum, making the school more manageable,

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Assuring quality in education and enhancing the development of teachers. Numerous strategies have been developed to enhance secondary education and one of such strategies involves the use of information and communication technology (ICT).

Technology Acceptance Model (TAM) is based on the Theory of Reasoned Action (TRA) and it is related to other theories such as the theory of planned behaviour. TAM explains ICT usage behaviour; what causes users to accept or reject the use of a technology and how user acceptance is affected by system characteristics. In TAM, two theoretical constructs exist. They are perceived usefulness and perceived ease of use. Perceived usefulness is the "degree to which a person believes using a particular system would enhance his or her job performance", while perceived ease refers to "the degree to which a person believes that using a particular system would be free of effort".

The application of ICT has greatly enhanced globalization and increased efficiency in work places. Thus, educational organizations must adapt to the use of modern communication technologies as a catalyst or stimulus for educational development.However, it has been observed that ICT facilities might not have been utilized effectively in secondary schools within the state. Secondary school education in Rivers State like others within the country is faced with numerous challenges in the area of quality delivery, increase number of students intake, effective and efficient school administrative functions, hence the need for an effective device resulting in better communication, efficient operations and personnel services. According to Adeyemi and Olaleye (2010), the computer becomes one of such tools in budgeting, collection of students' data, staff teaching and learning, recording of results and effective keeping of school results which is vital to educational development.

It is also, no longer news that infrastructure and learning facilities have been major problems in Nigerian Secondary Schools. Secondary education is a basic level apart from the primary education which precedes tertiary education through which a nation trains its manpower for sustainable development in every aspect of the economy. One of its' broad goals being to provide technical knowledge and vocational skills necessary for agricultural, industrial, commercial and economic development (Federal Republic of Nigeria: 2004).The concept of quality secondary school educationdelivery is based on the characteristics of something which contain its essential identifying nature or character [7].

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In other words, it is the original standard stipulated and expected of something. As laudable as the goals of secondary education is, the fact remains that provision of adequate facilities which includes equipped computer science laboratory in schools, is paramount for its attainment. [8] states that learning is more effective if the learner is exposed to a variety of experiences which are organized around specific objectives known to students.

II. STATEMENT OF THE PROBLEM

Numerous strategies have been developed to enhance secondary education and one of such strategies involves the use of information and communication technology (ICT). The application of ICT has greatly enhanced globalization and increased efficiency in work places. Thus, educational organizations must adapt to the use of modern communication technologies as a catalyst or stimulus for educational development.The problem of this study can be summed up with this question: New topic?

A. Purpose of study

The main purpose is to examine the level of capacity of using ICT facilities for the delivery of quality secondary school education in Rivers State. In specific terms, this work intended:

1. To find out the constraints to the effective utilization of ICT facilities in secondary school administration in Rivers State.
2. Determinehow the non-application of ICT techniques by teachers affect students' academic achievement in secondary schools in Rivers State?
3. Determine the extent to which the application of ICT in teaching enhance students rate of academic performance in Rivers state secondary schools?

B. Research Question

In addressing the problem of this study, the following research questions were raised:

1. What are the constraints to the effective utilization of ICT facilities in the administration of secondary schools in Rivers state?
2. To what extent does the non-application of ICT techniques by teachers influence students' academic achievement in secondary schools in Rivers State?
3. To what extent does the application of ICT in teaching enhance students' rate of academic performance in Rivers state secondary school?

C. Research Hypotheses

1. There is no significant difference in the mean ratings of male and female principals in the constraints to the effective utilization of ICT facilities in the administration of secondary schools in Rivers State.
2. There is no significant difference between the mean ratings of male and female teachers on the extent to which the non-application of ICT techniques affect student's academic achievement in Rivers State secondary schools.
3. There is no significant relationship between the mean ratings of teachers on the extent to which the application of ICT in teaching enhances the rate of academic performance of students in Rivers State Secondary Schools.

III. RESEARCH METHODS

A. Research Designed

The research designed for this study is a descriptive survey is the research design preferred for this study because it is a systematic means of collecting data which describes the characteristic features and facts about what exists or does not exist, with no intent of manipulating what is observed. In an attempt to study a group of people or items, a survey research collects and analyses data from a few members of a defined population considered to be a representative of the entire group, with respect to one or more variables. The design also specifies how such data will be collected in order to test hypotheses and answer research questions raised in the study. Hence this research design will enable the researcher to describe events using data from observations and opinion of principals and teachers believed to be a representative of the entire public secondary schools in Rivers State, on the usage of information and communications technology through questioning, collection and analysis of data so derived.

