The Imperatives of e- governance as a tool for university efficiency: A study of Enugu State University of Science and Technology, Enugu Nigeria

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Abstract: This research output investigated the imperatives of electronic governance as a tool for university efficiency: A study of Enugu State University of Science and Technology (ESUT). This research was considered imperative because of the critical role e-governance plays in orgasnisational performance. Sample survey research design was adopted and data elicited through primary and secondary methods. Data collected were analyzed using parametric and non-parametric statistics. The study revealed the following major findings; that electronic administration has noticeable impact on the efficiency and effectiveness of Enugu State University of Science and Technology, electronic registration significantly affects the efficiency and effectiveness of Enugu State University of Science and Technology The study concludes that ESUT transform the existing digital system to align with the current ICT system and digital global best practices, and continue to improve on its Internet access and digital divide among staff in order to continue achieving their organizational goals which will engender sustainability.

Keywords: electronic, performance, university, communication technology

1.1 Introduction

E-governance is gradually taking roots in different spheres of management in Nigerian universities. Most of the universities in Nigeria are making an attempt to transit from analogue to digital administration and electronic culture (e-culture). However, universities face great levels of uncertainty in deploying and providing e-governance services because of the complexity of the technology, deeply entrenched institution routines, and great diversity in the acceptance of technology by users.

However, few researches have been conducted on the deployment of e-governance in tertiary institutions in Nigeria. Online registration and submission of forms for services, online financial transactions with all security issues granted, and inclusion of E-consultation and E-decision making) play critical role in service qualities and promotion of good governance. Again there are no noticeable attempts of studies in developing countries like Nigeria on effect of e-governance on performance (effectiveness, efficiencies, and service quality, reductions of operational costs, combating corruptions) in tertiary institutions especially the universities, which this study is set to investigate.

1.3   Objectives of the Study

1. To find out the impact of electronic governable on the performance of ESUT.
2. Determine the extent to which electronic registration affect the efficiency and effectiveness of Enugu State university of Science and Technology.
3. Ascertain how e- learning affect the academic excellence of ESUT.

1.4   Hypotheses

1. Electronic governance does not has no significant effect on the performance of Enugu State University of Science and Technology.
2. Electronic registration does not significantly affect the efficiency and effectiveness of ESUT.
3. **Electronic learning has not significantly affected the academic excellence in ESUT.**

2.0   Review of Related literature

2.1.1   Electronic Governance

Electronic governance or electronic administration which is the adoption of web-based technologies to deliver and conduct government services has become a global trend in public administration (Madugu, 2012). It often comes with a promise to improve public administration in terms of efficiency, one of the primary values in public administration. The potential for electronic governance to transform public administration has been heralded at various points throughout the past half-century. Even by the

1960s and the 1970s, as computers started to appear in government organizations, some public officials and commentators predicted that information technology would bring a revolution to public administration (Fatile, 2012, Adoni,2013).

As information and communication technologies (ICTs) spread across all organizations in Nigeria today many institutions including universities are deploying it for use in their activities (Chukwuemeka, 2019). The role of ICT, like e-governance, in teaching and learning is rapidly becoming one of the most important and widely discussed issues in contemporary world. This is why universities like all other institutions of learning have to incorporate in themselves the new dimensions. Most academic experts agreed that when properly used, ICT hold great promise to improve teaching and learning in addition to shaping workforce opportunities. Lawan and Muhammad (2018) have indicated that computer illiteracy is now regarded as the new illiteracy. This has actually gingered a new and strong desire to equip universities with computer facilities and qualified personnel necessary to produce technologically proficient and efficient students in all countries of the world. There is no doubt that computer and internet related facilities can aid the instructional process and facilitate students' learning and administrative works of universities.

Ayoade (2019), Aduwa (2015) defined e-government as the use of Information and Communication Technologies in public administrations combined with organizational change and new skills in order to improve public services and democratic processes. E-governance is a process of reform in the way management's work, share information, engage people and deliver services to external and internal clients for the benefit of both the managers and the clients that they serve.

