

**INFORMATION COMMUNICATION TECHNOLOGY (ICT) AND PRINCIPALS'
DECISION-MAKING EFFECTIVENESS IN PUBLIC SECONDARY SCHOOLS IN ONDO
STATE, NIGERIA**

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Abstract

Principals' administrative functions in secondary schools are becoming increasingly difficult in terms of decision-making on issues concerning the school progress. Information Communication Technology (ICT) has been recognized to be a very powerful tool for effective decision-making. The study examined Information Communication Technology (ICT) and principals' decision-making effectiveness in public secondary schools in Ondo State, Nigeria. Descriptive survey research design was adopted. Three research questions were raised, and one hypothesis was formulated to guide the study. Respondents comprised 90 principals from the public secondary schools that were randomly sampled. Data were collected using "Information Communication Technology and Principals' Decision Making Questionnaire" (ICTPDMQ). Research questions were answered using mean and standard deviation while hypothesis was tested using the Pearson Product Moment Correlation at an alpha level of 0.05. Results revealed that most principals have adequate access to mobile phones and computer machine as these devices reflected high mean scores above 2.50 cutoff points respectively. However, ICT applications for decision-making such as Electronic mail, Yahoo messenger, Electronic board, Telegram, Fax messages, Video conferencing, Conference calls, and twitter have not been adequately used by the principals. Principals have been effective in taking decisions quickly as problems associated with distance and delay of decision-making have drastically reduced to a minimal level. Result further showed that there is no significant relationship between the use of various ICT applications by the principals and their decision-making [$r(88) = 0.187; p > 0.05$]. Based on the findings, it was concluded that ICT remains an effective tool for decision making. However, principals should be given more training opportunities to improve their ICT skills in using different applications for decision-making as this will increase the school overall effectiveness.

Keywords: Principals' decision making, ICT devices, ICT applications

Introduction

Decision-making remains one of the core functions of the school administrators. The quality of principals' decision process remains an important ingredient in measuring his/her effectiveness and value within the school system. Ayeni (2018) viewed decision-making as process of selecting the best/most preferred and workable action among other options or alternative courses of action available, either towards solving problems or the achievement of an objective. Since principals are faced with the difficult task of making a decisive decision, Information Communication Technology (ICT) therefore can be used to savage the problem of promptness and effectiveness in decision-making. Piñeros-Espinosa and Gómez-Santos (2017) asserted that the limitations derived from scarce resources such as time, information, and bias can be strategically reduced using Information Communication Technologies (ICTs). ICT embraces all forms of technological tools that can be used in transmitting, disseminating, storing and managing information (Jimoh, Osunkunle, & Musbahu, 2017). These devices include radio player, television, computer machine, mobile phones, projector, fax machine, digital camera, satellite systems, video recorder machine, internet facilities and so on.

General observation have shown that many principals in Ondo State are faced with the hurdles of time and distance in making decisions and disseminating relevant information across to educational stakeholders. It appears that many principals still prefer the conventional methods of making decision; this often leads to time wasting as it requires the physical presence of stakeholders that involve in the decision-making process. It seems that decisions taken on many occasions have to be communicated manually to various departments of the school. This may be a result of principals' inability to access relevant ICT devices that can assist them in making-decision. Atim (2016) and Eguavoen (2017) both attested to the aforementioned statement in their studies as students were unable to access ICT devices that can assist their academic performances.

In view of this, Hashim, Alam and Siraj (2010) believed that the traditional method of decision-making needs to be replaced with the use of modern technology. Hashim, Alam and Siraj (2010) noted that many organizations have developed their own approaches in ensuring reliable decision-making processes, but not many have used technology to ensure effective participatory based decision-making. Principals as custodians of secondary schools need to create, store,

disseminate and retrieve information for effective decision-making. Alabi and Akinnubi (2013) believed that decision-making within and between departments in schools must be ICT-based. However, Hassan (2018) asserted that the use of ICT can deal with the problem associated with decision-making in schools. ICT devices such as android phones, laptop, and tablets with internet facilities remain vital tools for decision-making. The accessibility of these devices will not only encourage principals to use them but improves the quality of their decision-making process. Issues about the school progress can be discussed via the various social media networking platforms such as Facebook, WhatsApp, Twitter, YouTube, and Instagram where the concerned parties express their opinions. Adu and Olatundun (2013) believed that principal's clear vision for technology can foster good partnership and collaboration between the school and community members.

