



## CIVIL SERVICE EFFICIENCY: LEVERAGING ON ELECTRONIC ADMINISTRATION TOOLS

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**ABSTRACT:** *This study investigated the relationship between electronic administration strategies and organisational efficiency of the civil service sector in Rivers State, Nigeria. Digital administration provides governments 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. This study used a descriptive research technique through the adoption of a cross-sectional survey design. Twenty ministries were conveniently sampled for this study. The instrument of data collection employed to obtain relevant data for analysis was a structured close-ended questionnaire. The study population comprised twenty (20) out of the twenty-five (25) ministries in Rivers State civil service sector as released by Rivers State Government of Nigeria. Two (2) copies of the questionnaires were administered to 40 census senior management members (director and deputy director) from the twenty (20) ministries, giving a total of forty (40) respondents. The data were analysed using Pearson's Product Movement Correlation statistic. The results of analysed data showed that the dimensions of electronic administration strategies, which included but were not limited to enterprise content management, electronic transaction, document management system and workflow management system, significantly correlated positively with the measures of organisational efficiency being cost reduction and quality service delivery. The finding also showed a high moderating effect of information and communication technology on electronic administration strategies and organisational efficiency in the civil service sector, Rivers State, Nigeria. Relying on the empirical findings, the study concluded that electronic administrative strategies have a positive significant relationship with organisational efficiency. It is therefore recommended that enterprise content management, electronic transaction, document management system and workflow management system identified in this study should be utilised as they enhance organisational efficiency.*

**KEYWORDS:** Enterprise Content Management, E-Transaction, Document Management System, Workflow Management System.



## INTRODUCTION

The application of e-administration when fulfilling the needs of citizens has become a real challenge for governance. The major concern for the civil service sector is efficiency; the employees as well as the leaders have to develop strategies in enhancing their commitment and continuous patronage in order to get desired results. This is becoming more challenging and difficult due to the uncertain nature of the corporate environment (Agger, 2018). E-administration refers to any mechanism which converts what is in a traditional work environment into smooth and seamless activity and still achieves better results than expected. In the current economic circumstances, a significant process that affects the efficiency and functionality of the operations of every organisation, including public administration, is the communication process. The correct information flows, as well as mechanisms for sharing knowledge, have become key areas in the life of every organisation. The information and communication technology, which is currently a key factor supporting social integration and increasing possibilities for cooperation and collaboration, is becoming more and more helpful in the inter-communication process (Quarato, 2020). The changing role and the large amount of information prepared by public administration units make it necessary to apply tools which allow quick and efficient processing and use of such data. E-administration is a helpful tool for better task management. Recognition of these administration strategies can use the possibilities offered by modern ICT technologies in the process of improving their functionalities.

For a couple of years now, innovative IT technologies have been dynamically implemented in public administration. The changes make it necessary to adapt the new solutions to the new activities of the public sector. Additionally, the observed amendment to the provisions of the law in that respect also constitutes an inherent part of shaping the relations, which are normally mainly related to the dissemination and transfer of information, together with its adaptation to new social expectations (Szpor, Martysz & Wojsyk, 2015). The stress on staff during the distribution of letters, memos as well as manual arrangements of files has been a challenge to the administration in the civil service sector in Rivers State. A poor database system is also another challenge for efficient administration in the civil service sector. Nigeria as a developing country believes that building a knowledge-based workforce is imperative, particularly in the education sector. This is because education contributes significantly to the development of any nation physically, morally, socially, politically and economically. Electronic administration is a form of administration that uses information and communication technology (ICT) to carry out its activities, focusing on three fronts: relations with the employees, internal functioning and relations with customers as well as other business organisations. The term e-administration refers to the method of automating key administrative functions using electronic and computer-based technologies. The main objective of e-administration is to cut down on wasted paper and space by converting important documents and files to electronic files. This strategy has become popular with many industries where heavy paperwork is a major part of conducting business, such as health care, legal, scientific, and government agencies. Private companies have also adopted e-administration in an effort to save time and resources. This system can provide security in a company by limiting who can view certain files and requiring clearance for anyone else who needs to access certain records. This is especially important in industries where the employee or client's confidentiality is important. E-administration is also becoming a common practice in the business world as more professionals use email, word processing, and social media networking. These electronic methods of communication allow people to share information, documents, and records seamlessly via the internet instead of waiting for



traditional mail and courier services (Schachter, 2010). With automated office practices in place, messages are conveyed at lightning speed, which makes processes much more efficient. E-administration eliminates the hassles of printing, mailing, filing, and delivering paper documents.

Technological advances in management and its adoption in the civil service today have changed the way people go about their daily activities by transforming the traditional paper and pen office into an information and communication technology-based organisation. Whether we are checking our e-mails or texting or sending messages with our phones, mobile communication is growing, and our ability to navigate the World Wide Web is improving dramatically. We use the internet to shop online, do banking transactions, book our flight tickets and make payments online, check the weather, do research on any subject and connect with the network. As internet usage grows, and the use of technology in general grows, so does the use of technology and the internet by the government. The observed constant development of new IT technologies, the internet, and ICT networks has contributed to a new approach to communication between the state (office) and citizens. The development of ICT made it necessary to introduce new management and communication solutions as well as new service models by introducing e-administration. The introduction of e-administration into the institutions contributed to certain, yet still not strongly visible changes. The application of ICT in administration bodies is aimed at improving accessibility to information, including certain improvements in the process of delivering public services to citizens (Quarato, Pini & Positano, 2020).