B. Population of the Study

The population of the study consisted of the entire 236 secondary schools in Rivers State with the principals and teachers as respondents. The source of information on the number of secondary schools in the state is the Rivers State Post Primary Schools Board, Port Harcourt, 2010/2011

C. Sample and Sampling Technique (s)

The research selected principals and teachers of at least ten secondary schools from each of the five administrative zones of the state namely: Ahoada zone, Isiokpo zone, Port Harcourt zone, Khana zone and Degema zone. The selected schools are indicated in appendix v on page 114. The schools were selected using simple random sampling technique. A total of 118 schools will represent about 50% of the total number of secondary schools in Rivers State. This technique was preferred to ensure that every individual in the population is given an equal chance of being selected.

D. Instrumentation

Instrumentation in research refers to the process and tools used for data collection. Statistical data generated using a research instrument can be processed and used in drawing conclusions about existing problem, if any. A structured questionnaire titled application of information and communication technology for quality secondary school education delivery (QAICTQSED) was constructed by the researcher after an extensive review of several empirical work to gather primary data from principals and teachers. The items are constructed on a 4 point rating scale

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E. Validity of the Instrument

To ensure that the research instrument measures what it purports to measure, the study carried out a face validity by cross checking the items in the QAICTQSED with the research questions to generate adequate information. Then it was validated by lecturers in the Departments of Educational Management University of Port Harcourt. Measurements and evaluation for scrutiny and content validation. The QAICTQSED was finally modified with the suggestions made by the experts before administering it to the respondents.

F. Reliability of Instrument

A split half method was used to determine the reliability of the instrument used in gathering data for this research. This was done by obtaining responses from randomly selected sample of 25 principals and teachers in Rivers State who did not form part of the sample size for the study. This method is preferred for this study because it will help to eliminate errors of measurement such as difference in testing conditions which may occur in a test re-test reliability method. The two sets of scores (1st and 2nd) were analyzed using the Pearson's Product Moment Correlation to determine the correlation Co-efficient, in order to obtain the reliability index.

IV. METHOD OF DATA COLLECTION

The study administered the QAICTQSED personally on the respondents and retrieved back the same at an agreed date. The researcher was aided by four (4) research assistants for quick administration and collection which was within one to two weeks. Only three hundred and fifty (350) copies of questionnaire were eligible and used for the analysis out of five hundred and (500) administered to principals and teachers.

A. Method of Data Analysis

The data generated from the questionnaire were collated the analysis of data was done using both inferential and descriptive statistical techniques. The mean($\overline{X}$) was used to answer the research questions. As a result any mean that ranged from 2.5 and above was regarded as high extent while those below 2.5 were regarded as low extent. The hypotheses were tested using z-test at 0.05 level of significance at 568 degree of freedom also with a sample size of 20 above. The z-test was most preferred because it is used for descriptive analysis. Pearson Product Moment Correlation Co-officient was used to establish the reliability index of the instrument at 0.90.2.50 was cited as mean($\overline{X}$) set. Mean score of 2.50 and above was accepted while mean score below 2.50 was rejected. The following indicate the scales used.

B. Research Question

Research Question 1: What are the constraints to the effective utilization of ICT facilities in the administration of secondary schools in Rivers state?

Table 1: Mean ($\overline{X}$) analysis on the constraints to the effective utilization of ICT facilities in the administration of secondary schools.

	PRINCIPALS		TEACHERS			
	N	$\bar{X}$	N	$\bar{X}$	$\bar{X}\bar{X}$	Rank
There are inadequate facilities to support full application of ICT	150	3.13	200	2.91	3.02	1st
Teachers are very reluctant to adapt to use of ICT in teaching-learning process	150	2.91	200	2.77	2.84	2nd
Irregular power supply hinders the use of computer in schools	150	2.72	200	2.65	2.69	4th
There is a lack of computer literate teachers/ instructors	150	2.83	200	2.72	2.78	3rd
Funds are not available for the growth of ICT in secondary schools	150	2.55	200	2.54	2.55	5th

From table 1 above, the calculated mean scores are 3.02, 2.84, 2.78, 2.69 and 2.55 for all items. The means are higher than the criterion mean of 2.5. This indicated that the entire identified items are factors on the constraints to the effective utilization of ICT facilities in the administration of secondary schools in Rivers state. There are inadequate facilities to support full application of ICT, irregular power supply hinders the use of computer in schools, teachers are very reluctant to adapt to use of ICT in teaching-learning process, there is a lack of computer literate teachers / instructors and funds are not available for the growth of ICT in secondary schools. In all, There are inadequate facilities to support full application of ICT ranks first of all the factors.

