

PUBLIC SECTOR EFFICIENCY: THE ELECTRONIC ADMINISTRATION DENOMINATOR

OBA-DAVIES, EDITH IHUNNA and PROF. PATRICK N. NWINYOKPUGI,
Department of Office & Information Management, Rivers State University, Port Harcourt,
Nigeria
nwinyokpugi.prtrick@ust.edu.ng

ABSTRACT

The purpose of this study was to examine the relationship between e-administration and work efficiency of public sector organization Rivers State, Nigeria. The study adopted the quasi-experimental research design. A total of 22 public organizations in Rivers State form the study population. A census of (4) principal officers of the 22 public organizations was done to represent the study population frame, bringing the total population frame to 88. Looking at the finite nature of the study population, the entire population were studied using census. The Data collection was gathered through structured closed ended questionnaire and analysed using the Pearson Product Moment Correlation Coefficient Statistics and presented with the aid of SPSS version 20.0 for interpretations. The results of analysed data showed that, the dimensions of e-administration which include; e-archiving, e-payment system and e-communication significantly correlated positively with the measures of work efficiency being collaboration with cost reduction and time minimization. The finding also showed a high moderating effect of information and communication technology on e-administration and work efficiency of public sector organizations in Rivers State, Nigeria. Relying on the empirical findings, the study concluded that e-administration has positive significant relationship with work efficiency. We therefore recommended that, the dimensions of e-administration: e-archiving, e-payment system and e-communication identified in this study should be utilized as it enhances work efficiency measures of cost reduction and time minimization.

Keywords: E-administration, E-archiving, E-payment, E-communication, Cost Reduction, Communication Technology, Collaboration

INTRODUCTION

The public sector organization in Nigeria and Rivers State in particular are characterised with so many challenges and scholars have investigated these problem using different tools as a solutions to the problem but the problem still persists. The public sector as none profit organization, its sustainability depend largely on an efficient work performance. But overtime in Nigeria the public sector is characterised with inefficient employee management as the employees of the sector are neglected with peanut as incentive leading to lack of effective service delivery. Also, the public sector organizations are often criticized over slowness in decision making to address concerned of the sector and this occurs sometimes due to bureaucratic bottleneck. And lack of innovation is another problem that public sector organization faces today. The public sector organizations as a non-profit organization feel relaxed due to monopoly and lack of competition. The lack of innovation however negatively affects the efficiency of public sector organization. Lastly but not the least, the instability of government is also a serious problem of public sector organization. Since public sector organizations are controlled by politicians, projects embarked on are used to serve individual and party interests. When a new government comes into power, they then abandon a previous project and begin a new one. This is why it is common to see many abandoned public projects in Nigeria and Rivers State in particular. In providing solution to this problem looking at the current trend in administration e-archiving, e-payment system and e-communication has been provided to seek solution for work efficiency in public sector organization. Therefore, the purpose of this study is to investigate the relationship between e-

administration and work efficiency of public sector organization in Rivers State, Nigeria. Administration involved the process of coordinating, managing, directing and the utilization of organizational resources to achieve service efficiency. Service efficiency is achieved when organizational resources are utilized to meet the needs of the organizational goals by reducing waste. At the heart of administration today is technology. Technology is now a household name as organizational leaders consider it the topmost equipment in the process of service delivery. E-administration is the systematic process of information communication technology utilization in the functioning of day to day administrative activities.

Onah (2013) opines that the term administration covers almost every aspect or sphere of activity involving cooperatives actions. Administration calls for the ability of the administrators to make the right decisions to fulfill the required goals. In a nutshell, administration is a service activity or tool through which the fundamental objectives of an organization or institution can be optimized. It is the institution process of optimizing organizational goals efficiently in allocating human and material resources as well as to make the best use of existing resources. Administration according to Hornby (2012) is activity done in order to plan, organize and successfully run a business, school or other institutions. It is a process or act of organizing the ways things are done. Edem (2006) submits that administration involves planning activities which aims at the fulfillment of the goals of a particular organization or institution. Liverpool and Jacinta (2013) electronics administration can therefore be seen as the integration of ICT into administration. E-administration refers to the incorporation of ICT in both public and private administration. From the two perspectives of intra-office and inter-office, the first encompasses a transformation of the traditional office, as paper processes are converted into electronic processes, while the second refers to the external relations of an organization or company in which the new electronics communications are applied to business citizens/client's relationships. As such, the main goal of e-administration is to improve public services and democratic processes and to aid compliances with public policies to achieve efficiency. According to Wikipedia, the concept e-administration refers to any number of mechanism which converts what traditional office paper processes into electronic processes with the aim being to create a paperless office. It is the application of information and communication technology to back up office administration. Sanches (2006) pointed out that e-administration is the use of Information and Communication Technology (ICT) to support information flows either in or outside the public authority.

