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INSTRUMENTAL INFORMATION UTILIZATION STRATEGY AND PERFORMANCE OF HEALTH INSTITUTIONS IN RIVERS STATE

Briggs Tamunotonye Grace

Department of Office and Information Management, Faculty of Management Sciences, Rivers, State University, Nkpolu-Oroworukwo, PMB 5080, Port Harcourt, Nigeria.

DOI: <https://doi.org/10.5281/zenodo.17161350>

Abstract: This study empirically investigated the impact of instrumental information utilization strategies on the productivity of health sectors in Rivers State, Nigeria. A cross-sectional survey design was employed, targeting employees of 21 hospitals, including both medical and non-medical professionals. From these hospitals, a sample of 210 employees—covering ten categories of staff from each hospital—was randomly selected. Reliability of the research instrument was confirmed using Cronbach’s alpha, indicating that the measures are reliable and reproducible under similar conditions. Descriptive statistics were used to address the research questions, while Spearman’s Rank Order Correlation assessed the relationship between information utilization strategies and productivity. Results revealed a positive and significant relationship between instrumental information utilization strategies and productivity in the health sector. The findings suggest that effective utilization of information as a strategic tool enhances performance, patient satisfaction, and quality service delivery in healthcare facilities. Consequently, it is concluded that adopting instrumental information utilization strategies can significantly improve productivity in the health sector of Rivers State.

Keywords: Information Utilization, Strategy, Productivity, Health Sector, Service Delivery

1. Introduction.

Information utilization involves the generation, collection, analysis and use, and also identifying gaps that exist during the process of utilization. Instrumental, Affective and Cognitive information utilization are modules in Health Management Information System (HMIS). The health sector depends greatly on the quality of information generated. Instrumental information utilization is the lower level of Health Information Management System in which “raw data” are collected, generated or stored as information for further operation (Muhindo, 2016). Health information management System compose of interrelated components directing towards achieving the corporate objectives (Amold and Wade, 2015).

The interrelating components are grouped into three entities. At the first level (Instrumental), the process ensured the collection of data from lower levels to the central level that transforms data into information, while at the conceptual (Affective) level is concerns with the analysis and feedback mechanisms aiding the transformation of data into knowledge to inform decision making, then the last level is the cognitive, this involves further research to identify the gap that exist (Ball, Weaver, and Kiel, 2013).

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Information utilization strategy functions varies from organization to organization, generally in the health sector, it is used to collect routine data and information on patients, costs, performance of personnel, specific diseases, medical conditions, their management, use of medicines and other medical supplies. Generally routine data collection provides most of the data used for monitoring and evaluation patients' health condition. These tools are functional in both electronic and manual to cater for the differences in technology built at various health facilities. Information utilization is concerned with planning health projects and priority activities, budget allocations, research, monitoring and evaluation education and health policy development (Obwocha, Ayobo, Nyangwa, and Thomas, 2016).

Information is the vehicle that drives the organization. Data/Information is the organizations intellectual asset (Glaser, Henley, Downing, and Brinner. 2008). Information provides the necessary assistant which enables the employees of the health sector to effectively dispense their duties using Instrumental, Effective and Cognitive use of the available information is the brain behind the employees' service delivery (Green, Ottoson, García, and Hiatt, 2009). The health sectors are concerned with the saving of life.

As a matter of life, the health sector requires current information that will assist them to collect, analyse and report the situation of a patient before treatment commences. Information utilization strategy involves collection of basic clinical information from the patient (Green, Ottoson, García, and Hiatt, 2009). The collection of basic information from the patient increases the changes of treatment. Appropriate utilization of health information guarantees the survival of the patient who was sick and about to die. In the health sector, information is the life wire of the employees to carry out their function and the guarantee or increases the changes of the patients to life (Cahill, 2014). It is the basic tools that the employees use to categorize the different human being according to our different chemical composition, variety in the genotype, blood group and even age.

Instrumental information utilization is a collaborative effort. The information is shared among all the stakeholders of the healthcare sector. Once wrong information is collected from the initial stage, it follows suit and this will also result to wrong result which may eventually cause the death of the patient. It is requires that the medical sector have a qualify personnel who have at least average knowledge to effectively collect information from the patient. The information must be timely, and error free. The sectors require professionals who are capable to carryout effective investigation on the patient, and be able to work as a team. Team work is one key collaborative effort that the medical personnel use to achieve results. Medical information flows from one stage of initialization to the stage of task accomplishment and reviewed, this is from the instrumental stage to the affective stage (analytical stage). Information utilization is a collaborative effort between the non-medical staff, physicians, nurse, doctors and management and all other stakeholders of the health sectors. The health sectors are structured in such a way that one stage must be completed before the next stage. This is because the process cannot be jumped. The patient must following the process of picking the card, do all documentation before meeting the doctor for examination, the physician also have to carry out the test before doctors' treatment (Kolodner, Cohn, and Friedman, 2008).

At the different stages, information is used based on the needed or specific purpose. Instrumental information utilization identifies quantity, and value for further analysis. At this stage the user is interested in collecting data about the patient, like asking your name, data of birth, blood group, how long you have been experience the

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symptom then proceeded by the affective information utilization. Affective information utilization is the second strategy of information utilization. At this stage the user is interested in combining the instrumental data collected, start analysing the information or data and report it accordingly before treatment will be carried out on patient. At this stage the physician is able to identify the type of sickness based on the available (analyzed) information. Affective information utilization is the output of the instrumental strategy. In most cases what is information to a group may be data to the other users.

