

# An Appraisal Of The Use Of ICT By The Professionals In Nigeria Construction Industry

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*Abstract: A lot of advancement has been witnessed in the construction industry. This paper has been able to appraise the use of ICT in the Nigeria construction industry by the professionals. The aim of this study is to appraise the use of ICT by the professionals in Nigeria construction industry while the objectives are to appraise the various software being used by the professionals in construction industry, assess the impact of this software on the construction industry in Nigeria and to identify the challenges of ICT to the construction industry in Nigeria. Related literature were reviewed to aids the direction of this study. Data were obtained through the administration of questionnaire to competent respondents. Data obtained from questionnaire were analyzed using percentage distribution table and mean score by implementing statistical packages for social science (SPSS). The various softwares available for professionals were identified while the challenges facing the utilization of the ICT by the professionals were also identified. It could be noted that despite the various benefits accruing to the utilization of ICT, professionals are yet to fully log in and be completely immersed in the trend that is engulfing the construction industry in the advanced countries. Conclusively, many professionals in the construction industry are relevant to switch to the new method of construction and this retard the level of productivity in construction industry. Therefore, professionals need to make themselves relevant in the face of new technologies.*

*Keyword: Construction industry, Professionals, Information Communication Technology, Computer Software and Nigeria.*

## I. INTRODUCTION

In the construction industry there is a necessity for innovative methods to improve the construction efficiency in order to move with the current technological advancement. Construction projects require effective collaboration and coordination among the diverse project participants and can be done effectively by means of communication between all the project participants. Combination of site positioning, design requirements, materials selection, budget constraints and the availability of specialized skills makes each building project absolutely unique. Also, the construction industry is well-known for its highly fragmented and competitive environment. Nowadays the majority of the building projects are hardly treated without traditional communication means, such as

face-to-face meetings and exchange of paper documents (Sergy, 2011).

The industry is characterized by inaccurate and untimely communication that often results in costly delays to the progress of the project. Thus, one of the most significant problems presently facing the construction industry is communication. The Architecture/Engineering/Construction (AEC) industry shows huge interest in accepting of new technologies in the sphere of an extension building information model, data analysis, information sharing, communication and collaboration. Following this way, it is possible to improve communication, increase client satisfaction and reduce coordination error in construction. ICT creates necessary conditions for the complete approach to project delivery. The key advantage to professionals is the

possibility to consider and produce projects changes at any time (Sergy, 2011).

These were buttressed by Peansupap and Walker 2005, that much effort has been directed toward improving construction productivity and the use of information and communication technology (ICT) in construction and this is an area worth concentrating upon because it can decrease the time for data processing, communicating information and increase overall productivity.

The attitude portrayed by professional in construction industry to investing on or adapting new technology was worrisome. If information and communication technology had been used for the execution of project works, the patter of work of the construction work would have changed.

The problem of compatibility and standardization of equipment sold by different manufacturers and also the absence of adequately trained staff for maintenance and repair of spare for different types of information and communication technology equipment are too cumbersome.

However, most inhabitant do not have access to electricity, thereby denying rural construction industry opportunity to benefits from site of all electronics equipment such television, radio and computers etc. the professionals in construction industry lack the skill to fully utilize technology in curriculum implementation hence the traditional method approach still dominates. Professionals also lack the effective tools, techniques and assistance that can help them develop computer based projects and activities designed to improve technology in construction industry.

Similarly, the construction industry also lacks relevant software, the cost of producing and limited access to the internet; thereby affect the execution of the project. Hewage et al (2008).

Consequently, the study explored the use of Information Communication Technology [ICT] by the professionals in Nigerian construction industry with a view to encourage the professionals concerned. It also appraise the various software being used by the professionals in construction industry, assess the impact of this software on the construction industry and identify the challenges of ICT to the construction industry.

## II. LITERATURE REVIEW

Communication can be described as the process of transmitting and receiving ideas, information and messages.

Information technology span wide variety are that include but are not limited to things such as process, computer software, computer hardware, programming languages and data construct. Information and communication technology is a study, design, development, implementation support or management of computer-based information system. It deals with the use of electronic computers software to securely convert, store protect, process, transmit, input, output and retrieve information (Capron, 2000).