Furthermore, the term electronics administration can be seen as the method of automating key administrative functions using electronics or computer based technologies. The aim of e-administration is to cut down on wasted papers and space by converting important documents and files to electronic files. Work efficiency relates to cost, energy, time, quality and thinking. So work efficiency is the ability to choose the right goal in achieving a certain goal. Work efficiency is also defined by results to emphasise effects or results without paying attention to the sacrifices that the results need to provide. From the description above, it can be concluded that the selection of appropriate alternative determines the level of efficiency of the work is very high and will certainly affect the quality of work and quality of the work itself (Milanie et al., 2020). In order to provide customer service excellence based organisations, it is necessary to have internal structures and processes that enable employees to succeed in carrying out the tasks they do to create superior customer support products and services. Work efficiency is factors close to

the empathy factor of the service quality scale. It can reduce transaction costs so that dimensions such as reliability, responsiveness, and security of service quality can encourage employees to do their work efficiently and effectively (Melián & Martín, 2019). Organisational efficiency affects service quality and overall organisational performance (Hamed et al., 2020). Efficiency is a factor that can encourage employee to work well so as to provide good service to consumers and the organization. Muhammad, Rifdas and Khoirul (2020) concluded that the creation of good service quality positively impacts organisational work efficiency. Therefore, when an effective system is created in an organisation or company, it will improve work efficiency. Also, organization administrators' behaviour will affect employee job goal achievement, which will have an impact on employee work efficiency. Henceforth, it will affect improving the quality of organizational services which encourages an increase in overall work performance (Ahmed, Nader, Khaled, Shadi, & Ziyad, 2020).

Moreover, we have come to a time in our history when individuals, companies, institutions and agencies whether public or private that refuse to embrace ICT will be left behind. Beyond reducing the whole world to a global village that can be toured within a short time while in the comfort of one's bed, information and communication technology (ICT) also eliminates the traditional Monday to Friday, 8am-4pm working hours. People can apply and pay for goods and services 24/7 without any hitch; this is made possible by ICT. Whereas, some organizations and agencies have embraced this, many others especially government agencies and parastatals are still very far from it. In some governmental agencies you will still see manual type writers, or a mounted desktop system at the front of the operator but perform nothing that qualify it to be digital system even in this digital age. We cannot afford to move against the trend, we must hook up with the rest of the world by integrating ICT into our administration and governance, (Madueke, Nwosu & Uduma, 2017).

LITERATURE REVIEW

Digital administration eliminates the time and space barriers citizens experience in their relations with public administrations, and it will be viewed as an improved service for citizens, instead of as a heavy civil service. Moreover, it allows citizens to participate in democratic institutions and political processes, thereby perceiving governments as being accessible, transparent, responsible, effective and participative, ((Justice, 2006; Siau & Long, 2006; Tolbert & Mossberger, 2006). Also, the theoretical frameworks (Task technology fit theory) provide different perspectives. Whereas the theory and the socio-technical theories underline the role played by the managers, worldviews of organizational change and the factors external to the organization, the technological models usually predict individual user adoption (Coursey and Norris, 2008) and hold that the behaviour adoption on behalf of the potential users will also depend on image, output quality and perceived ease of use, among others, combining both social influence processes and cognitive instrumental processes (Davis, 1989; Venkatesh and Davis, 2000). These latter models stressed the importance of usability as regards the delivery of e-administration services (Wang, 2005), as well as the relevance of adopting a citizen centric approach (Misra, 2006), which can lead to higher perceived usefulness (Jaeger & Matteson, 2009), for example, by attempting to anticipate the needs of web visitors.

The e-administration strategies envisaged public policy measures which may have a significant impact on the functioning of the entire administration which must follow the Law on e-

administration. It will also affect all citizens and businesses. For this reason, during the preparation of the e-administration, an impact assessment of the public policy measures was carried out in accordance with the LPS and the Regulation. A report was drawn up based on the results of this assessment. The application of Information Communication Technology (ICT) approach in administration has tremendously yielded high productivity due to the use of electronic administrative strategies which provided a great platform for waste reduction, limiting excessive workload and reducing fatigue. Cost and expenses are minimized through labour and waste reduction. The ministries and institutional setting is not left out in the operation because e-administrative strategies modernize productivity and fast flow of information, it checks uncertainty and enhance private accessibility to individual profile and files. In e-administration, e-administrative strategies involves e-communication, workflow management, e-control (using Personal Identification Number, **PIN** or Password to save each staff data, collection of customer details, as well as staff accessibility to their data privately), and e-record management (keeping staff and customer records electronically instead of having baggy files, collate access, and transfer information electronically instead of black and white which yielded excessive printing and waste of paper). The application of e-administration when fulfilling the needs of citizens has become a real challenge for modern administration. The major concern for the civil service is efficiency, the employees as well as the management has the duty to develop strategies in enhancing their commitment and continuous patronage in order to get the desired results from them, and this is becoming more challenging and difficult due to the uncertain nature of corporate environment (Agger, 2018).

E-Archiving

Public sector organizations face the challenge of coping with large volumes of information presented as printed or paper-based and electronic data. Traditional archives adopted for depositing printed documents have been replaced recently with digital archival and data management systems to organise and store all the possible information collected and used in organizations. In the public sector organizations, the use of information management systems is grounded in the need to design, collect, store, categorise, and expand data handled by organisations for their daily activities, (Maican & Lixandriou 2016). Currently, public sector organizations need to keep and maintain a lot of data, and they express a considerable demand for using the most appropriate tools and approaches to managing their information and documents. The purpose of digital archiving and electronic data management in this context is to improve administrators', daily activities to contribute to the achievement of their specific goals. Government depend on the effective document management and archiving because they regularly utilise materials, publications, and application forms, records, submissions, reports, regulations, and policies, as well as administrative files, video and audio files (Maican & Lixandriou 2016; Van Loon et al. 2017). As a result, administrators and managers, as well as academics and researchers, working in educational institutions are interested in following policies and using systems that ensure the efficient management and storage of documents and other types of data. The application of an effective digital archiving system allows for easy vertical and horizontal flows of information in an organization. The e-archiving involves digital or electronic documentation and records management which permeate digital curation, web archiving, personal information management and the management of records in digital repositories for the effectiveness and efficiency of the workplace. According to Vandika, Kurmiawan and Saputra (2014) e-archiving could be defined as the maintenance of electronic

data base containing written document, personal information, oral speeches, lectures, pictorial movies which are documented historically or presently and stored through the electronic media such as tape, video tape, computer, email etc for the proper functioning of the workplace.