At the instrumental stage, it is information about the patient, but going into the affective stage, it becomes data to the user. This is one concept that defines information according to the concept utilization. What is information at one stage may turn to be data at the other end. The employees collect information about the patient using a forms or record. These information collected enhanced the doctors, nurses, and physician to know the next step to take. In most cases the people involved in the collection of the information may not be medical personnel but are train in information management and possess the relevant skill to handle the process. To reduced information overload, the form is design according to the information that is relevant to the healthcare.

Instrumental information utilization provides a longitudinal record of patient health. These data are generated during one or more encounters in a care-delivery setting. The purpose of instrumental utilization of information depends on its purpose, what information is needed and for how long the patient had be experiencing the ill-health, it enhanced the healthcare accessibility rights, and increases possibility of the information that should be included for proper affective and cognitive research process. Instrumental information utilization also guides the cost of treatment, duration of treatment and the type of drug that will be effective for the treatment. Instrumental utilization of Information include patient demographics, progress notes, problems, medication, vital signs, past medical history, immunization details, laboratory data, and radiology reports, while affective information utilization entails analysis of body chemistry, composition of sickness, and details procedure for treatment and cognitive information utilization started from the end of affective, it aims at determine the gap that exit and carried out further research (UNICEF, 2017).

The health sector is a very sensitive sector that requires high quality information because of its involvement in the issue of life. It has been observed that over the years, many people have lost their lives because absent of the need information or wrong information utilization by the medical personnel. Information utilization is a serious problem especially in Rivers State and Nigeria in general. People are now seeking medical care abroad, and those that don't have the resources are dying in the hands of these medical personnel. The first area of concerned is at the instrumental level. There is no quality personnel in our health sector who are capable, and be able to diligently gather the needed data that will aids in the delivering of medical service. Even when there is professional medical and non-medical personnel, these people are always in a hurry because of their workload as a result always commit serious errors that will lead to the death of the patient. In most cases there is no measure put in place to ascertain the cause of the death.

The world today is moving towards information technology and communication were modern equipment will be used to collect these data without errors. But here in Rivers State most of the health sectors have no or little knowledge about it. The traditional method of information gathering cannot support the modern trend of analysis and treatment. Most countries of the world today they use special devices like Personal Digital Assistance to

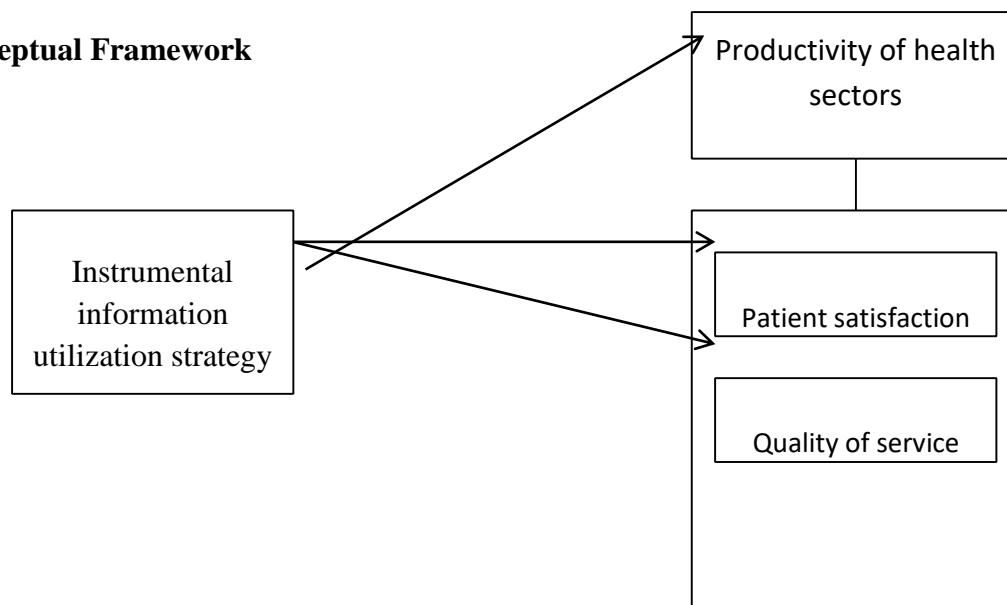
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effectively collect data from the patient, but this is still lacking in Rivers State Healthcare sectors. Because of the sequence of healthcare delivery, the instrumental problem cumulate into the affective stage, it is now difficult to analysed these local mean of collecting information, therefore with also the manual computer, result results are always obtained. In this case the treatment given to patient will be wrong and the patient may die. Lastly, in spite of all the challenges encountered, there is no serious measure to carry out further research in this area. Doctor that started their medical practice in the eighties is still using the old method in this modern age of information technology and communication. This research is a call for a change of practice especially in the health sectors in Rivers State. The purpose of this study is to determine the impact of instrumental information utilisation strategy on productivity of health sectors in rivers state.