## LITERATURE/THEORETICAL UNDERPINNING

The acceptance of the technology was mostly considered to be the manifestation of intention or use behaviour. Although in line with those theories, the individual's performance was not explicitly measured, the assumption of the research was that technology acceptance correlates with increased performance. However, there are two reasons that jeopardise the accuracy of the conclusions of the research about the impact on performance using those theories. First, the antecedents of technology acceptance are perceptual, which means that they reflect individuals' awareness of the event, which they can report. The major limitation of self-reported measures is that there is a threat of inconsistency among the perception and objectives of individuals (Daradkeh, 2019). Secondly, the acceptance of technology does not necessarily mean that users improve their performance (Goodhue & Thompson, 1995). Some evidence suggested that the adoption and extensive use of technology (PCs) had a weak, non-significant or even negative effect on personal productivity and efficiency (Letchumanan & Tarmizi, 2011). The application of 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 are not left out of the operation because e-administrative strategies modernize productivity and fast flow of information, check uncertainty and enhance private accessibility to individual profiles and files. In e-administration, e-administrative strategies involve e-communication, workflow management, e-control (using a Personal Identification Number or Password to save each staff data, collect customers' details, as well



as for staff access to their data privately), and e-record management (keeping staff and customer records electronically instead of having baggy files, collating access, and transferring information electronically instead of black and white which yielded excessive printing and waste of paper). The Task-Technology Fit Model (TTFM) was developed by Goodhue and Thompson (1995) to explain the utilisation of technology by examining the fit of technology to users' tasks or requirements. This theory explicates the reason for giving preference for the adoption of technology in administration over another. The purpose of the theory was to add to the body of knowledge on technology utilisation in the private and public contexts, which had limited explanation as to how the acceptance of technology contributes to individuals' performance. The task technology fit theory was the foremost supposition that aimed to investigate the adoption aspect of technology exploitation, unlike other previous research, which had mainly focused on the antecedents of use and intention. Considering the connection between effort and performance, administrators should assign tasks that are quite challenging to avoid dullness or minimal performance on the part of the workers. Managers should also be aware of the divergent skills and abilities of the workers while it is equally necessary to assign tasks based on the capability and competencies of individual employees. Although in line with those theories, the individual's performance was not explicitly measured, the researchers assumed that technology acceptance correlates with increased performance. However, two reasons jeopardise the accuracy of the conclusions of the research about the impact on performance using those theories.

In addition, the utilisation of technology had been largely examined in work settings, which are characterised by mandatory use. Therefore, the improvement of performance indicators may correlate not simply with extensive use, but rather with the ability of technology to address the needs and requirements of the user. Task-technology fit theory shows the interdependence between an individual (a technology user), technology (data, hardware, software tools and the services they provide) and task (activity carried out by individuals to produce the required output) characteristics. The degree to which technology is capable of performing a user's tasks is contingent on the degree to which individual abilities, task requirements and technology functionalities match. The utilisation component reflects the act of using the system evaluated by the frequency or diversity of use (Furneaux, 2012). The utilisation is determined by a number of attitudinal and belief factors, contributing to the use of technology both in mandatory and voluntary settings. Task Technology Fit (TTF) includes five constructs that represent the model, namely, task characteristics, technology characteristics, task-technology fit, technology utilisation and performance impact. While task characteristics and technology characteristics reflect the specific dimensions of the technology and its utilisation, the general task-technology fit factor captures individuals' perceptions of task-technology fit. The TTF model also has three propositions. The first proposal was of the view that the evaluation of users in task-technology fit is based on both mission attributes and characteristics of the technology. The degree to which a system assists an individual in performing his or her portfolio of tasks is measured by users' rating of eight dimensions: quality, locatability, authorisation, compatibility, production timeliness, systems reliability, ease of use/training and relationship with users. Task characteristics are measured by task non-routineness, interdependence and job title. Those are the factors that might make a user rely more heavily on certain aspects of information technology. Technology characteristics refer to technology-specific attributes or functions. The second proposition of the theory states that the utilisation of information systems by individuals is dependent on the perceived fit. The third proposition of the theory postulates that a positive



evaluation of task-technology fit not only predicts utilisation but positively influences perceived performance (the accomplishment of a portfolio of tasks by an individual).

### **Enterprise Content Management**

Enterprise content management, mostly referred to as internet sieve, is a component that regulates or controls the things the user of the internet is able to access, especially when used to restrict information delivered over the internet via the web, email, or other means. Enterprise content management displays the type of information that will be available or be blocked by the management of an organisation. Such restrictions can be applied at various levels: a government can attempt to apply them nationwide (just as in internet censorship), or they can, for example, be applied by an internet service provider (ISP) to its clients, by an employer to its personnel, by a school to its students, by a library to its visitors, by a parent to a child's computer, or by an individual user to their computer (Ketan, Ramesh & Dhakte, 2015). The motive is often to prevent access to content that the computer's owner(s) or other authorities may consider objectionable. When imposed without the consent of the user, content management can be characterised as a form of internet censorship. Some enterprise content management softwares include time control functions that empower the management to set the amount of time those users may spend accessing the internet or using organisational materials or other computer activities. Enterprise content management refers to the system and processes whereby information is created, managed, published, and archived. Information typically passes through this lifecycle for a finite period. An enterprise content management system (ECMS) provides the necessary infrastructure for multiple persons to effectively contribute content and collaborate throughout these lifecycles. Enterprise content management lowered communication costs tremendously while providing instant access to a larger audience.