The purpose of ICT in decision-making is not to make timely decision alone but to assist the school principals in allowing the relevant stakeholders to jointly take accurate decisions on the potential problems that require urgent attention. The principals' effectiveness in making decisive decision depends on the accuracy and reliability of available information. This means that the information must be accurate, relevant, complete, trustworthy, timely, authentic, and well presented in clear format. The use of ICT by the principals in decision-making can enable the relevant educational stakeholders to have immediate access to information. Oyedemi (2015) emphasized on the need for school administrators to have positive attitudes toward the use of ICT devices as this reduces administrative complexity.

Unfortunately, it seems that many School principals still find it difficult to take decision effectively, accurately, timely, and sufficiently using the ICT. This inability on the part of principals to discharge this duty according to Okon, Ekaette, and Ameh (2015) is considered as problem of storage, preservation, and presentation of huge volumes of the information. Due to the failure and incompetence of many principals to use ICT effectively in decision making process, Tearle (2004) as cited in Arooj (2014) emphasized the need for principals as a matter of urgency to embrace, learn, and have adequate knowledge of ICT as well as provide regular professional development training to support the use of ICT by the staff school for various purposes.

Statement of the Problem

The state of administration of public secondary schools in Ondo State has been a major source of concern to educational stakeholders. This is because principals are seen as the managers of school who creates an enabling environment for quality education at the secondary school level through their decision-making processes. Due to the complex nature of principals' administrative tasks, taking prompt and decisive decisions about pressing issues concerning the school programmes remain imperative. However, observations have shown that many principals in Ondo State are constrained with the problem of time and distance in making decisions as well as disseminating relevant information across to educational stakeholders. The Innovative use of ICT in the decision making process in most secondary schools in Ondo State public secondary schools seems not to be widespread. This could be the major factor that have contributed to the inability of the school principal to access accurate, relevant, complete, trustworthy, timely, and authentic information in making decision. Lack of appropriate ICT skills and utilization of different ICT applications seems to be the major problem faced by the principals thus leading to decision making ineffectiveness in public secondary schools in Ondo State. It is therefore important to investigate the information communication technology and principals' decision-making in public secondary schools in Ondo State, Nigeria.

Purpose of the Study

The purpose of the study is to find out the relationship between ICT and principals' decision-making effectiveness in secondary schools in Ondo State. Specifically, the objectives are to:

1. investigate the extent to which principals access ICT devices for decision-making in secondary schools in Ondo State.
2. examine the extent to which principals use various ICT applications for decision-making in public senior secondary schools in Ondo State.
3. investigate the level of principals' decision-making effectiveness public senior secondary schools in Ondo State.
4. establish the relationship between principals' use of ICT applications and decision-making effectiveness in public secondary schools in Ondo State.

Research Questions

To guide this study, the following questions were raised.

1. To what extent do principals access ICT devices for decision-making in secondary schools in Ondo State?
2. To what extent do principals use different ICT applications for decisions-making in public senior secondary schools in Ondo State?
3. What is the level of principals' decision-making effectiveness in public senior secondary schools in Ondo State?

Research Hypothesis

This hypothesis was formulated and tested at 0.05 alpha level to guide the study.

H₀₁: There is no significant relationship between principals' use of ICT applications and decision-making effectiveness in public senior secondary schools in Ondo State.

Methodology

This consisted of the procedure used in carrying out the study under the following sub-headings: Research Design; Population; Sample and Sampling Techniques; Research Instrument; Validity and Reliability of the Instrument; Administration of the Instrument; and Data Analysis.

Research Design

The study adopted a descriptive survey research design.

Population

The population of this study consisted of 304 Principals from the 304 public secondary schools in Ondo State as at the time of this study.

Sample and Sampling Techniques

The sample for the study consisted of 90 principals. A multi-stage sampling approach was used to select samples for the study. In stage one, nine Local Government Areas (LGAs) were selected out of the eighteen Local Government Areas available in Ondo State with three LGAs randomly selected in each of the existing three Senatorial Districts (Ondo North, Ondo Central, and Ondo South). In Stage two, simple random technique was used to select 10 public secondary schools each from the nine Local Government Areas making a total number of 90 secondary schools. Principals of the 90 sampled public secondary schools were selected as respondents for the study because it is believed that principals are the custodians of all decision-making in the secondary schools.

Instrumentation

Data were collected using Information Communication Technology and Principals' Decision-Making Questionnaire (ICTPDMQ). The instrument has four parts with a total number of 21 items. The instrument utilized a four point Likert rating scale with the value of 4, 3, 2, and 1. Section one of instrument covered the personal information of the respondents while the section two sought the extent to which ICT devices were accessed by the principals. Section three covered the ICT applications such as Facebook, Twitter, WhatsApp and so on used by the principals for decision-making. The last section sought for the level of principals' decision-making effectiveness using ICT.