The study has as anobjective to determine the impact of instrumental information utilization strategy influences patient's satisfaction and service quality delivery. In carrying out the study, two research hypotheses were stated, which include:

- H₀₁: There is no significant relationship between instrumental information utilization strategy and quality of service of health sectors in Rivers State.
- H₀₂: There is no significant relationship between instrumental information utilization strategy and patient satisfaction of health sector in Rivers State.

1.3 Conceptual Framework



2.0 Theoretical Foundation

A theoretical foundation or framework is lens from which all knowledge is constructed either metaphorically or literally for a research study. It serves as a structure and support or as the rational for the study. In search of theories of instrumental information utilization strategy and productivity of health sectors, a number of theories have been raised. This study looks at a few of these theories and highlights their limitation as scholars and researchers continue to search for the best theory. The following theories where looked at the evidence based health information system theory.

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Evidence-based practice evolved from Florence Nightingale in the 1800s to medical physicians 'practice in the 1970s and to the nursing profession in the late 1990s. It began as an idea to provide better outcomes for patients who experienced deplorable and unsanitary conditions, it has developed into a foundation that nursing has fostered and maintained in order to provide safe and competent care. This theory holds that there is a need for evidence based information regarding the organization of daily routine information to make planning and policy formulation for any developmental organization (Mantzoukas, 2007). Evidence-based theory suggested that what is needed was a fit between the technical subsystems and the social subsystems which together made up an organization (Sullivan-Marx, 2006).

Instrumental Information Utilization Strategy

Instrumental Information Utilization is the layer health information system that enables the user of the information system to effectively collect valuable data from the patient for effective analysis. Patient information can be log-in information, test results, documentation of the patient visit, updating of patient information. Note taking, while listening and talking to the patient is a complex activity which puts strenuous demands on the working memory of the clinician. Note taking is an activity that requires high cognitive effort, as both comprehension and production processes are involved. Instructional information utilization reduces the load cognitive effort. It is an effective method for increasing high cognitive load limits, it increases the clinician's capacity to attend to the patient's psychosocial issues (Vermeire, 2001), instrumental information utilization is essential to ensure that the clinician attention is mainly directed at the patient. Medical law requires health personnel to document all relevant and necessary information about a patient's healthcare (Leblanc, 2014). Although documentation throughout the patient meeting strains the clinician, it has several benefits. Documenting shortly after obtaining information leads to better and more accurate documentation, as it does not rely on the clinician's memory (Leblanc, 2014).

The instrumental information utilization in the health sectors is an administrative function performed by the health personnel (WHO, 2016). Instrumental information utilization in the health sector, records demographic and social economic data such as the name of the patient (identification), sex, data of birth, place of birth, patients permanent address, and medical record (WHO, 2016). The apparent need to use the enormous amounts of health information accessible by the medical personnel is a key process that will help in the treatment of patients seeking medical attention in the hospital. Today modern health sector generate special means of identification. Instrumental information utilization is crucial for the efficient and effective delivery of health services and public health management and is therefore necessary for achieving Sustainable Development Goal (SDG).

Instrumental information utilization is able to identify patients to ensure that those for whom claims are submitted are actually treated and to facilitate the mode and the effectiveness of the care based on the patient's history. Instrumental information utilization is a secure, inclusive, and responsible method of uniquely documentation and authenticating patient over time and across facilities and to ensure that the goal is achieved in the health sector (Paek, Meemon, and Wan, 2016). Most countries today have not realized the need for instrumental information, their records are often paper based, or either they used stand-alone information systems that cannot communicate, transfer data or records, or aggregate data between or within facilities (Onah, Ikeako and Iloabachie, 2009).

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As an alternative to creating a documented health-specific functional identification system (record system), countries have decided to use existing foundational instrumental or documentation systems, such as population registers, unique identification numbers (UINs) or national ID (NID) cards, as the basis for patient identification, verification, and authentication. Leveraging a foundational system in this way may create additional benefits beyond those offered by a functional system. By streamlining identity management overall and eliminating health-ID specific costs, integrating a foundational system into the health sector may improve patient management, administration, and data collection even more than a functional system. The integration of other mean of instrumental information utilization enables government to obtain registration and vital statistics, etc. The health systems will be interoperable with other government databases. This could facilitate the compilation of aggregate data by vital statistics offices, which can be used for planning and research in Rivers State. Similarly, in a country where multiple agencies use a common foundational identifier, it can be used to verify or cross-check patient attributes across systems for a variety of purposes. In Thailand, the use of the national ID number by disparate health databases allowed for the rapid creation and reduction in the duplication of a universal healthcare registry, these linkages can also help strengthen identification and civil registration systems by driving demand for the foundational system and creating more points of contact with individuals for updating information (Prgomet, Georgiou, and Westbrook, 2009).

Health records are legal documents and are designed to provide an overview of the service user's state of health before, during, and after a particular therapy. The healthcare record should contain sufficient information to identify the service user, support the diagnosis, justify treatment, document the treatment course and results and facilitate continuity of care among healthcare providers. Correct identification of service user, every page should have the forename and surname, identifiable number and date of birth. Service user identification should be on every sheet including reverse of double sided sheets and should be verified with the service user on each entry. Chronological, accurate and complete records- records should be accurate and recorded so as the meaning is clear and intelligible. Records must not be falsified. They must be factual and should not include unnecessary abbreviations, jargon, irrelevant speculation, coded expressions, sarcasm or meaningless phrases to describe service users or care providers. Opinions should be noted as opinions. Communication with service users and families, the date, time and detail of all communication i.e. face to face meetings, letters and phone-calls must be documented in the service user's healthcare record.