The strategic objective of e-governance is to support and simplify governance or administration for government, managers/administrators, people and businesses (Chukwuemeka, 2019). The use of ICT can connect all parties and support processes and activities. Other objectives are to make administration more transparent, speedy and accountable, while addressing the society's needs and expectations through efficient public services and effective interaction between the people, businesses and government. Ogbonna (2018) added that e-governance objectives are to cut down on wasted paper and space by converting important documents and files to electronic files, increase efficiency of administrative processes, lessen the administrative burden faced by personnel, reduce labour, time and cost of repetitive task and improve productivity and performance.

2.1.2 Electronic Administration (e-administration)

Electronic administration refers to any of a number of mechanisms which convert what in a traditional office are paper processes into electronic processes, with the goal being to create a paperless office (Gasco, 2013). This is an ICT tool, with the goal being to improve productivity and performance. Ehikhamenor (2018) is of the view that it can encompass both intra-office and inter-office communication for any organization. Its objective is to introduce total transparency and accountability leading to an ideal electronic administration within any organization. The implementation of any e-administration system should be customer centric rather than organization centric, should remove dependence on specific individuals, and should introduce transparency (Ahlan, 2018).

2.1.3 Electronic Registration

Several advantages are associated with a comprehensive online registration system. It is both convenient and fast, compared to the manual administration (Chukwuemeka 2019). An online registration system eliminates the need of filling paper forms manually and sending them to a registration office. The use of online registration systems implies that the participants could simply register at their convenience and submit their data immediately. The participant edit and effect corrections as needed without copying and pasting. The input the participant sends are immediately loaded into a database (Okeke ,2020).

Okeke (2020) argues that online registration method is more secured than hard copy registration. The database event organizers gather will also be stored on a highly secured server leaving no room for third-parties. The form submission and the payment details are done through an encrypted method. In contrary to this, the information available on paper forms are vulnerable to many parties. Paper forms need to be destroyed securely to prevent unwanted information access.

2.1.4 Electronic Learning

Oboegbulem and Godwin (2013) are of the opinion that electronic learning (e-learning) is a learning system based on formalized teaching but with the help of digital resources. While teaching can be based in or out of the classrooms, the use of computers and the internet forms the major component of e-learning. Meenakumari and Krishnaveni (2016) on the other hand stated that e-learning can also be termed as a network enabled transfer of skills and knowledge, and the delivery of education is made to a large number of recipients at the same or different times. Earlier, it was not accepted wholeheartedly as it was assumed that this system lacked the human element required in learning.

Electronic aided learning has proved to be the best means in the corporate sector, especially when training programs are conducted by multinational companies for professionals across the globe and employees are able to acquire important skills while sitting in a board room, or by having seminars, which are conducted for employees of the same or the different organizations under one roof

(Krishnaveni & Meenakumari, 2010). The institutions which use e-learning technologies are a step ahead of those which still have the traditional approach towards learning.

2.3   Review of empirical literature

Ogbonna, Eze and Nkemdirim (2011) conducted a study on university management dynamics: issues of e-administration and the user communities perceptive in Nigeria. Regression analysis was adopted for the study while it was discovered that with the changing landscape where the majority of government's transactions with citizens, businesses and private partners take place at the local level, it is imperative that much effort be devoted towards putting in place mechanisms which allow maximum collaboration and participatory governing.

Fatile and Olufemi (2012) investigated e-governance as a myth or opportunity for Nigerian Public Administration. The research was conducted using secondary data where regression analysis was carried out and the results showed that Nigeria is faced with several challenges concerning e-governance which includes inadequate ICT infrastructures and limited access to internet usage by the citizens.

Madugu (2012) studied the application of ICT in the conduct of government business and its implication on bureaucracy. Data were obtained from secondary sources using regression analysis. The work revealed that ICTs in government gives room for extensive public participation and contribute toward efficient service delivery. The author approved that more ICTs tools should be assigned by the government to facilitate service delivery and the use of ICTs should have national coverage to bridge the digital divide in the country.