E-archiving is one of the conditions toward creating electronic environment on which e-workplace is based for the improvement of document and information management. There is no much difference between traditional archiving and e-archiving. Their differences are anchored in the form the records, contents, documents and information are stored (Mohammad & Barka, 2012). E-archiving involve storing information content in digital format which contrast with traditional archiving system which stores information contents in a physical archives consisting of shelves, filing cabinets, which are classified for easy identification during information usage. The manual form of archiving is associated with numerous challenges which makes it ineffective and inefficient and unnecessary occupation of office space (Mohammad & Barka, 2012). Unlike e-archiving, traditional archiving system is not a sustainable or environmentally friendly office management practice. E-archiving is a more sustainable or environmentally friendly approach to office and information management in the 21st century. Its approach is clean and a more greener approach to information and document management which contrast with traditional or manual archiving system of document administration (Katuu, 2002). E-archiving in a working environment help to make a clean and smart working ambience devoid of paper littering which is friendly with both the take and external physical environments (Kasab, Abu-Naser & Shoboki, 2017). Thus, e-archiving is a sustainable information and document management system that is less susceptible to fire accident, loss of valuable documents/records etc due to backup electronic files stored for safety (Addis et al., 2009). Therefore, e-archiving system in a working environment has less vulnerability risk associated with information and document management. Importantly, over the long term, e-archiving system many pose environmental challenges through the use of computers. Digital archiving ought to be greened and be friendly with the geonatural environment.

Data in the archive should be effectively managed to adapt to the critical effect of the data deluge in the e-archiving system at work (Bussel, Smit & Pas, 2015). Therefore, management of organizations and institutions should focus on green archiving in the management of electronic documentation and record management in the workplace for workplaces and institutions to achieve a sustainable world (Smith & Bussel, 2014). Thus, the use of computers in the long term creates environmental challenges. The production of computer demand electricity, chemical, component parts, water and supply materials etc. During disposal, the computer set pollutes the environment especially groundwater when disposed in refuse sites (Bussel, Smith & Pas, 2015). Therefore, organizations should focus on green or sustainable e-archiving in the entire information and document management value chain in order to promote a sustainable world. Haryadi in Priansa and Garnida (2013) states that an electronic archive is a collection of stored data in the form of scanned data that is transferred electronically or carried out by digital copy using high resolution, then stored on a hard drive or optical disk. According to the National Archives and Record Administration (NARA) electronic archives are archives stored and processed in a format, which only computers can process. Electronic archives are also called machine readable records (archives can only be read through machines). Electronic records are information contained in electronic files and media, created, received, or managed by organizations or individuals and stored as evidence of activities. Based on the above

understanding, it can be concluded that the electronic archive (E-archive) is a collection of data or documents recorded or stored with electronic media with the aim of making it easy to view and retrieve, (Astini, et al., 2022).

E-Payment System

The fighting against corruption and the increasing need for transparency at the public-sector organization's level is becoming more vital than ever and very actual especially for African and Nigeria in particular. The importance of government electronic payments as part of the transparency programs have been much discussed in recent years. E-government tools play a key role in reshaping the way governments engage with the people, deliver better and more personalized services, embedded new ideas and behaviours such as collaboration, citizen-centered, co-creation in the administration of public organizations. Furthermore, electronic money is expected to replace physical cash, if not all, small-value payments continue to evoke considerable interest, both among the public and the various regulatory authorities, (Papadopoulos, 2007). The Central Bank of Nigeria (CBN) took the initiative in 2011 to launch the cashless policy program. The objective was to achieve Nigeria's vision 2020 goal of top 20 economies of the world. The essence of this program was to reduce the volume of cash in circulation in Nigeria while encouraging the use of electronic-based systems or e-payment systems to carry out the transactions, (CBN, 2012). Implementation of the cashless policy raised a lot of concerns about the reliability of the e-payment systems available at the time and its ability to sustain transactions as expected by the apex bank.

Since the implementation of the cashless policy in Nigeria, there has been a substantial improvement in the e-payment infrastructure reliability. The introduction of some new electronic payment platforms have subsequently led to a significant increase in the use of e-payment systems and the growth in transactions via the various e-payment systems (Ikpefan, Akpan, Osuma, Evbuomwan, & Ndigwe, 2018). E-payment is therefore seen as an integral aspect of a cashless economy. E-payment is expected to have a significant negative relationship with cash in circulation; as the use of e-payment products increase, cash-in-circulation reduces. The logic being that the more the transactions are carried out electronically, the less physical cash in circulation will be involved (Eze & Nwankwo, 2012). E-payment system is any medium of cash transaction payment perform or conducted through electronic devices. E-payment systems are important mechanisms used by individual and organizations as a secured and convenient way of making payments over the internet and at the same time a gateway to technological advancement in the field of world economy, (Slozko & Pello, 2015). In addition, it has also become the major facilitating engine in e-commerce through which electronic business success relied upon. Electronic payment system had also brought about efficiency, fraud reduction and innovativeness in the world payment system (Oladeji, 2014).