Healthcare organizations, just like other business entities, are informationintensive enterprises, generating on a daily basis huge volumes of data from many different units such as clinics, laboratories, surgeries, administrative offices, and so on. Yet, much ofthis data continues even today to be processed manually is spite of decades of experience in the successful application of Information Technology (IT) in other information-intensive industries. At the same time, the health care industry has become significantly specialized and complex. Complexity, on one hand, arises from the numerous entities, which are simultaneously involved in many interactions and processes during the provision of patient care. While, on the other hand, specialization occurs due to the significant and continuous advances that take place in the field of medicine such as the development of new treatments, diagnostic plans and procedures.

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Within this interdisciplinary healthcare environment, it is commonly accepted that the safe and high quality delivery of healthcare services depends heavily on timely access to accurate and comprehensive information, as well as knowledge resources. Thereby, over the years, information management environments have emerged from a secondary to a primary subject of institutional management, constituting a critical component in the process of successful healthcare delivery. Many business analysts, as well as scientists, have emphasized over the years the need to treat information as a valuable resource, which has an important role to play not only in the successful operation of an entire Healthcare Organization, but also in delivering value to its stakeholders (patients, professionals, government authorities). This also suggests the necessity for the development of specific responsibilities, strategies, and tools, in order to manage information resources effectively and improve their quality to deliver value. Therefore, Healthcare organizations are turning towards the adoption of new techniques and processes that can support more efficiently their working environment and the services they offer.

Instrumental information utilization is the roadmap for any medical success (WHO, 20016). The proper recording of information facilitates increases the analysis of the medical treatment and enhanced further research in the health sectors. Today there are many electronic health records system available in most of the healthcare. They are Electronic Patient Record, Electronic Medical Record, Continuity of Care Record or Patient Medical Record Information. The different labels denote slight changes in the scope, the content, and the use of the record, the core role of this central ITC tool remains the same: to enable comprehensive documentation of the care provided to any citizen, and to make the right information available to the right healthcare providers at the right time. The role of the electronic health record is essentially two-fold: to automate and streamline the clinician's workflow, and to generate a complete record of each clinical encounter with a patient or citizen in order to support directly or indirectly all care-related activities. Electronic health record provides a longitudinal record of patient health information (AdlerMilstienand Bates, 2010).

These data are generated during one or more encounters in a care-delivery setting. Instrumental information utilization uses patient demographics, progress notes, problems, medication, vital signs, past medical history, immunization details, laboratory data, and radiology reports. Instrumental utilization of health information follow through four hierarchical levels: Level one Begins with picture archiving and other departmental systems. Level two Builds on level one to include a common master/patient index and integration. Level three Grows in complexity and sophistication. Level 3 takes on board advanced medical records with clinical ordering (order communications). Level four Encompasses full e-Prescribing, with decision support, in a clinical setting (Adler-Milstienand Bates, 2010).

Decision Support Systems may be defined as software systems that tap into a range of database resources to assist users in making decisions on care options. A clinical decision support system gives a healthcare provider structured (rule-based) information on diagnoses and treatments. Research by Bhattia,andCleland (2001). Bhattia,andCleland (2001)provides a meta-analysis of seventy reported trials and reports on the ability of decision support systems to improve clinical practice.Emerging from all 70 reported trials identified that decision support systems improved clinical practice significantly in 68% of trials. It has been noted that computer-based connection is of little interest to most hospital physicians (they usually have neither desks nor laps to put a computer on while seeing a patient!) while office-based physicians need quick connections that can be seamlessly

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integrated with any interaction with a patient which require a high level of data input from the doctor. For this reason, key connectivity tools such as radio frequency identification and wireless integrated microsystems have a very significant application potential in health sector (Bhattia and Cleland, 2001).

The application of wireless integrated microsystems technologies in the hospital promises to improve significantly the quality and patient-centeredness of in-patient and ambulatory care, the potential impact of these devices on home care is even greater. With properly integrated homebased systems, and intelligent decision support systems, patients could be monitored on a continuous basis and healthcare professionals could be alerted automatically when medical events merit attention (Bhattia and Cleland, 2001).

Instrumental use of information considered six basic things which include system quality, information quality, use, user satisfaction, individual impact and organizational impact (Bhattia and Cleland, 2001). Instrumental use of information has great potential in reducing healthcare cost and in improving health outcomes. The rapid growth in the field of information technology has strongly affecting the Instrumental utilization of information in the healthcare sectors. Instrumental utilization of Information is the application of comprehensive software for patient information integration, and to exchange comprehensive patient information between wards and other medical centers in order to expedite the process of patient care, improve quality, increase patient satisfaction and reduce cost (Bhattia and Cleland, 2001).