Ojo (2014) studied the imperative of electronic governance for sustainable development in grassroots in Nigeria. Multiple regression was adopted for the study while it was discovered that electronic governance enhances participation, transparency as well as facilitates grassroots development. It was discovered that e-governance guarantees effective and efficient service delivery and facilitates the indulgence of the populace in local affairs. The adoption of ICT and training of local government workers for sustainable grassroots development was approved by the research to the Federal Government for implementation.

Ugochukwu and Edet (2015) conducted an empirical study on e-administration and its implementation bottlenecks in the Nigerian public service. The study made use of archival analysis of relevant literature on the subject matter and inferences drawn from it. It was found out that e-governance remain the best in encouraging transparency and accountability in government business.

Lawan and Muhammad (2018) investigated e-learning: illusion or opportunity for Nigerian university's administration. Regression analysis was adopted for the study. It was discovered that institutionalizing ICT infrastructures for efficient and effective e-governance is necessary in the development of any Nigerian University. However, the constraints in the path must be surmounted. It was also discovered that Nigerian universities not only need the infrastructure available, but also the skills to use the ICT gadgets.

Ayoade (2019) examined the effect of e-governance usage on service delivery in tertiary institutions in Oyo township of Southwest Nigeria. Data collected were analysed using statistical package for social sciences (SPSS) to obtained frequency count and regression analysis test. The results of the study showed that the use of e-governance has significant positive effect on the effectiveness and effective of services delivery in tertiary institutions in Oyo Township. Also the use of e-governance has positive significant effect on the quality services delivery and also has positive significant effect on cost reduction of services delivery in tertiary institutions in Oyo municipalities. Thus, the results revealed that the use of e-governance has positive significant effect on good governance and customers' satisfaction of services delivery in tertiary institutions in Oyo municipalities.

Obikaonu (2020) examined the problems and prospects of electronic governance policy and electronic governance in Nigeria public service. The mean and standard deviations were used while the t-test was used to check the assumptions formulated. The study showed that information technology policy, in line with theory, exhibits a significant positive impact on e-governance implementation. This showed that given the benefits of e-governance, combating the challenges facing the implementation of e-governance is indispensable in the attainment of sustainable economic development in Nigeria.

Nuhu (2020) conducted a study on information communication technology and management: driving public service productivity through e- government in Nigeria. The study used technology acceptance model as its theoretical framework while analysis was carried out with regression analysis. It was discovered that e-governance was necessary in other to ensure efficient, effective and transparent service delivery in governance.

3.0 Methodology

3.1   Research Design

The researcher adopted survey research design which is adjudged an appropriate design to investigate e-governance and performance.

The population of the study comprised of both academic and non-academic staff of ESUT.
The distribution of the population are presented below:

Table 1: Population Distribution

S/N	Universities	No. of Staff
1	Academic Staff	682
2	Non-academic	847
	Total	1529

Source: Field Survey, 2021

To get a representation of the entire population, the Taro Yamani statistical formula was employed.

$$n = \frac{N}{1+N(e)^2}$$

Where   n   = represents the sample size

N   = represents the population

e   = represents the margin of error

I   = constant

For the purpose of this study, N will be equal to 1529, e will be assumed to be 5%

Therefore the sample size for this research work will be

$$n = \frac{1529}{1+1529\,(0.05)^2}$$

$$= \frac{1529}{1+ 1529\,(0.0025)}$$

$$= \frac{1529}{1 + 3.8225}$$

$$= \frac{1529}{4.8225}$$

$$n = 317$$

In order to get a good representation of the population, the researcher used the stratified random sampling techniques. To make a sample a true representation of the parent population, the researcher first divided the entire population into homogenous groups called strata. By applying the systematic sampling, the researcher selected items from each stratum into the sampling. Using this method, the researcher selected items out of a population of staff.