Furthermore, e-payment system tends to bring many electronic modes of payments through which financial institutions offer different e-payment opportunities and services to their customers such as the credit cards, debit cards, on-line banking and mobile banking (Premchand & Choudhry, 2015). As a result, the adoption of e-payment technology is ever increasing in today's business environment, (Muhammed, 2015). Using the E-payment System has many benefits for payers, payees, E-commerce, banks, organizations and governments. These benefits had led to widespread electronic payment systems in the world. An efficient and reliable e-

payment system enables faster pay outs, better tracking, transparent transactions, reduced time use, cost savings and increased trust between sellers and buyers. The development and adoption of technology in the e-payment system involve financial transactions, assimilated users and quality e-payment technology tend to shape their own perceptions and expectations. Electronic payment systems are now commonly used such as transactions via ATM machines, use of credit or debit cards, through online banking and mobile banking. Electronic payment can be defined as a platform used in making payments for goods/services purchased online through the use of internet (Roy & Sinha, 2014).

On daily basis depositors are inundated with an array of service options which they are encouraged to embrace as they canvass ease access to cash as well as deepen their relationship with the banks and of course the fad is paying off. Through the e-banking payment channels customers may deposit cash, transfer money, recharge GSM prepaid account, credit postage stamp and so on and so forth. According to Atteh (2012) electronic payment systems are related collection of structure of instruments for settling payments and transactions or part thereof. Although the system work together but each of the instruments share attributes of being exchangeable with one another through substitution and convertibility mechanisms. Uwah (2011) examines the various categories of payments systems ranging from: cash- paper-based instruments, paperless or electronic instruments, and other payment instruments. Paper based instruments include cheques, bank drafts, debit cards, credit cards, and traveller's cheques. Although, cheque is a major payment instrument in Nigeria, they are not popular for day to day payment because of high incidence of dud cheques and forgeries, a safe financial system is thus hedged on effective payment infrastructure which are core to the financial stability of a country, (Ibrahim, 2009). In his contribution, Tijani (2013) observes that e-payment systems are accessible and can be measured in terms of their reliability, transaction costs and risks. The reliability of payment system can be increased if all factors surrounding the efficiency of the electronic payments could be upgraded to prevent system breakdown and area of financial risks which may arise in form of liquidity risk, credit risk and systematic risk.

There are various types of e-payment in Nigeria but this study limits its coverage to the common types in used in Nigeria. **Mobile Payment:** Mobile payment (likewise referred to as mobile money or mobile wallet) generally refers to any payment service operated under financial regulations and performed using any mobile device. The original patent exclusively defined as the "Mobile Payment System" was filed in 2000. Mobile Money is a service whereby customers use their mobile device to send and receive monetary value, i.e., to transfer money electronically from one person to the next using a mobile phone as Mobile Wallet". MTN offers mobile money as a team with GT-Bank. It is one of numerous mobile money services that were launched in Nigeria. Mobile money is a service that allows merchants to receive payments and services using MTN Mobile Money. It is, however, not limited to merchants only, as customers, too, can use it to pay for the same goods and services to merchants. Some of the significant benefits of Mobile Payments include Integrated and increase incentive programs, the ability to offer credit card payments and the tracking of customer trends and inventory. Other benefits include an increased speed of checking customers and savings on credit card fees. **Point-of-Sale Terminal:** The merchant banks issues point of Sale (POS) terminals on the client's request. The merchants use them in different domains to conduct business with their customers. Customers slot their electronic cards into or through the POS in order to make payments for purchases or services

instead of using physical cash. Since the POS terminals are typically online real-time, the customer's financial balance is expected to be debited immediately in the value of purchases made. Point of Sale (POS) terminals additionally allow merchants access to card payments available to be purchased of other products and services like airtime recharge cards, charge payments (including service charges), lottery tickets, etc. ***Automated Teller Machines (ATM):*** An ATM is a machine mounted into the wall of a bank or other building, allowing people to withdraw money from their ledger by using a special card called an ATM card. ATM is an abbreviation for 'automated teller machine. They are used more frequently to make a variety of online payments like service charges, cable memberships, airtime, and information recharges etc. Customers are consistently advised by their banks to keep their ATM cards safe and never to divulge their ATM card pins.

E-Communication

According to Nwinyokpugi & Nwosu, (2020) developments in the communications field indicates how the knowledge gaps between the information-poor and the information-rich have enlarged over time thereby excluding certain parts of the globe from enjoying the benefits of what is known as a Global Village. Communication either electronic or physical is a serious factor for workplace efficiency. The workplace comprises of people who share ideas with one another using communication. Communication is vital to any human group including animals. Wherever, one or more persons gather to share information with one another, communication takes place. Without communication effective workplace cannot be actualized. It involves the sharing of message between one or more persons. It is in this view that Slatten, Göran and Sander (2011) assert that communication is an asset available to each organization and must be harnessed for the purpose of attaining the aims set out which are of major importance. This asset is seen, on the one hand, as a series of products, services, brands, and performance, part of respecting the objectives of the organization and on the other hand even as personality. Permanent contact with the developing organization creates connections: whether you are with your customers, suppliers, competitors, employees, or other audiences, all of which cannot exist without a communicative potential. Therefore, electronic communication is any communication process that utilizes electronic technology as a channel of sharing messages between one or more persons. E-mail is a useful e-communication approach that instantly delivers messages between computers. Paper correspondence is no longer needed to transmit documents and other important information.