A great goal of national healthcare system is not possible without implementing a strong system that will instrumentally utilized information that will be beneficially to the various professional or users of the information system. Instrumental utilization of information controls many functions in hospitals which includes; admissions/discharge/transfers, pathology test result information, radiology test with appointment scheduling, special test information systems in medical research, inventory maintenance of medicines and other appliances, issues of medicines for patients, communications with external world and patient billing. Instrumental utilization of information required physicians and frontline staff to comprehensively and accurately codify all hospital discharges and procedures. It aids the redesign of workflows to incorporate and exploit the system's functionality. Instrumental utilization of information is both service quality indicator and a quality component. Strong instrumental utilization of information enable health sectors to deliver better quality and value healthcare to patients (Asenso-Okyere, Chiang, Thangata and Andam, 2011).

Digital instrumental information utilization Provide continuous (Graphic User Interface, GUI) display layout from session to session, Consistency in terminology, structures, look, and user action/system reaction throughout the considerable period of time (Milstienand Bates, 2010). The documentation will display context of information, the relationship between the different context views should be evident (Milstienand Bates, 2010). Provide clear navigation; provide a clear overview of available options and their location within the system (Milstienand Bates, 2010). Display information supporting a patient centered focus. The displayed information should support human perception in order to offer rapid and easy understanding of presented information (Ware, 2013). The focus should be on reducing cognitive load and the amount of distracting elements, in order to avoid causing break-in-task occurrences in the patient meeting (Milstienand Bates, 2010). Information documentation in the healthcare sector should be able to convey meaningful information that the professional will act upon.

2.3 Concept of Productivity

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The health sector is a service organization. Most of these health sectors are owned by individual. The aim of any business is to make profit and to impact positively on the lives of the individual and the society at large. This is why it is necessary to consider the health sector productivity. The main role of the health sector is to assist the flow of service to the generally public. In the research the measures considered for health sector productivity are quality service delivery and patient satisfaction.

2.3.1 Quality service delivery

Service delivery is a critical link in health sector today; it is the locus at which money and technology are transformed into health-improving interventions (Aikins, Ahmed, and Adzimah, 2014). Despite much progress, the gap between need and effective action is still large. Further development of cost-effective intervention and better health financing schemes are certainly needed. But it is also striking that even the funds and technologies that are available are often not being used effectively. In many countries one encounters health facilities with shockingly few patients, communities with low levels of coverage in life-saving services even where capacity exists to provide that coverage, or trained workers missing from their assigned posts and empty shelves for drugs and supplies when workers have been paid and supplies purchased (Aikins, Ahmed, and Adzimah, 2014). Clearly, having money and technology are not sufficient conditions for impact. Even with more money and better technologies, a major challenge remains. Without improvement in the performance of the organizations that deliver health services, potential gains in health outcomes from increased funding and better technologies will not be achieved (Aikins, Ahmed, and Adzimah, 2014). The need for improvement in the delivery of health services can be pictured as the gap between what available funds and technologies could achieve and what they actually do achieve in specific countries, districts, and communities.

2.3.2 Patient satisfaction

Patient satisfaction is a relative phenomenon (Kendrick, Bu, Pan, and Middleton, 2007), which has been around over the years, but no active research has been done especially in Nigeria where patient are not really considered because of the limited and low standard of health care (Kendrick, Bu, Pan, and Middleton, 2007). This though has replaced the Nigerian understanding of quality healthcare. People have now decided to live at the mercy of God. Some will not even border to go to healthcare because of lack of trust. They no longer believe in the medical treatment in Nigeria (Berry, and Bendapudi, 2007). Most top politician and people that are well to do travel abroad for healthcare. In this concept, patient satisfaction embodies the patient's perceived need, his expectations from the health centre and experience of the personnel. This multidimensional concept includes both medical and non-medical aspects of health care (Gilland White, 2009). The expectancy value theory is a key theory that supports this concept, which proposes patients beliefs, values and prior expectations regarding care to influence patient satisfaction.

Also another theory the support patient satisfaction is the interpersonal process of care which plays a paramount role in ensuring patient satisfaction (Qidwai, Ali, Baqir, and Ayub, 2005). Some provider-related factors are physician's proficiency and interpersonal communication skills, behavior of hospital staff, access to care, basic facilities, and infrastructure. Patient-related factors include sociodemographic characteristics of patients, stage of their disease as well as patients' perception of a relationship of trust and feeling of being involved (Harutyunyan, Demirchyan, Thompson, and Petrosyan, 2010).

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The modern day patient is more aware and educated, has access to information, and has expectations from the health system (Alzaidiyeen, andAlmwdiah, 2012). Hence, it is more important today than ever before to address issues related to service delivery in this context. A patient with positive perceptions has a greater chance of translating it into positive outcomes (Alzaidiyeen, andAlmwdiah, 2012). Whereas, negative attitudes in the patient and dissatisfaction with health care provided leads to poor compliance and, in extreme cases, patients resort to negative word-of-mouth that discourages others from seeking health care

3.0 METHODS

The research dessign adopted in this study is thecross sectional survey research. The population of this study comprised of employees oftenty one (21) Hospitals in Port Harcourt, Rivers State, sample size of 210 employee was obtained using the Taro Yamene sample determination size , the information collected from the questionnaire was summarized in their groups and percentage were used to analyses the data, also inferential statistical tool of spear man rank order colorations was applied in the study was used to test the level of significance among variables and finally The analysis was aided with SPSS version 23.0.