Before the internet, it was acceptable to publish new information every quarter whereas, now, important information is expected to be immediately available online. In the words of Riley (2003), managing information in content management is less costly as content is maintained by company users and standard processes are automated. Common tasks, like checking for dead links and archiving old pages, are done transparently by the Content Management System. Other tedious tasks, like generating navigational menus and enforcing information architectures, do not require technical labour when using a Content Management System. According to Vinaora (2017), the term enterprise content management is an in-sequence frame (iframe) that represents a nested browser, allowing you to embed another view, form, or website into your current view or form. Each control contains its own browsing context, with session history and the active page. You can also use the control to slot in information from new sources, such as adverts, into a view or form. Although an iframe behaves like an inline image, you can configure it with its own scroll bar which is independent of the view or form's scroll bar. The control contains a refresh method which you can use with an execute control's method rule action to refresh the content. With the explosive growth of the internet, fundamental content management needs have also grown. No longer can information be published online in a manual process and be left unattended to (Kinn, Sanath & Taylor, 2011). The internet through content management lowered communication costs tremendously while providing instant access to a larger audience. Before the internet, it was acceptable to publish new information every quarter whereas, now, important information is expected to be immediately available online. Managing information in content management is less costly as content is maintained by company users and standard processes are automated. Common tasks like checking for dead links and archiving old pages are done transparently by the Content



Management System. Other tedious tasks like generating navigational menus and enforcing information architectures do not require technical labour when using a Content Management System (Yusof & Pathan, 2016). Typically, an enterprise content management system is made up of two elements: the content management application (CMA) and the content delivery application (CDA). In the Content Management application, the content manager may be able to manage the creation, modification, and removal of content from a website. It may happen that the content managers do not know about the knowledge of HTML (Hypertext Markup Language) or may not be experts as a Webmaster. In the content delivery application, the website is updated to use and the content delivery application elements comply with the information to update the website. The features of a CM vary, but most include web-based publishing, format management, revision control, indexing, search, and retrieval. Content Management may serve as a central repository for content, which could be textual data, documents, movies, pictures, phone numbers, and/or scientific data. So, all the works in CM are functional and some composite functions are working to develop the content management system.

### **Electronic Transaction (E-Transaction)**

The business transaction process is an important aspect that must be protected for a business to increase. This action can be taken care of by computerization. The introduction of computers which helps develop transparent transactions is an important thing that should be provided (Aigbe & Akpojaro, 2014). The era of Information and Communication Technology (ICT) and digital innovation has led to dynamic changes in the business environment, where business transactions continue to shift from cash-based transactions to electronic-based transactions. The e-payment system was not introduced to replace cash but as a better alternative to cash and trade barter. Electronic transactions can be understood as a payment mechanism using electronic media that does not involve cash. An electronic payment system (e-payment) is an important aspect of e-administration.

An electronic transaction system comes to replace a cash payment system. In the civil service sector today, payments for goods and services increased significantly with the adoption of the use of e-payment systems so electronic payments became an increasingly important part of the payment system (Daştan & Gürler, 2016). E-transaction is a system that provides tools for payment of services carried on the internet. E-payment system provides ease of transaction processing in business between consumers and sellers. Using the e-payment system has many benefits for payers or payees, e-commerce, banks, organisations and governments. These benefits can lead to widespread electronic payment systems in the world. An efficient and reliable e-payment system enables faster payouts, better tracking, transparent transactions, reduced time use, cost savings and increased trust between payers or payees. The application of technology in exchange, which we have now formally known as electronic payment systems, makes the performance more optimal; various activities can be implemented quickly and accurately while impacting the quality of service. The electronic transaction is a payment mechanism that uses electronic media that do not involve cash. An electronic payment system can also be defined as a type of inter-organisational information related to transaction systems, linking various associations, and linking to individual clients. Need for complex interaction is required between partners, technology and the environment. An electronic transaction may be defined as an electronic value transfer of a payment from the payer to the recipient through an electronic payment mechanism. The e-transaction service comes with a web-based user



interface that allows customers to access and manage their bank accounts and do their transactions remotely. Electronic payment can also be defined as a paperless payment process.

### **Document Management System**

Today, technological know-how is at the best possible top of popularity; improvements occur as time passes and make all things possible through the assistance of the structures of information and communication technology. The civil service sectors are amongst the primary consumers of today's technology, via the use of technological materials and equipment during their day-to-day administration. Most agencies started with a manual submission of records, and it includes all visitors and those who come in contact with the civil service. Information sharing in the industry is made using many kinds of technology bases, but the most reliable form to evidence a business transaction, internal or external in offices, are documents. A document is everything that has been stored in an accessible source (Eleoranta, Hameri & Lati, 2001). Information Technology and networks are changing the way professionals face many business processes, and the use of electronic documents and office automation systems makes us think about how to evaluate enterprise content management problems. It has also been observed that using the Document Management System leads to better output, lower costs of operation and the transmission of information in a useful and very short time in an organisation or company. Using DMS systems effectively in a company or teaching organisation ensures that data and knowledge are safe, accurate, and accessible. With that comfort, students or employees feel more apt to reduce paper and rely on the DMS system. It is one important step for the efficiency of work in an organisation. The control offered by an EDMS also ensures document integrity. Man now lives in an age associated with advanced information technology through the joint use of the electronic systems of computers and modern communications systems, the information revolution (Khairymustaffa, Saharfalehawadabujarour & Amman-Jordan, 2016), and that the information sources available to the beneficiaries are many and varied, but useless unless utilised. With what the modern world has witnessed, tremendous growth in the volume of information produced or published became only benefited from it by conventional means and useless due to the widening distance between the source of this information and its beneficiaries. One of the most important challenges facing modern-day management is the conservation and retrieval of information from the vast amount of documents and paper files, which are increasing daily. With the emergence of e-administration, the need for digital preservation of the archive has evolved and even become a necessity which is inevitable, and infrastructure is needed for the operation of e-government.