Businesses have shown increased productivity and profitability by decreasing the time and money spent on correspondence. Unfortunately, they also commonly display a lack of attention to exactly who has access to certain information, and to whom such information is being transmitted. The likelihood for abuse of e-mail and the Internet in the workplace is great. Find a method for effective electronic communication that will best fit your goals. If you have a message to communicate with many businesses, electronic newsletters are a decent alternative to mass email. Blogs are a useful electronic communication method for marketing. Many businesses use blogs (like ours) to reach a new audience of potential customers (Baridam, 2008). One weakness of electronic communication is the lack of communication support. In a face-to-face conversation nonverbal communication, such as tone of voice and body language, help to clarify the message you are sending. This lack of communication support can lead to messages becoming misinterpreted. A computer can be hacked, and infected with a computer virus. This

can have an unfavourable effect on the computer system, and the network. One more disadvantage is email privacy. An email is sent using data packets via computer networks. These data packets pass through routers and computers, before the email reaches its destination. Therefore, there is a chance of an individual tampering with the emails before the email reaches the recipients. Electronic communication replaces the hassle of coordinating face-to-face meetings and productivity and provides a quick and easy way to communicate. (Quarato, 2020).

Communication of information is one of the very essential requirements of a system. We need to communicate so many things among various offices and officials. The quicker we pass on the information, the quicker our job gets done. We are using different modes of communication. Previously organizations used to communicate the matters by post, later when telephones became common, the communication improved a lot. With the advancement in science and technology, the communication has reached our fingertips. We can communicate to any person in the world sitting in a room with an internet connected computer. There are various ways of communicating information one of which is e-communication. E-mail is an electronic mail function that allows you to exchange messages and information with other people on the network via your computer. To be able to send e-mail your computer has to be; connected to internet, have e-mail software, which is normally part of any internet and browser such as Internet explorer and Netscape. E-communication is not a new thing nowadays. We have Internet facilities almost in every office that aided the mode of communication. E-communication is a common form of interaction for many people. The use of e-communication allows people to interact in different ways and combine many forms of media in the process. E-communication makes it easy to interact with groups through chat interfaces or video conferencing. Companies use electronic communications to enhance their business and avoid obstacles, such as long-distance communication with their clients or partners.

METHODS

This is a descriptive study that adopted the quasi-experimental research design and taking cognizance of the cross sectional approach. This approach is only relevant where a study is focus on study population that shares homogenous characteristics. Now, because of the nature of the study population a cross-sectional research approach becomes very necessary to allow for a scientific generalisation of result. According to Babbie (2005) the population is that element about whom we want to draw conclusion. This means that population is the entire elements who could be included in a given study. The population could share the same or similar characteristics with which the researcher has concern for. Looking at our studied which focus on investigating public sector organization in Rivers State, the principal officers of the public sector parastatals in Rivers State will be studied. Our target study population includes: Director Administration, Director finance, Director statistics/research and Director procurement and that represent four (4) officers per agencies. A total of 88 principal officers make up the study population from the 22 agencies. A sample size of a research is derive when the study population is too large for the researcher to cover and when the population is not too large the entire population can form the study sample size. Therefore, looking at the nature of our study population element which is not too large, the entire population was censured. A reliability test was carried out on the instrument for the study tom ascertain the strength in data collection and results therefrom.

Table 1: Reliability Coefficients of variable measures

S/N	Dimensions/Measures of study variable	Numbers of items	Numbers of cases	Cronbach Alpha
1.	e-archiving	4	73	.716
2.	e-payment system	4	73	.845
3.	e-communication	4	73	.754
4.	Cost reduction	4	73	.797
5.	Time minimization	4	73	.894
6.	Information and communication technology	4	73	.793

*SPSS Result Output 2023***METHOD OF DATA ANALYSIS**

Based on the nature of the study, which tends to determine the relationship between two variables, (e-administration and Work Efficiency), the Pearson's Product Moment Correlation Coefficient was used to analyse the data. The analysis on the relationship between the variables was carried out at a 95% confidence interval and a 0.05 level of significance. The tertiary level of analysis involved the interpretation of the results of the secondary analysis which constitutes the findings with a view of making conclusions and recommendations. Below is the Pearson's Product Moment Correlation Coefficient formula.

$$r = \frac{n\sum xy - \sum x \sum y}{\sqrt{(n\sum x^2 - \sum x^2)(n\sum y^2 - (\sum y)^2)}}$$

We had proposed seven research hypotheses in chapter one of the studied to seek explanation to the relationship between –administration and work efficiency. The Pearson Product Moment Correlation Coefficient formula was calculated using the Statistical Package for Social Science (SPSS) version 20.0 to establish the relationship among the empirical referents of the predictor variable and the measures of the criterion variable. Correlation coefficients can range from -1.00 to +1.00. The value of -1.00 represents a perfect negative correlation while +1.00 represents a perfect positive correlation. A value 0.00 represents a lack of correlation. In testing hypothesis 1 – 7, the following rules were upheld in accepting or rejecting the null hypotheses proposed in the chapter one. All the coefficient values that indicate levels of significance (* or **) as calculated using SPSS were accepted and therefore, our null hypotheses rejected; when no significance is indicated in the coefficient (r) value, we accept our null hypotheses. Our confidence interval was set at the 0.05 (two tailed) level of significance to test the statistical significance of the collected data in this study.

Results of Tested Hypotheses

This study proposed seven research hypotheses in chapter one of the studied to seek explanation to the relationship between –administration and work efficiency. The Pearson Product Moment Correlation Coefficient formula was calculated using the Statistical Package for Social Science (SPSS) version 20.0 to establish the relationship among the empirical referents of the predictor variable and the measures of the criterion variable. Correlation coefficients can range from -1.00 to +1.00. The value of -1.00 represents a perfect negative correlation while +1.00 represents a perfect positive correlation. A value 0.00 represents a lack of correlation. In testing hypothesis 1

– 7, the following rules were upheld in accepting or rejecting the null hypotheses proposed in the chapter one. All the coefficient values that indicate levels of significance (* or **) as calculated using SPSS were accepted and therefore, our null hypotheses rejected; when no significance is indicated in the coefficient (r) value, we accept our null hypotheses. Our confidence interval was set at the 0.05 (two tailed) level of significance to test the statistical significance of the collected data in this study.