Reliability and validity test of the Research Instrument

The instrument used was subjected to face/content validity. This was done to ascertain the validity of the questionnaires to be administered. In this research the Cronbach's Alpha reliability test was used. A test of reliability of instrument is seen as being reliable when it can be used by a number of differentresearchers under stable conditionswith consistent results (notvarying). Furthermore, reliability is seen as the degree to which a test is free from measurement errors,since the more measurement errors occur the less reliable the test (Fraenkel&Wallen, 2003). The dimensions and measures tested in this research were consistent with coefficient of reliabilities above the average of 0.500 as shown below.

3.1 Findings.

Result and Frequency Analysis

In this section, the output of the primary and secondary data is presented. Analysis was carried out on individual variables and measures. Mean scores and standard deviations are also illustrated. The presentation begins with the independent variable which is instrumental information utilization strategy. It then proceeds to the dependent variable- productivity of health sectors, whose measures are patient satisfaction and quality service delivery. These are all scaled on the five (5) point Likert scale (ranging from 1: **SD**=strongly disagree, 2: **D**=disagree, 3: **N**=neutral, 4: **A**=agree and 5: **SA**= strongly agree).

The secondary data analysis was carried out using the Spearman rank order correlation tool at a 95% confidence interval. Specifically, the tests cover hypotheses HO_1 to HO_2 which were bivariate and all stated in the null for. We have relied on the Spearman Rank (ρ) statistic to undertake the analysis. The 0.05 significance level is adopted as criterion for the probability of either accepting the null hypotheses at ($p>0.05$) or rejecting the null hypotheses at ($p<0.05$).

Analysis on Instrumental information utilization

Table 1 Instrumental information utilization

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List of items N Sum Mean Std. Dev.

To what extent employees are able to use admission/transfer of patient as demanded hospital forms/Graphical User Interface (GUI) in your hospital	190	628	3.31	.915
To what does the record of the hospital secured, all inclusive and responsible and uniquely effective for patient record document	190	667	3.51	.840
To what does the record of the hospital secured, all inclusive and responsible and uniquely effective for patient record document	190	696	3.66	.692
To what extent does your hospital facilitates	190	653	3.44	.779
Valid N (listwise)	190			

Source: Research survey, 2019.

Table 1 asked the question on instrumental information utilization. Question one on to what extent employees are able to use hospital forms/Graphical User Interface (GUI) in the various hospitals obtained a mean of 3.31, question two is on to what does the record of the hospital secured, all inclusive and responsible and uniquely effective for patient record document gives a 3.51, question three asked, to what does the record of the hospital secured, all inclusive and responsible and uniquely effective for patient record document scored a mean of 3.66 and lastly question four on to what extent does your hospital facilitates admission/transfer of patient as demanded scored 3.44 respectively. The mean of the various items showed that instrumental information utilization enhanced the productivity of health sectors in Rivers State.

Table 2 showing descriptive statistics for Instrumental information utilization

Statistic	N	Minimum	Maximum	Mean	Std. Deviation
Instrumental information utilization	180	1.00	4.00	3.4301	.732

Source: Research Data 2019 (SPSS output version 23)

Table 3: Quality service delivery

List of items	N	Sum	Mean	Std. Deviation
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To what extent is the service delivered

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190	654	3.44	.905	costly effective and meet the standard
To what extent does the existing				
infrastructure in your hospital guarantee	190	647	3.41	.796 effective service quality
To what extent is your hospital able to				
identify the gap that exist in the hospital and	190	690	3.63	.698 response promptly to the
existing gap. To what extent is your hospital able to finance the necessary	aspect of the hospital			
190	654	3.44	.863	that will delay the services of the organization
Valid N (listwise)		190		

Source: Research survey, 2019.

Table 3 showed how service quality delivery enhanced productivity of health sectors in Rivers State. Question one on to what extent is the service delivered costly effective and meet the standard scored a mean of 3.44, question two on to what extent does the existing infrastructure in your hospital guarantee effective service quality scored a mean of 3.41, question three on to what extent is your hospital able to identify the gap that exist in the hospital and response promptly to the existing gap scored a mean of 3.63 and lastly question four on to what extent is your hospital able to finance the necessary aspect of the hospital that will delay the services of the organization scored 3.44. This showed that there is quality services delivery in the health sectors in Rivers State as a result of information utilization strategies put in place.

Table 4: Patients satisfaction

	N	Sum	Mean	Std. Deviation
To what extent is patient able to come for				
second treatment after attending you hospital for	190	611	3.22	.861
the first time				
To what extent are customers able to made referral	190	654	3.44	.905
for your standard care and treatment				
To what				
extent is the attitude of non-medical,				
medical professional encourage motivates patient	190	696	3.66	.714
to come for treatment				
To what extent does the positive attitude of				
patient resorts to positive word-of-mount that	190	634	3.34	.921
encourages others to seek for medical care from				
your centre				
Valid N (listwise)		190		

Source: Research survey, 2019.