### **Workflow Management System**

A workflow management system (WFMS) provides an infrastructure for the set-up, performance and monitoring of a defined sequence of tasks, arranged as a workflow application (Wetzstein, 2007). A workflow management system allows the user to define different workflows for different types of jobs or processes. For example, in a manufacturing setting, a design document might be automatically routed from a designer to a technical director to the production engineer. At each stage in the workflow, one individual or group is responsible for a specific task. Once the task is complete, the workflow management system ensures that the individuals responsible for the next task are notified and receive the data they need to execute their stage of the process. Nwinyokpugi (2015) was of the view that workflow management is a business information technology field that deals with orderly flows of work in complex office organisations. It can be seen as 'administrative logistics', that is, obtaining accurate information



at the right time to the right persons. In doing so, it principally looks at the structure of work processes, not the contents of these processes. Workflow management in its complete form includes a broad scale of aspects. The most vital of these aspects includes routing of work objects (documents) through an office organisation as described by detailed route specifications. This involves the selection of alternative paths on 'splits' and the allocation of tasks in the workflow to actors (office workers) in the organisation. The allocation can be based on actor functions, roles, workload and authorisations; scheduling tasks to be performed on time; dealing with the workload of actors, prioritisation of tasks, and availability of required resources (scheduling includes alerting actors when tasks are to be performed); scheduling of scarce resources like meeting rooms and specialised equipment, based on resource availability usage per task, and task priorities; supervising the flow of work for management and alerting when attention is needed; and handling outstanding circumstances like missed deadlines or missing actors using exception definitions and general business rules. It may be clear that this long list of aspects causes a workflow management system dealing with all of this to be very complex. Consequently, not all the aspects are completely covered by typical existing workflow management systems.

The workflow management system has a significant job in rivalry among organisations. Organisational capacities, as well as the general fitness of an organisation to orchestrate its composite human resource and different assets adequately to accomplish corporate execution, can get a contending predominance by picking up or developing authoritative capacities that are commendable, extraordinary, cannot be copied in a perfect world and are not commutable in uncommon mixes (Abdul et al., 2019). Workflow Management System in administration helps the organisation in understanding the life and complexity of a project. The scheduling of tasks for the production clearly shows the estimated timeline and approximate delivery time of the project. It helps in dealing with the potential bottlenecks of the projects; they can be in the form of an artist's needs for the specific job or the technology barrier or can also be a hardware resource required to meet the need of the current project. Workflow Management System requires systematic administrative operations to achieve an effective system design. This prompts a stream of activities that muddle the outline of the framework. This enhances business administration by bringing discipline into their activities, as everybody must take after and utilise frameworks and techniques. This process gives a high level of professionalism in operations. It also appears in distributed information technology (IT) environments such as grid computing or cloud computing. The aim of such systems is to manage the execution of various processes that may belong to the same application, while in many cases, they are used as a means to guarantee the offered quality of service (QoS).

According to Mendling (2008), workflow is a collection of tasks organised to accomplish some business process such as processing purchase orders over the phone, provisioning telephone service, and processing insurance claims. Human tasks include interacting with computers closely providing input commands or loosely using computers only to indicate task progress. Such tasks include updating a file or database, generating or mailing a bill, and laying a cable. In addition to a collection of tasks, a workflow defines the order of tasks as invocation or condition(s) under which tasks must be invoked, task synchronisation, and information flow (dataflow). Today's operation of civil service must deal with global competition, reduce the cost of administration, and rapidly develop new strategies that will accommodate electronic administration. To address these requirements, institutions must constantly reconsider and optimise the way they operate and change their information systems and applications to support





evolving processes. Workflow technology facilitates these by providing strategies and software to support (i) process modelling to capture workflow specifications, (ii) process reengineering to optimise specified processes, and (iii) workflow automation to generate workflow implementations from workflow specifications. The workflow concept has evolved from the notion of progression in process automation in administration. Such processes have existed since industrialization and are products of a search to increase cost reduction by concentrating on the routine aspects of work activities (Georgakopoulos & Hornick, 2005). They typically separate work activities into well-defined tasks, roles, rules, and procedures which regulate most of the work in administration and the office. Initially, processes were carried out entirely by humans who manipulated physical objects. With the introduction of information technology, processes in the workplace are partially or totally automated by information systems, i.e., computer programs performing tasks and enforcing rules which were previously implemented by humans. Thus, the formation of a workflow procedure is theoretically at an advanced level than the idea of information or material process; this is because workflow management processes are primarily implemented as information processes. Once an organisation captures its operational stages, it can re-engineer each process to improve it or adapt it to changing requirements. Workflow management has its beginning with office computerization in the seventies, but it is not until recently that conceptual and technological penetration led to its widespread adoption (Chun, Michael, Moe, & Arthur, 2010). Nowadays, progression responsiveness has become an accepted and vital part. Workflow management is concerned with providing automated support for business processes. Typically, a workflow involves both people and software applications. Work is assigned to participants based on explicit resource allocation directives, which may link into an organisational model, and the timing is driven by an explicit representation of the temporal order of the various activities of the business process. Organisational efficiency is a pivotal paradigm for an organisation's profitability in short-term cycles and long-term sustainability as a responsible stakeholder of society.