Table 2: Correlations Matrix Of E-Archiving And Measure of Work Efficiency

		E-archiving	Cost Reduction
E-archiving	Pearson Correlation	1	.613**
	Sig. (2-tailed)		.000
	N	73	73
Cost Reduction	Pearson Correlation	.613**	1
	Sig. (2-tailed)	.000	
	N	73	73

***. Correlation is significant at the 0.01 level (2-tailed).*

The correlation coefficient result in table 2 above was used to answer research question 1. Table 2 shows a Pearson Product Moment Correlation Coefficient (r) of .613 on the relationship between e-achieving and cost reduction. This value implies that a strong relationship exists between the variables. The direction of the relationship indicates that the correlation is positive; implying that an increase in cost reduction was as a result of the adoption of e-archiving. Therefore, there is a strong positive correlation between e-archiving and cost reduction of government parastatal in Rivers State, Nigeria. The study null hypothesis 1 was stated thus; there is no significant relationship between e-archiving and cost reduction of public organization in Rivers State, Nigeria. The result of the collected data after analysis showed the sig-calculated is less than significant level ($p = 0.000 < 0.05$). Therefore, based on this finding, the null hypothesis 1 earlier stated is hereby rejected and the alternate upheld. Thus, there is a significant relationship between e-archiving and cost reduction of public organization in Rivers State, Nigeria

Table 3: Correlations Matrix of e-archiving and measure of work efficiency

		E-archiving	Time Minimization
E-archiving	Pearson Correlation	1	.835**
	Sig. (2-tailed)		.000
	N	73	73
Time Minimization	Pearson Correlation	.835**	1
	Sig. (2-tailed)	.000	
	N	73	73

***. Correlation is significant at the 0.01 level (2-tailed).*

The correlation coefficient result in table 3 was used to answer research question 1. Table 3 shows a Pearson Product Moment Correlation Coefficient (r) of .835 on the relationship between e-achieving and time minimization. This value implies that a strong relationship exists between the variables. The direction of the relationship indicates that the correlation is positive; implying that an increase in time minimization was as a result of the adoption of e-archiving. Therefore, there is a strong positive correlation between e-archiving and time minimization of government parastatal in Rivers State, Nigeria. The study null hypothesis 2 was stated thus; there is no significant relationship between e-archiving and time minimization of public organization in Rivers State, Nigeria. The result of the collected data after analysis showed the sig-calculated is less than significant level ($p = 0.000 < 0.05$). Therefore, based on this finding, the null hypothesis 2 earlier stated is hereby rejected and the alternate upheld. Thus, there is a significant relationship between e-archiving and time minimization of public organization in Rivers State, Nigeria.

Table 4: Correlations Matrix of e-payment and measure of work efficiency

		E-payment	Cost Reduction
E-payment	Pearson Correlation	1	.723**
	Sig. (2-tailed)		.000
	N	73	73
Cost Reduction	Pearson Correlation	.723**	1
	Sig. (2-tailed)	.000	
	N	73	73

** . Correlation is significant at the 0.01 level (2-tailed).

The correlation coefficient result in table 4 was used to answer research question 2. Table 4 shows a Pearson Product Moment Correlation Coefficient (r) of .723 on the relationship between e-payment system and cost reduction. This value implies that a strong relationship exists between the variables. The direction of the relationship indicates that the correlation is positive; implying that an increase in cost reduction was as a result of the adoption of e-payment system. Therefore, there is a strong positive correlation between e-payment system and cost reduction of government parastatal in Rivers State, Nigeria. The study null hypothesis 3 was stated thus; there is no significant relationship between e-payment system and cost reduction of public organization in Rivers State, Nigeria. The result of the collected data after analysis showed the sig-calculated is less than significant level ($p = 0.000 < 0.05$). Therefore, based on this finding, the null hypothesis 3 earlier stated is hereby rejected and the alternate upheld. Thus, there is a significant relationship between e-payment system and cost reduction of public organization in Rivers State, Nigeria

Table 5: Correlations Matrix Of E-Payment And Measure of Work Efficiency

		E-payment	Time Minimization
E-payment	Pearson Correlation	1	.811**
	Sig. (2-tailed)		.000
	N	73	73
Time Minimization	Pearson Correlation	.811**	1
	Sig. (2-tailed)	.000	
	N	73	73

** . Correlation is significant at the 0.01 level (2-tailed).

The correlation coefficient result in table 5 was used to answer research question 2. Table 5 shows a Pearson Product Moment Correlation Coefficient (r) of .811 on the relationship between e-payment system and time minimization. This value implies that a strong relationship exists between the variables. The direction of the relationship indicates that the correlation is positive; implying that an increase in time minimization was as a result of the adoption of e-payment system. Therefore, there is a strong positive correlation between e-payment system and time minimization of government parastatal in Rivers State, Nigeria. The study null hypothesis 4 was stated thus; there is no significant relationship between e-payment system and time minimization of public organization in Rivers State, Nigeria. The result of the collected data after analysis showed the sig-calculated is less than significant level ($p = 0.000 < 0.05$). Therefore, based on this finding, the null hypothesis 4 earlier stated is hereby rejected and the alternate upheld. Thus, there is a significant relationship between e-payment system and time minimization of public organization in Rivers State, Nigeria.