The formula for proportional sampling is giving by Burleys as thus;

$$= \frac{Nhn}{N}$$

Where: Nh   =   Respondents/categories
n   =   sample size
N   =   Total population

Academic Staff

$$= \frac{317 \times 682}{1529} = 141$$

Non-academic Staff

$$= \frac{317 \times 847}{1529} = 176$$

Table 3.2: Sample Size Distribution Table

Respondents	No of staff
Academic Staff	141
Non-academic Staff	176
Total	317

Data were collected using questionnaire, face to face interview and focus group discussion guide. Date collected were analysed using (SPSS version 21).

4.5 Results

The study discovered that electronic administration has strong effect on the performance of ESUT based on the premise that the sig value of the response being .002 was less than 0.05.

It was equally discovered that electronic registration significantly affect the efficiency and effectiveness of Enugu State University of Science and Technology as the sig value of the response being .030 was less than 0.05.

The study also discovered that electronic learning has significant effect on the academic excellence of ESUT due to the fact that the sig value of the response being .008 was less than 0.05.

5.0 Findings

1. Electronic administration has significant effect on the performance of ESUT
2. Electronic registration significantly affects the efficiency and effectiveness of ESUT.
3. Electronic learning has significant effect on the academic excellence of ESUT.

5.2 Conclusion

Government as a concept is different from the traditional model of the government. E-government or government online is supposed to provide information services or products through electronic means, by and from governmental agencies like the university at any given moment and place, offering an extra value for all participating players. This model of the government provides serious entities the facility of accessing the systems online in order to improve the efficiency of the system.

Therefore, the following recommendations are made for this study:

1. Enugu State University of Science and Technology should improve on the current digital infrastructure and strategy, and continue to improve on its Internet access and digital divide among staff in order to continue achieving their organizational goals which will engender sustainability.
2. Given the strategic role of digital administration in the 21st century administration, ESUT should continue to expand windows of opportunities that ICT provides in its drive to further enhance employees' performance (by acquiring new skills, knowledge and abilities) that will invariably improve workers' performance and organizational success.
3. The University should ensure that there is a well-coordinated ICT training and development methods for all staff and students of the University, because this is the only way it could have a pool of competent employees' to drive and implement its vision, goals and objectives by producing graduates for 21st century economy that are ICT savvy.

6.0 Abbreviations

E-governance – electronic governance

E-administration – electronic administration

ICT – Information communication technology

ESUT – Enugu State University of Science and Technology

7.0 Appendix 1

Table 2 Questionnaire return rate

Federal Universities	No. of Questionnaire distributed	No. of Questionnaire returned	No. of Questionnaire unreturned	% of returned questionnaire
Academic Staff	141	139	2	44
Non-academic Staff	176	171	5	54
Total	317	310	7	98

Source: Field Survey, 2021

Table 2 showed that a total of three hundred and seventeen copies of questionnaire were distributed to academic and non-academic staff of ESUT and 310 copies were returned representing a return rate of 98% while 7 copies of the questionnaire were not returned.

4.2.1   Analysis of Demographic Characteristics

Table 3: Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	177	57.1	57.1	57.1
	Female	133	42.9	42.9	100.0
	Total	320	100.0	100.0	
Missing	System	0	0.0		
Total		310	100.0		

Source: SPSS Version 23.0

Table 3 showed that there are 177 male respondents representing 57.1% while there are 133 female respondents representing 42.9%.

Table 4: Marital Status

		Frequency	Percent	Valid Percent	Cumulative Percent4.3
Valid	Single	91	29.4	29.4	29.4
	married	219	70.6	70.6	100.0
	Total	320	100.0	100.0	
Missing	System	0	0.0		
Total		310	100.0		

Source: SPSS Version 23.0

Table 4 revealed that there are 91 single respondents representing 29.4% while there are 219 married respondents representing 70.6%.

Table 5: What is the effect of electronic administration on the performance of ESUT?