Measurement of organisational efficiency primarily depends on tracking the performance of the organisation based on key performance indicators established commonly and differently by sectors. It is an interior or self-evaluation of a company's performance; the result of the evaluation displays how well the company converts inputs into outputs. The more significant the ratio of organisational outputs to her inputs approaches a hundred per cent, the better the efficiency of the process will be in simple terms. It is worthy of note that the act of doing the right things comes from the proper harnessing of time, cost and effort. A worker can develop competence by building a daily work schedule; keep away from personal interruption (Ubulom, Kayii & Dambo, 2016; Rao & Satoa, 2013). One of the effective solutions is optimised usage of organisational efficiency, providing a superior strategic position for an organisation (Tabatabae, 2012). Effectiveness is the power to produce the desired result. Efficiency is defined as the ability to do something or produce something without wasting materials, time, or energy: the quality or degree of being efficient (technical); it is also the power to produce the desired result. It is operationalized by aspects of practicability; these are, above all, the expenditure of the procedure, the required competence for its application, and its availability. Above all, economic utility is a core element of organisational efficiency. It depends on several parameters, especially validity, selection rate, and base rate as well as the variance in the performance criteria (this means, selection utility grows with the size of subsequent achievement differences). Supplemented by different economic indicators, the expected benefit can be calculated. Such calculations frequently lead to high utility estimates



for the application of personnel selection instruments. Advisory efficiency may be understood as the use of diagnostic procedures to support individual occupational and organisational choices. Due to the relatively small general relationship between interests and abilities, such benefit is usually assumed. Advisory efficiency is important primarily in job counselling at labour agencies, and also in the context of organisational personnel development (Shao, Zhang, Zhou, Gu, & Yuan, 2019).

## METHODOLOGY

This is explanatory research as it investigated the correlations between e-administrative strategies and organisational efficiency. It thus adopted the cross-sectional survey research design as a section of the homogeneous population was sampled for investigation. The scope of this study covers the 25 ministries of the civil service sector in Rivers State, Nigeria especially principal officers in designations of directors and deputy directors given the macro nature of the investigation. Two (2) respondents were selected from the twenty (20) sampled ministries under this study, thus giving a census of forty (40) respondents. The research instrument for data collection was a questionnaire designed in a well-structured closed-ended form and also in a four-point Likert scale range of Strongly Agree (SA) = 4 points, Agree (A) = 3 points, Disagree (D) = 2 points and Strongly Disagree (SD) = 1 point. Three sections are targeted in this research: the first section was designed to generate the demographic data of the respondents, the second section was structured to obtain data on the dimensions of the independent variable, and the third was to gather responses on the moderation variable. The reliability of the structured questionnaire was ascertained through a Test–retest in which a pilot administration of the questionnaire was made on a portion of the chosen sample and administered after two months and the relationship between the two results was determined by the correlation coefficient, through the SPSS version 20. Our reliability test was anchored on the Cronbach Alpha at 0.7.

**Table 1: Reliability Coefficients of Variable Measures**

S/N	Dimensions/Measures of study variable	Numbers of items	Numbers of cases	Cronbach Alpha
1.	Enterprise content management	4	35	.990
2.	E-transaction	4	35	.988
3.	Document Management System	4	35	.985
4.	Workflow Management System	4	35	.987
5.	Cost Reduction	4	35	.989
6.	Quality Service Delivery	4	35	.984
7.	Information Communication Technology	4	35	.988

*SPSS Result Output 2022*



## Methods of Data Analysis

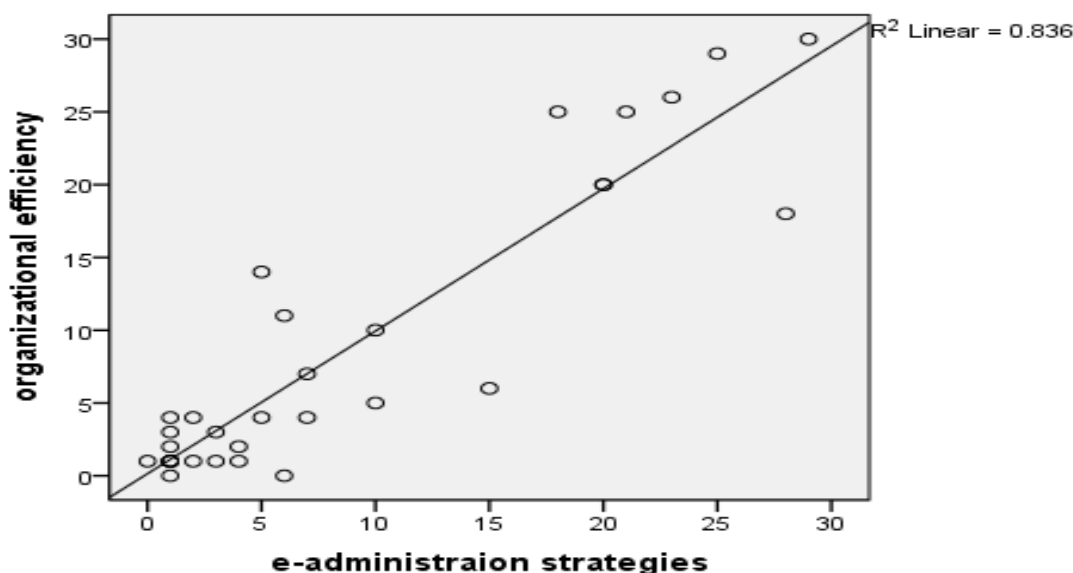
Based on the nature of the study, which tends to find the relationship between two variables (electronic administration strategies and organisational efficiency), the Pearson's Product Moment Correlation Coefficient will be used to analyse the data. However, the analysis will be categorised under three headings: primary analysis, secondary analysis and tertiary analysis. The primary analysis here involves the use of descriptive statistics. The secondary analysis here is the results of the test on the hypotheses. The analysis of the relationship between the variables will be carried out at a 95% confidence interval and at a 0.05 level of significance. The tertiary level analysis involves the interpretation of the results of the secondary analysis which constitutes the findings with a view of making conclusions and recommendations. Inferential statistics on multivariate analysis tested the predictor against two other variables.