Research Question 2: To what extent does the non-application of ICT techniques by teachers affect students' academic achievement in secondary schools in Rivers State?

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Table 2: Mean $(\bar{X})$ analysis on the extent to which the non-application of ICT techniques by teachers affect students' academic achievement in secondary schools.

S/N		Male Teachers		Female Teachers			
		N	$\bar{X}$	N	$\bar{X}$	$\bar{X}\bar{X}$	Rank
27.	There is need for good ICT techniques	80	2.77	120	2.91	2.84	1st
28.	Upgrade on ICT techniques are necessary in teaching	80	2.77	120	2.91	2.84	1st
29.	Students academic achievement increases with the use of ICT based techniques in teaching	80	2.83	120	2.72	2.78	3rd
30.	Students academic achievement are limited with non-application of ICT techniques in teaching	80	2.76	120	2.68	2.72	4th
31.	Students academic achievement remain the same whether ICT techniques are used in teaching or not	80	2.71	120	2.65	2.68	5th

From table 2 above, the calculated mean scores are 2.84, 2.84, 2.78, 2.72 and 2.68 for all items. The means are higher than the criterion mean of 2.5. This indicated that the entire identified items are factors on the extent to which the non-application of ICT techniques by teachers affect students' academic achievement in secondary schools in Rivers State. Students academic achievement remain the same whether ICT techniques are used in teaching or not, There is need for good ICT techniques, Upgrade on ICT techniques are necessary in teaching, Students academic achievement increases with the use of ICT based techniques in teaching and Students academic achievement are limited with non-application of ICT techniques in teaching. In all, Upgrade on ICT techniques are necessary in teaching ranks first of all the factors.

Research Question 3: To what extent does the application of ICT in teaching enhance students' rate of academic performance in Rivers state secondary school?

Table 3: Mean $(\bar{X})$ analysis on theextent to which theapplication of ICT in teaching enhance students' rate of academic performance in Rivers state secondary school.

	Male Teachers		Female Teachers			
	N	$\bar{X}$	N	$\bar{X}$	$\bar{X}\bar{X}$	Rank
Teachers deliver their lessons more effectively with the use of ICT	80	2.55	120	2.55	2.55	5th
Students do better academically with exposure to ICT based lessons	80	2.61	120	2.59	2.60	3rd
ICT enhances quality of work for both teachers and students	80	2.78	120	2.69	2.74	2nd
ICT based delivery of instruction exposes the students to more knowledge in different subjects than non based delivery	80	2.82	120	2.71	2.77	1st
ICT compliant teachers are more innovative in their style of lesson delivery	80	2.60	120	2.58	2.59	4th

From table 3 above, the calculated mean scores are 2.77, 2.74, 2.60, 2.59 and 2.55 for all items. The means are higher than the criterion mean of 2.5. This indicated that the entire identified items are factors on the extent to which the application of ICT in teaching enhance students' rate of academic performance in Rivers state secondary school. ICT compliant teachers are more innovative in their style of lesson delivery, ICT based delivery of instruction exposes the students to more knowledge in different subjects than non based delivery, teachers deliver their lessons more effectively with the use of ICT, ICT enhances quality of work for both teachers and students and Students do better academically with exposure to ICT based lessons. In all, ICT based delivery of instruction exposes the students to more knowledge in different subjects than non based delivery ranks first of all the factors.

C. Research Hypothesis

Hypothesis 1: There is no significant difference in the mean ratings of male and female principals in the constraints to the effective utilization of ICT facilities in the administration of secondary schools in Rivers State.

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Table 4: Means, standard deviation and Z-statistics on the constraints tothe effective utilization of ICT facilities in the administration of secondary schools.

	N	$\bar{x}$	SD	Z-CAL	Z-CRI	DF	LEVEL OF SIGNIFICANCE	DECISION
Male Principals	130	2.83	0.78	1.53	1.96	568	0.05	H_{05} was Accepted
Female principals	20	2.72	0.93					

The data in table 4above, shows that the z-calculated value of 1.53 is less than z-critical value of 1.96 at 0.05 level of significance with 568 degree of freedom. The null hypothesis (H_{01}) was accepted. This means that there is no significant difference between the mean ratings of male and female principals in the constraints to the effective utilization of ICT facilities in the administration of secondary schools in Rivers State.

Hypothesis 2: There is no significant difference between the mean ratings of male and female teachers in the extent to which the non-application of ICT techniques affect student's academic achievement in Rivers State secondary schools.

Table 5: Means, standard deviation and Z-statistics on the non-application of ICT techniques affect student's academic achievement.