Table 4 is how satisfactory are patients as a result of the application of information utilization strategies. Question one on To what extent is patient able to come for second treatment after attending you hospital for the first time scored 3.22, question two on to what extent are customers able to made referral for your standard care and treatment scored 3.44, question three on to what extent is the attitude of non-medical, medical professional encourage motivates patient to come for treatment scored 3.66 and lastly question four on to what extent does the positive attitude of patient resorts to positive word-of-mount that encourages others to seek for medical care from

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your centre scored 3.34. This showed that there is a positive relationship between information utilization strategies and productivity of health sectors in Rivers State.

Table 5 showing descriptive statistics for measures of productivity of health sectors

	N	Minimum	Maximum	Mean	Std. Deviation
Patient satisfaction	180	1.00	4.00	3.6846	.843
Quality service delivery	180	1.00	4.00	3.3692	.731
Valid N (listwise)	180				

Source: Research Data 2019 (SPSS output version 23)

Table 6 Relationship between Instrumental information utilization strategy and quality service delivery

		Instrumental information utilization	Quality service delivery
	Correlation Coefficient		
	Sig. (2- tailed)		
	N		
Instrumental information utilization	Correlation Coefficient	1.000 .	.830** .000
Spearman's rho	Sig. (2- tailed)	190 .830 **	190 1.000 .000
Quality service delivery	N	190	190

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

Source: Research survey, 2019.

Table 6 showed the Spearman's correlation coefficient; $r = 0.830$, probability Value (PV) = 0.000 < 0.05 (95% level of freedom). This showed that there is a strong positive relationship between Instrumental information utilization strategy and Quality service delivery of Health sectors in Rivers State. Therefore implementing instrumental information utilization strategy will increase quality service delivery of Health sectors in Rivers State.

Table 7: Relationship between instrumental information utilization and Patients' satisfaction

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		Instrumental information utilization	Patient satisfaction
	Correlation Coefficient		
Instrumental information utilization	Sig. (2-tailed) N	1.000 .	.628**
Patient satisfaction	Correlation Coefficient Sig. (2-tailed) N	190 .628 ** .000 190	.000 190 1.000 . 190

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

Source: Research survey, 2019.

Table 7 showed the Spearman's correlation coefficient; $r = 0.628$, probability Value (PV) = 0.000 < 0.05 (95% level of freedom). This showed that there is a significant positive relationship between Instrumental information utilization strategy and Patients' satisfaction of Health sectors in Rivers State. Therefore implementing instrumental information utilization strategy will increase Patients' satisfaction of Health sectors in Rivers State.

Table 8 Decision summary.

Hypotheses	Decision	Basis for decision	Remark
H ₀₁ : There is no significant relationship between instrumental information utilization strategy and quality service delivery	Reject the Null Hypothesis	Correlation Coefficient = 0.830 $p = 0.000 < 0.05$.	There is Strong positive relationship
H ₀₂ : There is no significant relationship between instrumental information utilization strategy and Patients satisfaction	Reject the Null Hypothesis	Correlation Coefficient = 0.628 $p = 0.000 < 0.05$.	There is strong positive relationship

4.0 Conclusion and Recommendations

Instrumental information utilization strategy is effective tools that should be employed in the health sectors in Rivers State to improve quality service delivery and patients' satisfaction. It requires that one level must be completed before going to the order level. This implies that there should be proper implementation of instrumental information utilization. The health sectors require information from the non-medical officers to the medical professional. The following recommendations are hereby made to enhanced instrumental information utilization Strategy and productivity of health sectors in Rivers State.

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1. Instrumental information utilization strategy should be proper implemented in the health sectors in Rivers State.
2. The health personnel and management of health sectors should be properly educated to improve upon their method of collecting, analysing, used and further research on health information to improve quality service delivery and patients satisfaction..

REFERENCES

- Adler-Milstien, J., & Bates, D. W. (2010). Paperless healthcare: Progress and challenges of an information technology-enabled healthcare system. *Business Horizons*, 53(2), 119–130.
- Agaba, D., & Tenuche, M. (2010). Managing the global economic meltdown in a consolidated banking sector of Nigeria: Rhetorics or realities. *Current Research Journal of Economic Theory*, 2(1), 16–21.
- Aghajani, M. (2002). Analytical and comparative study of hospital information systems. *Medicine and Islam*, 47, 36–29.
- Agudosy, F. I. (2012). Nigerian population and healthcare facilities. *The Touch Magazine*, 20–21.
- Ahiauazu, A. I., & Asawo, S. P. (2016). *Advanced social research methods*. Port Harcourt: CIMRAT.
- Aikins, I., Ahmed, M., & Adzimah, E. D. (2014). Assessing the role of quality service delivery in client choice for healthcare. *European Journal of Logistics, Purchasing and Supply Chain Management*, 2(3), 1–23.
- Almeida, M. (2005). The evolution of the incubator movement in Brazil. *International Journal of Technology and Globalisation*, 1(2), 258–277.
- Alzaidiyeen, N. J., & Almwidiah, R. S. (2012). A theoretical overview on the utilization of information and communication technology (ICT) in educational settings. *International Interdisciplinary Journal of Education*, 1(2), 34.
- Amin, S., Das, J., & Goldstein, M. (2008). *Are you being served? New tools for measuring service delivery*. Washington, DC: World Bank.
- Arnold, R. D., & Wade, J. P. (2015). A definition of system thinking: A system approach. Retrieved June 15, from www.sciencedirect.com
- Anderson, C. J. (2003). The psychology of doing nothing: Forms of decision avoidance result from reason and emotion. *Psychological Bulletin*, 129(1), 139–167.
- Armijo, D., McLean, C., & Werner, K. (2009). Electronic health record usability: Evaluation and use case framework.
- Armstrong, R., Waters, E., Crockett, B., & Keleher, H. (2007). The nature of evidence resources and knowledge translation for health promotion practitioners. *Health Promotion International*, 22(3), 254–260.