Below is Pearson's Product Moment Correlation Coefficient formula:

$$r = \frac{n \sum xy - \sum x \sum y}{\sqrt{\left( n \sum x^2 - \sum x^2 \right) \left( n \sum y^2 - (\sum y)^2 \right)}} \quad 4.6$$

## RESULTS/FINDINGS

In a bid to determine the existence and trend of this relationship, we plotted a scatter diagram as presented in the figure below. E-administration strategies as a predictor variable is plotted on the X-axis whereas organisational efficiency as the criterion variable is on the Y-axis.



**Figure 1: Scatter plot showing the influence of e-administration strategies on organisational efficiency**



Figure 1 above showed a strong relationship between e-administration strategies (independent variable) and organisational efficiency (dependent variable). The scatter plot graph shows an  $R^2$  linear value of (0.836) depicting a strong viable and positive relationship between the two constructs. The implication is that an increase in e-administration strategies simultaneously brings about an increase in the level of organisational efficiency.

### Presentation of Results on the Test of Hypotheses

Earlier in chapter one of our study, we proposed nine research hypotheses to seek an explanation for the relationship between e-administration strategies and organisational efficiency. And for the analysis of the collected data of the study, we adopted the Pearson Product Moment Correlation Coefficient formula, calculated using the Statistical Package for Social Science (SPSS) version to establish and examine 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 of 0.00 represents a lack of correlation. In testing hypotheses 1–9, the following rules were upheld in accepting or rejecting the null hypotheses proposed in chapter one. All the coefficient values that indicate levels of significance (\* or \*\*) as calculated using SPSS were accepted and therefore, our null hypotheses were rejected; when no significance is indicated in the coefficient (r) value, we accept our null hypotheses. Our confidence interval was set at the 0.01 (two-tailed) level of significance to test the statistical significance of the data for the study.

**Table 2: Correlations Matrix of Enterprise Content Management and Organisational Efficiency**

		Enterprise Content Mgt	Cost Reduction	Quality Service Delivery
Enterprise Content Management	Pearson Correlation	1	.880**	.948**
	Sig. (2-tailed)		.000	.000
	N	35	35	35
Cost Reduction	Pearson Correlation	.880**	1	.909**
	Sig. (2-tailed)	.000		.000
	N	35	35	35
Quality Service Delivery	Pearson Correlation	.948**	.909**	1
	Sig. (2-tailed)	.000	.000	
	N	35	35	35

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



From the results in the table above, the correlation coefficient ( $r$ ) shows that there is a highly significant and positive relationship between enterprise content management on cost reduction. The correlation coefficient of  $.880^{**}$  confirms the magnitude and high strength of this relationship and it is significant at  $p\ 0.000 < 0.01$ . Therefore, based on empirical finding, our null hypothesis earlier stated is rejected and the alternate is upheld; thus, there is a significant relationship between enterprise content management and cost reduction of the ministries in Port Harcourt, Rivers State. We also found that there is a highly significant relationship between enterprise content management and quality service delivery ( $r = .948^{**}$ ,  $0.000 < 0.01$ ). Going by this result, null hypothesis 2 was rejected and an alternate upheld; thus, there is a significant relationship between enterprise content management and quality service delivery.

**Table 3: Correlations of E-transaction and Organisational Efficiency**

		E-Transaction	Cost Reduction	Quality Service Delivery
E-Transaction	Pearson Correlation	1	$.959^{**}$	$.948^{**}$
	Sig. (2-tailed)		.000	.000
	N	35	35	35
Cost Reduction	Pearson Correlation	$.959^{**}$	1	$.909^{**}$
	Sig. (2-tailed)	.000		.000
	N	35	35	35
Quality Service Delivery	Pearson Correlation	$.948^{**}$	$.909^{**}$	1
	Sig. (2-tailed)	.000	.000	
	N	35	35	35

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

From the results in Table 3 above, the correlation coefficient ( $r$ ) shows that there is a highly significant and positive relationship between e-transaction on cost reduction. The correlation coefficient  $.959^{**}$  confirms the magnitude and high strength of this relationship and it is significant at  $p\ 0.000 < 0.01$ . Therefore, based on empirical finding, our null hypothesis earlier stated is rejected and the alternate upheld; thus, there is a significant relationship between e-transaction and cost reduction of the ministries in Port Harcourt, Rivers State. We also found that there is a highly significant relationship between e-transaction and quality service delivery ( $r = .948^{**}$ ,  $0.000 < 0.01$ ). Going by this result, null hypothesis 4 was rejected and an alternate upheld; thus, there is a significant relationship between e-transaction and quality service delivery.