Validity and Reliability of the Instrument

The validity of the instrument was carried out through a critical assessment of the items in the questionnaire by the experts in Educational Management and Test & Measurement, Faculty of Education, Adekunle Ajasin University, Akungba Akoko. Issues about both face and content validity of the instrument were taken into consideration and necessary corrections were made. The reliability of the instrument was estimated through test and re-test technique. The instrument was given to 20 principals outside the Local Government Study Area of study. After two weeks, the same instrument was administered on the same 20 principals and their responses were scored. Their responses were correlated using the Pearson Product-Moment

Correlation (PPMC). The reliability co-efficient (r) indicated a value of 0.82. This calculated value of 0.82 showed that the instrument was reliable.

Administration of the instrument

The researchers were assisted by two trained research assistants in the administration of the instrument. The administration of the instrument was on the spot administration to ensure a 100% return. An appeal was made to each respondent to carefully study the instrument and to be honest as their responses remain confidential.

Data Analysis

All the questions raised were answered with descriptive statistics using the mean and standard deviation while the hypothesis was tested using Pearson Product-Moment Correlation (PPMC). A mean of 2.50 and above indicates an agreement on the items in the instrument while any mean less than 2.50 indicates a rejection. The hypothesis was tested at 0.05 level of significance.

Results and Discussions

The results and discussions of data analyses are presented in two parts based on the research questions raised, and hypothesis that was formulated for the study

Research Question one: To what extent do principals access ICT devices for decision-making in secondary schools in Ondo State?

Table 1
Principals' Access to ICT Devices for Decision-making in Secondary Schools in Ondo State

S/N	Items	- X	SD	Remark
1.	Computer machine	3.06	0.85	Accepted
2.	Mobile phone(android, tablet etc)	3.67	0.67	Accepted
3.	Fax machine	1.24	0.67	Rejected
4.	Telex machine	1.11	0.36	Rejected
	Average	2.27	0.64	

The analysis of data in Table 1 indicated that most principals accessed mobile phones and computer machine as ICT devices for making an effective decision. Item 1 and 2 showed high mean scores above 2.50 indicating that mobile phones and computer machine as essential ICT devices mostly accessed by the principal for decision-making. However, fax machine and telex machine were not popular ICT devices accessed by the principals for decision-making. Item 3 and 4 respectively indicated low mean scores below 2.50.

Research Question two: To what extent do principals use different ICT applications for decision-making in secondary schools in Ondo State?

Table 2

Principals' Use of ICT Applications for Decision-making in Secondary Schools in Ondo State

S/N	Items	\bar{X}	SD	Remark
5.	Electronic mail	2.02	0.73	Rejected
6.	Facebook	2.62	0.65	Accepted
7.	WhatsApp	3.03	0.63	Accepted
8.	Yahoo messenger	2.29	0.63	Rejected
9.	Electronic board	1.17	0.35	Rejected
10.	Telegram	1.78	0.72	Rejected
11.	Fax messages	1.33	0.41	Rejected
12.	Video conferencing	2.11	0.68	Rejected
13.	Conference calls	2.17	0.61	Rejected
14.	Twitter	2.12	0.77	Rejected
	Average	2.06	0.61	

It could be seen from Table 2 that item 6 and 7 have mean scores above the cutoff point of 2.50. This indicates that WhatsApp and Facebook remain the most ICT application used by the principals for decision-making. Item 5, 8, 9, 10, 11, 12, 13, and 21 have low mean scores below 2.50 indicating that Electronic mail, Yahoo messenger, Electronic board, Telegram, Fax

messages, Video conferencing, Conference calls, and Twitter are not popular ICT applications used by the principals in making decisions.

Research Question three: What is the level of principals' decision-making effectiveness in secondary schools in Ondo State?

Table 3
Principals' Decision-making Effectiveness in Secondary Schools in Ondo State

S/N	Items	\bar{X}	SD	Remark
15.	ICT allow principals to disseminate information and take decisions quickly about the school progress.	3.12	0.50	Accepted
16.	ICT enable principals to carry stakeholders along in decision-making process without their physical presence.	2.64	0.60	Accepted
17.	ICT allows the principals to store information about decisions made electronically for easier retrieval.	2.47	0.68	Accepted
18.	ICT helps principals in reducing the manual methods of sending circulars about decisions made.	3.14	0.50	Accepted
19.	The problem of distance and delay faced by the principals in making decisions are eradicated through the use of ICT.	3.03	0.43	Accepted
20.	ICT allows principals to engage everybody to actively participate in decision-making process.	2.68	0.66	Accepted

21.	ICT allows principals to get immediately response and feedback about a decision from the stakeholders.	2.99	0.54	Accepted
	Average	2.89	0.57	

The analysis of data in Table 3 indicated that many principals were effective using ICT in decision-making. This allows them to take decisions quickly, reduces the manual methods of sending circulars about decisions made as well as eradicates the problem of distance and delay been faced by the majority principals in making-decision process. The mean of item 23, 24, 26, 27, 28, and 29 indicated high values that are above 2.50 which means the result of those items showed that the use of ICT by the principals have appositve influences on their decision making. However, the result of item 25 revealed that the uses of ICT by the principals do not influence their process of storing information about decisions made.