Table 6: Correlations Matrix Of E-Communication And Measure of Work Efficiency

		Electronic communication	Cost Reduction
E-communication	Pearson Correlation	1	.956**
	Sig. (2-tailed)		.000
	N	73	73
Cost Reduction	Pearson Correlation	.956**	1
	Sig. (2-tailed)	.000	
	N	73	73

** . Correlation is significant at the 0.01 level (2-tailed).

The correlation coefficient result in table 6 was used to answer research question 3. Table 6 thus, shows a Pearson Product Moment Correlation Coefficient (r) of .956 on the relationship between e-communication and cost reduction. This value implies that a strong relationship exists between the variables. The direction of the relationship indicates that the correlation is positive; implying

that an increase in cost reduction was as a result of the adoption of e-communication. Therefore, there is a strong positive correlation between e-communication and cost reduction of government parastatal in Rivers State, Nigeria. The study null hypothesis 5 was stated thus; there is no significant relationship between e-communication and cost reduction of public organization in Rivers State, Nigeria. The result of the collected data after analysis showed the sig-calculated is less than significant level ($p = 0.000 < 0.05$). Therefore, based on this finding, the null hypothesis 5 earlier stated is hereby rejected and the alternate upheld. Thus, there is a significant relationship between e-communication and cost reduction of public organization in Rivers State, Nigeria.

Table 7: Correlations Matrix Of E-Communication And Measure Of Work

Efficiency		Electronic communication	Time Minimization
E-communication	Pearson Correlation	1	.718**
	Sig. (2-tailed)		.000
	N	73	73
Time Minimization	Pearson Correlation	.718**	1
	Sig. (2-tailed)	.000	
	N	73	73

** . Correlation is significant at the 0.01 level (2-tailed).

The correlation coefficient result in table 7 above was used to answer research question 3. It shows a Pearson Product Moment Correlation Coefficient (r) of .718 on the relationship between e-communication and time minimization. This value implies that a strong relationship exists between the variables. The direction of the relationship indicates that the correlation is positive; implying that an increase in time minimization was as a result of the adoption of e-communication. Therefore, there is a strong positive correlation between e-communication and time minimization of government parastatal in Rivers State, Nigeria. The study null hypothesis 6 was stated thus; there is no significant relationship between e-communication and time minimization of public organization in Rivers State, Nigeria. The result of the collected data after analysis showed the sig-calculated is less than significant level ($p = 0.000 < 0.05$). Therefore, based on this finding, the null hypothesis 6 earlier stated is hereby rejected and the alternate upheld. Thus, there is a significant relationship between e-communication and time minimization of public organization in Rivers State, Nigeria.

Table 8: Partial correlation matrix showing the moderating role of ICT between

E-administration and work efficiency

Control Variables			E-Administration	Work Efficiency	ICT
-none- ^a	E-Administration	Correlation	1.000	.928	.982
		Significance (2-tailed)	.	.000	.000
		Df	0	71	71
	Work Efficiency	Correlation	.928	1.000	.950
		Significance (2-tailed)	.000	.	.000
		Df	71	0	71
	Information and communication technology	Correlation	.982	.950	1.000
		Significance (2-tailed)	.000	.000	.
		Df	71	71	0
	Information and communication technology	Correlation	1.000	-.133	
		Significance (2-tailed)	.	.266	
		Df	0	70	
Work Efficiency	Correlation	-.133	1.000		
	Significance (2-tailed)	.266	.		
	Df	70	0		

a. Cells contain zero-order (Pearson) correlations.

above, the zero-order partial correlation between e-administration and work efficiency showed the correlation coefficient where information and communication technology is moderating the relationship; and this is, indeed, both very high (0.982) and statistically significant (p-value (=0.000) < 0.05). The partial negative correlation controlling for technology however is (-.133) and statistically not significant (p-value (= .266) > 0.05.). The observed positive "relationship" between e-administration and work efficiency is due to the underlying relationships between each of those variables and technology. Looking at the zero correlation, we find that both e-administration and work efficiency are highly positively correlated with information and communication technology, the control variable. Removing the effect of this control variable reduces the correlation between the other two variables to be negative at -.133 and also not significant to 0.266 at $\alpha = 0.05$, therefore we reject the null hypothesis and conclude that: information and communication technology significantly moderates the relationship between e-administration and work efficiency in public organization in Rivers State, Nigeria.

DISCUSSION OF FINDINGS

The overall objective of the study was to examine the relationship between e-administration and work efficiency of public organization in Port Harcourt, Rivers State, Nigeria. The data collection for this study was done through the distribution of structured closed ended questionnaire. The questionnaire was categorised into four sections. The first section was to collect the respondent demographic information. Section two was the designed questionnaire that seeks information from the respondent based on the study variables regard the independent variable. Section three was the questionnaire on the measures of the dependent variable and the last section four was on the moderating variables of the study.

Our analysis was carryout on the seventy three (73) retrieved questionnaire from the study sampled. The research design of the study involved the use of quasi-experimental research design as the study intends to examine the relationship between the study construct. Descriptive statistics was used to analyse data on the information of the demographic of the study respondents, while inferential statistics used to analyse collected data for the study bivariate analysis of the study variables. As stated earlier in the chapter three of the study the Pearson Product Moment Correlation Coefficient formula was used as the study statistical tool to test the study formulated hypotheses to validate if there is relationship between the independent variable (e-administration) dimensions and the measures of the dependent variable (work efficiency), and presented with aid of SPSS version 20.0 for interpretation of the study data analysis.