**Table 4: Correlations Matrix of Document Management System and Organisational Efficiency**

		Document Management System	Cost Reduction	Quality Service Delivery
Document management system	Pearson Correlation	1	.969**	.951**
	Sig. (2-tailed)		.000	.000
	N	35	35	35
Cost Reduction	Pearson Correlation	.969**	1	.909**
	Sig. (2-tailed)	.000		.000
	N	35	35	35
Quality Service Delivery	Pearson Correlation	.951**	.909**	1
	Sig. (2-tailed)	.000	.000	
	N	35	35	35

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

From the results in Table 4 above, the correlation coefficient (r) shows that there is a highly significant and positive relationship between document management systems on cost reduction. The correlation coefficient .969\*\* confirms the magnitude and high strength of this relationship and it is significant at  $p\ 0.000 < 0.01$ . Therefore, based on empirical finding, our null hypothesis earlier stated is rejected and the alternate upheld; thus, there is a significant relationship between the document management system and cost reduction of the ministries in Port Harcourt, Rivers State. We also found that there is a highly significant relationship between document management systems and quality service delivery ( $r = .951^{**}$ ,  $0.000 < 0.01$ ). Going by this result, the null hypothesis 6 was rejected and an alternate upheld; thus, there is a significant relationship between the document management system and quality service delivery.

**Table 5: Correlations of the Workflow Management System and Organisational Efficiency**

		Workflow Management System	Cost Reduction	Quality Service Delivery
Workflow management system	Pearson Correlation	1	.911**	.970**
	Sig. (2-tailed)		.000	.000
	N	35	35	35
Cost Reduction	Pearson Correlation	.911**	1	.909**
	Sig. (2-tailed)	.000		.000
	N	35	35	35
Quality Service delivery	Pearson Correlation	.970**	.909**	1
	Sig. (2-tailed)	.000	.000	
	N	35	35	35

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



From the results in Table 4.16 above, the correlation coefficient ( $r$ ) shows that there is a highly significant and positive relationship between workflow management systems and cost reduction. The correlation coefficient .911\*\* confirms the magnitude and high strength of this relationship and it is significant at  $p\ 0.000 < 0.01$ . Therefore, based on empirical finding, our null hypothesis earlier stated is rejected and the alternate upheld; thus, there is a significant relationship between the workflow management system and cost reduction of the ministries in Port Harcourt, Rivers State.

**Table 7: Correlations of the Moderating Relationship Between ICT, E-administration and Organisational Efficiency**

Control Variables		e- administration strategies	organisational efficiency	ICT	
-none <sup>a</sup>	e- administration strategies	Correlation	1.000	.880	.925
		Significance (2-tailed)	.	.000	.000
		Df	0	34	34
	organisational efficiency	Correlation	.880	1.000	.939
		Significance (2-tailed)	.000	.	.000
		Df	34	0	34
ICT	information communication technology	Correlation	.925	.939	1.000
		Significance (2-tailed)	.000	.000	.
		Df	34	34	0
	e- administration strategies	Correlation	1.000	.086	
		Significance (2-tailed)	.	.760	
		Df	0	33	
	organisational efficiency	Correlation	.086	1.000	
		Significance (2-tailed)	.760	.	
		Df	33	0	

Cells contain zero-order (Pearson) correlations.

We also found that there is a highly significant relationship between workflow management systems and quality service delivery ( $r = .970^{**}$ ,  $0.000 < 0.01$ ). Going by this result, the null hypothesis 8 was rejected and alternate upheld; thus, there is a significant relationship between workflow management systems and quality service delivery. In Table 4.17, the zero-order partial correlation between e-administration strategies and organisational efficiency showed the correlation coefficient where information communication technology is moderating the relationship, and this is, indeed, both very high (0.925) and statistically significant ( $p$ -value =  $0.000 < 0.01$ ). The partial correlation controlling for information and communication technology, however, is 0.760 and statistically less significant ( $p$ -value =  $.086 > 0.01$ ). The



observed positive "relationship" between e-administration strategies and organisational efficiency is due to the underlying relationships between each of those variables and information and communication technology. Looking at the zero correlation, we find out that both e-administration strategies and organisational 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 0.760, and also, no significance at  $p\text{-value} = 0.910 > 0.01$ ; therefore, we reject the null hypothesis and conclude that information and communication technology, as a driver of e-administration, significantly moderates the relationship between e-administration strategies and organisational efficiency in the civil service ministries in Port Harcourt, Rivers State, Nigeria.

## DISCUSSION

The purpose of this study was to investigate the relationship between e-administration strategies and organisational efficiency. Our analysed data were collected using the questionnaire and hypothesis testing. The results of the analysed data establish the relationship between e-administration strategies and the organisational efficiency of the civil service sector in Port Harcourt, Rivers State, Nigeria. Descriptive statistics were used to analyse the data on the respondents' demographic characteristics, while inferential statistics were used to interpret information on the bivariate analysis of the study variables. The Pearson Product Moment Correlation Coefficient formula was used to test the study-formulated hypotheses stated in chapter one of this research study to see if there exists a relationship between the predictor variable (e-administration strategies) dimensions and the measures of the criterion variable (organisational efficiency), and the moderating effect of information and communication technology between e-administration strategies and organisational efficiency presented with the aid of SPSS version 20.0 for easy interpretations of the study data analysis. The study findings showed a significant positive relationship between e-administration strategies and organisational efficiency with all the study dimensions of the predictor variable showing a positive relationship with the measures of the criterion variable. The finding of the study supports the study of Schachter (2010) and concluded that e-administration is becoming a common practice in the business and other service parastatals in the world as more professionals use email, word processing, and social media networking. These electronic methods of communication allow people to share information, documents, and records seamlessly via the internet instead of waiting for traditional mails and courier services. With automated office practices in place, messages are conveyed at lightning speed, which makes processes much more efficient. E-administration eliminates the hassles of printing, mailing, filing, and delivering paper documents.