S/N	Options	SA	A	U	D	SD	N	Total	Mean score	RMK
1	Increase in student enrolment ratio.	185	125	3	3	4	310	1444	4.51	Accept
2	Provide quality e-services and e-participation for	75	80	40	88	37	310	1028	3.21	Reject

S/N	Options						N	Total	Mean score	RMK
	Ebonyi State University									
3	Saving of hidden operational cost	115	188	3	6	8	310	1363	4.26	Accept
4	Instant statistical report generation	155	135	4	6	15	310	1354	4.23	Accept
5	Improved decision making and private Public Participation	160	145	3	6	6	310	1407	4.40	Accept
	Cluster Mean								4.12	

Source: Field Survey Report, 2021

Table 5 shows that the respondents agreed that items in number 1, 3, 4 and 5 are the effect of electronic administration on the performance of ESUT because their respective mean was greater than 3.0 which is the cutoff point. The cluster mean was 4.12 showing agreed.

Table 6: To what extent does electronic registration affect the efficiency and effectiveness of Enugu State University of Science and Technology?

S/N	Options	SA	A	U	DS	SD	N	Total	Mean score	RMK
1	Increase participation in education affairs	142	150	5	8	15	310	1356	4.24	Accept
2	Personalized login for each students	89	70	65	40	56	310	1056	3.30	Accept
3	Extensive saving in time cost & efforts	125	160	5	10	20	310	1320	4.12	Accept
4	Information and transaction services	130	175	4	5	6	310	1378	4.31	Accept
5	Students can access virtual lectures and seminars	132	165	3	10	10	310	1359	4.25	Accept
	Cluster Mean								4.04	

Source: Field Survey Report, 2021

Table 6 shows that the respondents agreed that items in number 1, 2, 3, 4 and 5 are the effect of electronic registration on the efficiency and effectiveness of ESUT as their respective mean was greater than 3.0 which is the cutoff point. The cluster mean was 4.04 showing agreed.

Table 7: How does electronic learning affect the academic excellence of Ebonyi State University?

S/N	Options	SA	A	U	DS	SD	N	Total	Mean score	
A	E-learning has been introduced to empower learners to get basic schooling and enhance skills	155	145	3	6	11	310	1387	4.36	Accept
B	It promotes a self-paced learning process	162	130	4	5	20	310	1372	4.29	Accept
C	It offers access to exclusive, prolific, and updated content and accessibility is open, secure, and uninterrupted	80	66	50	55	69	310	993	3.10	Accept
D	E-Learning lets students be in sync with modern learners and updated with the current trends	140	165	5	10	-	310	1395	4.36	Accept
	Cluster Mean								4.03	

Source: Field Survey Report, 2021

Table 7 shows that the respondents agreed that items in number 1, 2, 3 and 4 are the effect of electronic learning on the academic excellence of ESUT based on the premise that their respective mean was greater than 3.0 which is the cutoff point. The cluster mean was 4.03 showing agreed.

4.4 Test of Hypotheses
Hypothesis One
Electronic administration does not have significant effect on the performance of ESUT.

Table 8: One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
Meanscore	11	3.1691	.35337	.10654

Source: SPSS Version 23.0

Table 8 showed the first output of one – sample test carried out using the mean values of the responses. It indicated that there were eleven (11) responses as to effect of electronic administration on the performance of ESUT and the cumulative mean of these responses is 3.1691 while the standard deviation is 0.35337 and the standard error mean is 0.10654.

The standard deviation measures how widely values are dispersed from the average value (mean value). This implies that the values of the responses are not widely dispersed from the mean as the standard deviation is 35%. On the other hand standard error mean function as a way to determine the accuracy of the sample or the accuracy of multiple samples by analyzing deviation within the means. Therefore, since the standard error mean is 0.10654 which is 10% indicates that the samples are considerably accurate.

Table 9: One-Sample Test

	Test Value = 3.0					
					95% Confidence Interval of the Difference	
	T	df	Sig. (2-tailed)	Mean Difference	Lower	Upper
Meanscore	1.587	10	.008	.16909	-.0683	.4065

Source: SSPSS Version 23.0

Table 9 showed the output of the second sample t-test. It indicated that the test value is 3.0. This showed that a 5 point likert scale was used for the responses. The value of the t-statistics being 1.587 showed that the responses are positively related to the statement on the effect of electronic administration on the performance of ESUT. Since the degree of freedom (Df) is 10 showed that there were 11 responses.