Research Hypothesis one: There is no significant relationship between principals’ use of ICT applications and decision-making effectiveness in secondary schools in Ondo State.

Table 4
Summary of PPMC Showing the Relationship between Principals’ use of ICT Applications and Decision-Making Effectiveness in Secondary Schools in Ondo State

Variables	N	X	SD	df	r-cal	r-Cr.	P	Remark
ICT applications	90	2.06	0.61	88	0.187	0.205	>0.05	Not
Decision-making Effectiveness	90	2.89	0.57					Significant

Table 4 showed that r-cal value of 0.187 is less than r-critical 0.205 given the 88 degree of freedom at 0.05 level of significance. This implies that there was no significant relationship

between use of various ICT applications by the principals and decision-making effectiveness [$r(88) = 0.187$; $p > 0.05$]. Therefore, the null hypothesis is retained.

Discussion of Findings

The finding of this study indicated that most principals do not have adequate access to ICT devices that support effective decision-making in public secondary schools in Ondo State Nigeria. Many of them only make use of mobile phones and computer machine as ICT devices for making an effective decision. This supports the finding of Atim (2017) that students do not have adequate access to ICT facilities at the Federal College of Agriculture Ishiagu thereby denying them of using ICT facilities that enhance their academic performances. However, fax machine and telex machines were not popular ICT devices used by the principals for decision-making.

The finding of the study showed that many principals have not fully explored the use of various ICT applications in taking decisions. WhatsApp and Facebook remain the two most used ICT applications by the principals for decision-making. Whereas, ICT applications such as Electronic mail, Yahoo messenger, Electronic board, Telegram, Fax messages, Video conferencing, Conference calls, and twitter were not commonly used by the principals in making decisions. This means the use of few ICT applications can restrict the Principals' vast knowledge of using other better interactive applications. This finding is line with the observation of Eguavoen (2016) that ICT tools which are likely to facilitate academic performance of students are not used or accessed by the students with Visual Impairment in Lagos State, Nigeria.

The study further revealed that the use of ICT by the principals enable them to take decisions quickly, reduces the manual methods of sending circulars about decisions made as well as eradicates the problem of distance and delay been faced by the majority principals in making prompt decisions. This is in line with the finding of Piñeros-Espinosa and Gómez-Santos (2017) that ICT has improved the reliability, speed and interaction of communicating decisions with employees. Similarly, Hashim, Alam and Siraj (2010) attested to this finding that the use of traditional paper based system is normally time consuming therefore technology has replaced

the traditional method with the tracking system of activities and identification through user logins.

The result also indicated that there is no significant relationship between ICT applications used by the principal and decision-making effectiveness. This result does not correspond with the finding of Oyedemi (2015) that school administrators have a positive perspective towards the use of ICT tools which brought effectiveness into school administration by solving the problem of poor communication as well as reducing complexity in school administration.

Conclusion

ICT has prompted demands for systematic changes in decision-making in schools. Unavoidably principals must respond to this demand as this is becoming part of today's reality for every educational institution. The problem of distance and delay being faced by majority of principals in making prompt decisions can gradually be eradicated with the use of ICT. However, the extents of principals' access to ICT devices and usage of ICT applications are low, hence, much is still expected of the State Government in the area of procurement of ICT devices for effective decision-making to ease principals' administrative complexity.

Recommendations

1. Government and other educational stakeholders should endeavour to improve the supply of ICT devices in schools as this will allow principals to have adequate access to these devices.
2. Since computers and mobile phones remain important devices for effective decision-making, computer tablets or android phones with free internet subscription should be provided to every principal and teacher in secondary schools to ease the difficulty of decision-making process.
3. There should also be continuous and periodic trainings for principals to acquire practical skills and knowledge of using the computer, internet and other ICT devices as this will enhance their capacities in using various ICT applications for decision-making.

4. Principals must be re-orientated away from the conventional method of decision-making to ICT-based decision-making process. This will make the process of decision-making faster and effective.

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