The empirical finding results showed a strong positive correlation coefficient ( $r$ ) between hypotheses 1 and 2. The correlation coefficient .880\*\* confirms the strength of this relationship and it is significant at  $p\ 0.000 < 0.01$  and ( $r = .948^{**}$ ,  $0.000 < 0.01$ ) respectively. The findings support the study of Kinn et al. (2011) concluding that managing information in content management is less costly as content is maintained by company users and standard processes are automated. Common tasks like checking for dead links and archiving old pages are done transparently by the Content Management System. Other tedious tasks like generating navigational menus and enforcing information architectures do not require technical labour when using a Content Management System.





The results of the analysed data showed the correlation coefficient ( $r$ ) between E-transaction and Administrative Efficiency. This can be seen from the significant and positive relationship between e-transaction and cost reduction  $r=.959^{**}$  at  $p\ 0.000<0.01$ , quality service delivery ( $r = .948^{**}$ ,  $0.000<0.01$ ). Going by these results, the null hypotheses 3 and 4 were rejected and the alternate upheld; thus, there is a significant relationship between e-transaction and quality service delivery. The findings support the study of Niousha, Masoud and Hamid (2015) who assert that the e-payment system was not introduced to replace cash but as a better alternative to cash and pay point services.

The study results also showed the correlation coefficient ( $r$ ) of the document management system correlated positively with cost reduction at  $r = .969^{**}$ , and it is significant at  $p\ 0.000<0.01$ . In the same vein, the study revealed a highly significant relationship between document management systems and quality service delivery ( $r = .951^{**}$ ,  $0.000<0.01$ ). Therefore, based on empirical finding, our null hypotheses 5 and 6 earlier stated are rejected and the alternates upheld.

The results of the analysed data showed the correlation coefficient ( $r$ ) between the workflow management systems and cost reduction. The correlation coefficient is  $r=.911^{**}$  and it is significant at  $p\ 0.000<0.01$  with a highly significant relationship between workflow management system and quality service delivery ( $r = .970^{**}$ ,  $0.000<0.01$ ) respectively. Going by these results, the null hypotheses 8 and 9 were rejected and their alternates upheld. The findings support the study of Wetzstein (2007) who stated that a workflow management system (WFMS) provides an infrastructure for the set-up, performance and monitoring of a defined sequence of tasks, arranged as a workflow application.

## IMPLICATIONS

This study has established that enterprise content management, e-transaction, document management system and workflow management system are the main drivers of e-administration strategies that enhance organisational efficiency, and this is deliverable through information and communication technology. Hence, the study has contributed to the body of knowledge. Relying on the findings and conclusion of the study, the following are established:

- i) Enterprise content management system should be used by administrators and other relevant organisational stakeholders as it is seen to enhance organisational efficiency through cost reduction and quality service delivery.
- ii) E-transaction ensures the achievement of the cashless policy as it is seen to reduce administrative cost and increase quality service delivery. Therefore, directors of any kind of organisation involved in any nature of transaction should adopt e-transaction as a driver of organisational efficiency.
- iii) Document management systems also showed a significant relationship between cost reduction and quality service delivery. Therefore, management should ensure the use of document management systems.



- iv) Workflow management system showed significant correlations with cost reduction and quality service delivery. It is seen to enhance administrative service efficient performance through the monitoring of services sequentially.
- v) To actually capitalise on the utilisation of identified e-administration strategies, information and communication technology is the main driver to successful organisational efficiency. This is because the result of the analysed data on information communication technology as a moderating variable between e-administration strategies and organisational efficiency showed significant correlations and removing the effect showed the correlations will have no significance as the p-value is far above the accepted p-value for the study.

## CONCLUSION

The core aim of the administrator is to ensure the resources of the organisation are used judiciously for organisational efficiency. In administrative parlance, organisational efficiency is ensuring the goals and objectives of the organisations are achieved with less waste. Furthermore, as the nature of work changes, the administrative unit of the organisation faces serious challenges in providing an efficient technological approach to bridge the gap between the traditional methods of administration and the modern way of administration in order to reduce costs and enhance quality service delivery. To overcome this problem, the study identified enterprise content management, e-transaction, document management system and workflow information system as the modern administrative drivers to organisational efficiency, and this is achievable through information and communication technology, hence the moderating effect of information communication technology between e-administration and organisational efficiency. Lastly, this study showed that there is a significant relationship between electronic administration strategies and the organisational efficiency of the civil service sector in Rivers State.

## FURTHER RESEARCH

The study has highlighted various relevant issues that the study did not exhaustively investigate, which might be important for further research on e-administration strategies to enhance organisational efficiency other than the dimensions used in this study. The study only studied Civil Service Ministries in Rivers State, Port Harcourt, Nigeria. There is a need to carry out further studies in other sectors in Nigeria like education, hospitals, hospitality, telecommunication, construction, oil and gas, and manufacturing industries, among others, and confirm whether the results will be the same. Also, further study should be conducted on the factors that affect organisational efficiency in Rivers State, Port Harcourt, Nigeria other than e-administration. This study used explanatory and quantitative research, hence a correlational research design. Future research can be conducted over a year using a longitudinal design and confirm whether the results will be consistent.



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