Df = (R-1)

Where:

Df = Degree of Freedom

R = Row

The sig value being .008 showed that there is a significant relationship between the statement and the responses, implying that electronic administration has significant effect on the performance of ESUT.

Hypothesis Two

Electronic registration does not significantly affect the efficiency and effectiveness of ESUT.

Table 10: One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
Meanscore	17	3.3500	.39171	.09500

Source: SPSS Version 23.0

Table 10 showed the first output of one – sample test carried out using the mean values of the responses. It indicated that there were seventeen (17) responses as to the extent to which electronic registration affect the efficiency and effectiveness of Enugu State University of Science and Technology and the cumulative mean of these responses is 3.3500 while the standard deviation is 0.39171 and the standard error mean is 0.09500.

The standard deviation measures how widely values are dispersed from the average value (mean value). This implies that the values of the responses are not widely dispersed from the mean as the standard deviation is 39%. On the other hand standard error mean function as a way to determine the accuracy of the sample or the accuracy of multiple samples by analyzing deviation within the means. Therefore, since the standard error mean is 0.09500 which is 10% indicates that the samples are considerably accurate.

Table 11: One-Sample Test

	Test Value = 3.0					
					95% Confidence Interval of the Difference	
	t	df	Sig. (2-tailed)	Mean Difference	Lower	Upper
Meanscore	3.684	16	.002	.35000	.1486	.5514

Source: SSPSS Version 23.0

Table 11 showed the output of the second sample t-test. It indicated that the test value is 3.0. This showed that a 5 point likert scale was used for the responses. The value of the t-statistics being 3.684 showed that the responses are positively related to the statement on the extent to which electronic registration affect the efficiency and effectiveness of ESUT. Since the degree of freedom (Df) is 16 showed that there were 17 responses.

Df = (R-1)

Where:

Df = Degree of Freedom

R = Row

The sig value being .002 showed that there is a significant relationship between the statement and the responses, implying that electronic registration significantly affect the efficiency and effectiveness of ESUT.

Hypothesis Three

Electronic learning does not have significant effect on the academic excellence of ESUT .

Table 12: One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
Meanscore	8	3.3888	.40410	.14287

Source: SPSS Version 23.0

Table 12 showed the first output of one – sample test carried out using the mean values of the responses. It indicated that there were eight (8) responses as to the effect of electronic learning on the academic excellence of ESUT and the cumulative mean of these responses is 3.3888 while the standard deviation is 0.40410 and the standard error mean is 0.14287.

The standard deviation measures how widely values are dispersed from the average value (mean value). This implies that the values of the responses are not widely dispersed from the mean as the standard deviation is 40%. On the other hand standard error mean function as a way to determine the accuracy of the sample or the accuracy of multiple samples by analyzing deviation within the means. Therefore, since the standard error mean is 0.14287 which is 14% indicates that the samples are considerably accurate.

Table 13: One-Sample Test

	Test Value = 3.0					
					95% Confidence Interval of the Difference	
	T	Df	Sig. (2-tailed)	Mean Difference	Lower	Upper
Meanscore	2.721	7	.030	.38875	.0509	.7266

Source: SSPSS Version 23.0

Table 13 showed the output of the second sample t-test. It indicated that the test value is 3.0. This showed that a 5 point likert scale was used for the responses. The value of the t-statistics being 2.721 showed that the responses are positively related to the statement on the effect of electronic learning on the academic excellence of ESUT. Since the degree of freedom (Df) is 7 showed that there were 8 responses.

Df = (R-1)
Where:
Df   =   Degree of Freedom
R   =   Row

The sig value being .030 showed that there is a significant relationship between the statement and the responses, implying that electronic learning has significant effect on the academic excellence of ESUT.

8.0 Acknowledgements

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