The study findings showed a significance positive relationship between e-administration and work efficiency. The findings support the study of Siau and Long (2006) digital administration will provide organization with an effective and efficient channel to facilitate their internal administrations, and will improve their external services, thereby increasing transparency and generating a higher degree of trust. Furthermore, a digital administration would eliminate the time and space barriers citizens experience in their relations with public administrations, and it will be viewed as an improved service for citizens, instead of as a heavy civil service.

The analysis of the collected data of the test of hypothesis one and two showed a strong positive relationship between e-archiving and measure of work efficiency on cost reduction and time minimization of which the significant is based on $r=0.613$; $p= 0.000 <0.05.$, and $r=0.835$; $p= 0.000 <0.05.$, both at 95% confidence interval leading to the rejection of the null hypothesis ($H_{0:1}$) and ($H_{0:2}$), stated in the chapter one, and upheld the alternate and restated thus; there is a significant relationship between e-archiving and cost reduction and time minimization. This study findings supports the finding of Kittanah and Amman-Jordan (2016) who studied the impact of electronic document management on performance in the context of banks in Jordan. This finding also collaborates with the study of Ukata and Wechie (2019) the scholars studied electronic records management and national development in the context of Nigeria. The study employed the Pearson Product Moment Correlation and the findings of the study are that e-record management has positive and significant impact on Nigeria's national development in the improvement of various sectors such as banking, security, lowering archiving cost, agriculture, e-tax payment and education.

The analysis of the collected data of the test of third and fourth hypotheses showed a strong positive relationship between e-payment system and measure of work efficiency on cost reduction and time minimization of which the significant is based on $r=0.723$; $p= 0.000 <0.05.$,

and $r=0.811$; $p= 0.000 <0.05.$, both at 95% confidence interval leading to the rejection of the null hypothesis ($H_{0:3}$) and ($H_{0:4}$), stated in the chapter one, and upheld the alternate and restated thus; there is a significant relationship between e-payment system and cost reduction and time minimization. This study finding support the empirical findings of Oloruntoyin and Olanloye (2012) who in their study concluded that the e-payments channels are the apparatus used to safely and efficiently transfer monetary value in exchange for goods and services as well as financial assets.

The analysis of the collected data for the test of the fifth and sixth hypotheses showed a strong positive relationship between e-communication and measure of work efficiency of cost reduction and time minimization of which the significant is based on $r=0.956$; $p= 0.000 <0.05.$, and $r=0.718$; $p= 0.000 <0.05.$, both at 95% confidence interval leading to the rejection of the null hypothesis ($H_{0:5}$) and ($H_{0:6}$), stated in the chapter one, and upheld the alternate and restated thus; there is a significant relationship between e-communication and cost reduction and time minimization. The study finding supports the empirical finding of Antony (2013) who conducted study to examine the impact of electronic communication on labour productivity in civil engineering projects at Kampala Central division. A measure of the existing relationship between effective e-communication and labour productivity, and other explanatory variables included work duration spent in a company, educational qualifications, timely information on changes at work, cooperation at work and adequate training provided to employees. It was discovered that asking for clarity in e-communication and timely information about changes affecting work are meaningful to labour productivity.

Summarily, the proposed seven hypotheses to establish the relationship between e-administration and work efficiency of public organization in Rivers State, Nigeria. The Pearson Product Moment Correlation Coefficient is calculated using the SPSS version 20.0 to ascertain the establish relationship among the empirical referents of the predictor variable and the measures of the criterion variable. From the collected research data gathered from the field and analysed, it was empirically discovered that there is a significant positive relationship between e-administration and work efficiency of public organization in, Rivers State, Nigeria. The study used this to answer research questions one to seven. Correlation coefficient can range from -1.00 to +1.00. The value of -1.00 represents a perfect negative correlation while the value of +1.00 represents a perfect positive correlation.

In the test for moderating effect, the revealed that there is a positive significant moderating effect of information and communication technology between e-administration and work efficiency in which removing information and communication technology, see the moderating effect dropped to negative. This implies that, information communication technology is a driver to successful e-administration.

CONCLUSION

The study concludes that e-administration positively enhances work efficiency of public organizations in Rivers State, Nigeria. The results clearly indicate that there is a significant relationship between these two variables. The study highlights the critical importance of implementing e-administration within public organizations. Specifically, the study has the following conclusions:

The study conclude that all tested attributes of electronic administration which include: E-archiving, E-communication and E-payment have significant relationship with the measures of work efficiency of public organizations in Rivers State, Nigeria. Finally, the study concludes that information communication technology plays a significant moderating role in the relationship between e-administration and work efficiency of public organizations in Rivers State, Nigeria. These findings highlight the importance of leveraging appropriate information communication technology infrastructure to optimize the operation of public sector organizations to achieve efficiency.

RECOMMENDATIONS

Drawing from the implications of the outcome of our study findings, we therefore make the following recommendations:

- i) To manage the files of the public sector organization, management of public sector organization should implement the use of e-archiving.
- ii) To stop delay in working hours, public sector organization should ensure e-payment system are utilized in all unit of the organization as it helps in preventing corrupt official from embezzling public fund safe time for work performance.
- iii) E-communication should be as a matter of urgency be implemented and officially declared as a serious part of communication in the public sector organization as its reduces organizational cost and safe time leading to work efficiency.
- iv) To achieve successful e-administration, management of public organization should ensure the implementation of information and communication technology as it is the driver of effective e-administration and work efficiency.

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