	N	$\bar{x}$	SD	Z-CAL	Z-CRI	DF	LEVEL OF SIGNIFICANCE	DECISION
Male teachers	80	2.79	0.81	0.68	1.96	568	0.05	H_{06} was Accepted
Female teachers	120	2.74	0.92					

The data in table 5 above, shows that the z-calculated value of 0.68 is less than z-critical value of 1.96 at 0.05 level of significance with 568 degree of freedom. The null hypothesis (H_{02}) was accepted. This means that there is no significant difference between the mean ratings of male and female teachers in the extent to which the non-application of ICT techniques affect student's academic achievement in Rivers State secondary schools.

Hypothesis 3: There is no significant relationship between the mean ratings of teachers on the extent to which the application of ICT in teaching enhances the rate of academic performance of students in Rivers State Secondary Schools.

Table 6: Means, standard deviation and Z-statistics on the applicationof ICT in teaching enhances the rate of academic performance of students

	N	$\bar{x}$	SD	Z-CAL	Z-CRI	DF	LEVEL OF SIGNIFICANCE	DECISION
Male teachers	30	2.67	0.89	0.625	1.96	568	0.05	H_{07} was Accepted
Female teachers	120	2.62	0.99					

The data in table 15 above, shows that the z-calculated value of 0.68 is less than z-critical value of 1.96 at 0.05 level of significance with 568 degree of freedom. The null hypothesis (H_{03}) was accepted. This means that there is no significant difference between the mean ratings of teachers on the extent to which the application of ICT in teaching enhances the rate of academic performance of students in Rivers State Secondary Schools.

V. DISCUSSION

The administration of Secondary Schools in Rivers State includes inadequate facilities to support full application of ICT, irregular power supply which hinders the use of computer in schools, teachers are very reluctant to adapt to use of ICT in teaching-learning process, there is relatively a lack of computer literate teachers/ instructors and funds are not available for the growth of ICT in secondary schools. It is very glaring that the above identified factors do really militate against the effective utilization of ICT facilities in the administration of Secondary Schools in Rivers State.

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Thus, there is need for good ICT techniques and its upgrade on. Respondents affirmed that the extent to which the non-application of ICT affects students academic achievement is very high also ICT based delivery of instruction exposes the students to more knowledge in different subjects than non based delivery, ICT enhances quality of work for both teachers and students and Students do better academically with exposure to ICT based lessons to a high extent. While the innovativeness of ICT compliant teachers in their style of lesson delivery and its effectiveness is at low extent. The respondents agreed that the above outlined factors indicates that the application of ICT in teaching enhance students' rate of academic performance in secondary schools in Rivers State. This has actually gingered a new and strong desire to equip schools with ICT facilities and qualified personnel necessary to produce technologically proficient and efficient students in developed countries of the world. There is no doubt that ICT can aid the instructional process and facilitate students' learning. Many studies have found positive effects associated with technology aided instruction. As aid to teaching and learning, ICT is capable of activating the senses of sight, hearing and touch of the students. ICT has the capacity to provide higher interactive potential for students to develop their individual, intellectual and creative ability. The main purpose of ICT consists just in the development of human mental resources, which allow people to both successfully apply the existing knowledge and produce new knowledge.

VI. CONLCUSIONS AND RECOMMEDATIONS

Based on the findings of the study the following conclusions were drawn as follows:

1. it is possible to use carefully prepared ICT programs to ensure that learners are accurately and systematically instructed. Also, ICT enhances problem-solving skills of the students by focusing on thinking skills especially in subject such as mathematics. ICT serves administrative functions.
2. They can replace the laborious exercise of filing papers in filing cabinets and shelves where records accumulate dust over a long period of time.
3. Administrative application of ICT is their use for budget planning, accounting for expenditure, writing correspondences and reports, assigning students to classes, reporting students' progress and testing students and scoring tests which help to reduce paper work. In this way, ICT can promote individualized learning in secondary schools in Nigeria

On the basis of the findings of the present study, the discussion and conclusion therefore, the following recommendations were made.

1. The government should ensure that inclusion of ICT education intopublic secondary school curriculum is accompanied with essentialinstructional and infrastructural support and adequate training of skilled manpower.
2. The government should pay particular attention to the source of electricpower by overhauling the energy sector in order to play its crucial and supportive role in the development of ICT in secondary schools.
3. Adequate funds should be allocated and disbursed to public secondary schools for proper financing and maintenance of ICT appliances.
4. There is need for the government at all levels, non-governmentalorganizations (NGO) and philanthropists to invest in the development of ICT in secondary schools by providing adequate human and material resources.

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