Original Article

- Asenso-Okyere, K., Chiang, C., Thangata, P., & Andam, K. S. (2011). Interactions between health and farm-labour productivity. *International Food Policy Research Institute*, Washington, DC.
- Auerbach, A., Landefeld, C., & Shojania, K. (2007). The tension between needing to improve care and knowing how to do it. *New England Journal of Medicine*, 357, 608–613.
- Aziz, H., Bearden, R., & Elmi, A. (2015). Patient–physician relationship and the role of clinical decision support systems. Retrieved July 15 from <https://qspace.qu.edu.qa/bitstream/handle>
- Backer, T. E. (1991). Knowledge utilization: The third wave. *Knowledge*, 12, 255–240.
- Balabanova, D., McKee, M., et al. (2004). Health service utilization in the former Soviet Union: Evidence from eight countries. *Health Service Resources*, 39(6), 27–50.
- Ball, M., Weaver, C., & Kiel, J. (2013). *Healthcare information management systems: Cases, strategies, and solutions*. Springer Science & Business Media.
- Behara, A. (2004). The role of emotion in decision making: Evidence from neurological patients with orbitofrontal damage. *Brain and Cognition*, 55(1), 30–40.
- Berry, L. L., & Bendapudi, N. (2007). Health care: A fertile field for service research. *Journal of Service Research*, 10(2), 111–122.
- Bhattia, J. C., & Cleland, J. (2001). Health care seeking and expenditure by young Indian mothers in the public and private sectors. *Health Policy and Planning*, 16(1), 55–61.
- Cahill, S. (2014). Structuring information and incentives to improve health. *Bulletin of the World Health Organization*, 83(8).
- Cook, D. A., Sorensen, K. J., Nishimura, R. A., Ommen, S. R., & Lloyd, F. J. (2015). A comprehensive information technology system to support physician learning at the point of care. *Academic Medicine*, 90(1).
- Cresswell, K., & Sheikh, A. (2013). Organizational issues in the implementation and adoption of health information technology innovations: An interpretative review. *International Journal of Medical Informatics*, 82(5), e73–e86.
- Criswell, D. F., & Parchman, M. L. (2002). Handheld computer use in U.S. family practice residency programs. *Journal of the American Medical Informatics Association*, 9(1), 80–86.
- Cysneiros, L., & Kushniruk, A. W. (2003). Bringing usability to the early stages of software development. In *Proceedings of the 11th IEEE International Requirements Engineering Conference* (pp. 359–361).
- Etzkowitz, H., & Leydesdorff, L. (2000). The dynamics of innovation: From national systems and “Mode 2” to a triple helix of university–industry–government relations. *Research Policy*, 29(2), 109–123.

Original Article

- Fellows, L. (2004). The cognitive neuroscience of human decision-making: A review and conceptual framework. *Behavioural and Cognitive Neuroscience Reviews*, 3(3), 159–172.
- Garrido, T., Raymond, B., Jamieson, L., Liang, L., & Wiesenthal, A. (2004). Making the business case for hospital information systems. *Journal of Healthcare Finance*, 31(2), 16–25.
- Gattini, C. H. (2009). Improving the structure and performance of national health information systems. *Technical Series on Information for Decision-Making*, 3.
- Gill, L., & White, L. (2009). A critical review of patient satisfaction. *Leadership in Health Services*, 22(1), 8–19.
- Glaser, J., Henley, D. E., Downing, G., & Brinner, K. M. (2008). Advancing personalized health care through health information technology: An update from the American Health Information Community's Personalized Healthcare Workgroup. *Journal of the American Medical Informatics Association*, 15(4), 391–396.
- Green, L. W., Ottoson, J. M., García, C., & Hiatt, R. A. (2009). Diffusion theory and knowledge dissemination, utilization, and integration in public health. *Annual Review of Public Health*, 30, 151–174.
- Harutyunyan, T., Demirchyan, A., Thompson, M. E., & Petrosyan, V. (2010). Patient satisfaction with primary care in Armenia: Good rating of bad services? *Health Services Management Research*, 23(1), 12–17.
- Hysong, S. J. (2009). Meta-analysis: Audit and feedback features impact effectiveness on care quality. *Medical Care*, 47(3), 356–363.
- International Council of Nurses. (2012). *Closing the gap: From evidence to action*. Retrieved June 16 from <http://www.icn.ch/publications>
- Jacob, J. (2009). The global financial crisis and leadership challenges in Africa. *African Journal of Contemporary*, 9(3), 194–2002.
- Jansen, W., & Ayers, R. (2005). An overview and analysis of PDA forensic tools. *Digital Investigation*, 2(2), 120–132.