### COMPUTER SOFTWARE

Computer needs a set of instructions to work effectively and be capable of solving a particular problem. Software is a

set of instruction of program(s) required by the computer to perform specific task. Appraising the computer softwares available in the construction industry thus comes up the following:

### COMPUTER SOFTWARE FOR ARCHITECTURE

- ✓ *AUTODESK REVIT*: Autodesk revit is a major player in building information modeling software for architects and engineers. It allows users to design a building and its components in 3D, annotate the model with 2D drafting elements and access building information from the building model database. Revit is \$D BIM capable with tools to plan and track various stages in building's lifecycle, from inception to construction and later demolition.
- ✓ *SKETCH UP*: Sketch up is a 3D modeling program optimized for a broad range of applications such as architectural, civil, mechanical, film as well as video game design and available in free as well as "professional versions" (Bacus 2012). The program highlight its ease of use. And an online repository of model Assemblies (e.g. windows, doors, automobiles etc. ) known as 3D ware house enable designer to locate, download, use and contribute free models. The program include a drawing layout functionality, allows surface rendering a variable "styles", accommodate third party "plug-in" programs enabling other capabilities (e.g. near photo realistic rendering) and enables placement of its models within Google earth. [www.sketchup.com](http://www.sketchup.com) (2010)
- ✓ *CATIA*: Computer Aided Three Dimensional Interactive Application (CATIA) is a multi-platform CAD/CAM/CAE commercial software suite developed by the French company dessaults systems written in C++ programming language. It is the corner stone of the desault systems product lifecycle management software suite. CATIA is commonly referred to as a 3D product lifecycle management software suite. It supports multiple stages of product development (CAX), from conceptualization, design (CAD), manufacturing (CAM), and engineering (CAE).  
CATIA facilitates collaborative engineering across disciplines, mechanical engineering . CATIA provides a suite of surfacing, reverse engineering and visualization solutions to create, modify, and validate complex innovative shapes.  
CATIA enables the creation of 3D parts, from 3D sketches, sheet metal, composites, and molded, forged or tooling parts up to the definition of mechanical assemblies. CATIA offers a solution to model complex and intelligent products through the systems engineering approach.
- ✓ *PRIMAVERA*: Primavera system are a brand name under which range of software packages that collectively forms a comprehensive Enterprise Project Portfolio Management (EPPM) solution are marketed. The focus of primavera a EPPM software is to allow organization to effectively manage their program and projects regardless of complexity. The software provides end-end, real-time visibility of all corporate information to inform portfolio management decision, determine the correct resources and ensure individual project teams have the appropriate

skills to complete any given product, Peter (2012). Primavera software includes project management collaboration and control capabilities and integrates with other enterprise software such as Oracle Or SAP'S ERP system.

- ✓ **AUTOCAD:** Autocad is a software for computer aided design (CAD) and drafting. The software supports both 2D and 3D formats. Autocad is now used in a range of industries, employed by architect, project managers and engineers, amongst other professions. Autocad was derived from a program called interact, which was written in a proprietary language (SPL) by inventor Michael Riddle. The modern autocad includes a full set of basic solid modeling and 3D tools. The release AUTOCAD 2007 included the improved 3D modeling that provided better navigation when working in 3D, Cohn, (2011).

### III. SOFTWARE PACKAGES FOR QUANTITY SURVEYOR

The productivity and efficiency of the Nigerian Quantity Surveyors stand to be greatly boosted if available software packages are acquired and applied in their professional practice to carry out various operations. The increasing and use of the technology in work practices however, necessitate the development of different specialist software packages for performing the array tasks involved in the practices however, necessitate the development of different specialist software packages for performing the array of tasks involved in the practices. These packages include: QS plus, winQS, ENGplus, Kwiest, Bill cost, Master bill, Computer Aided taking off (CATO), Estimator, Digitizers, QSCAD, QS lotus, Vector, Prochain plus, MS project, and Feasibility estimating solution.

- ✓ **QS PLUS:** This is a comprehensive, efficient and cost effective international software solution for quantity surveyor and cost engineers. It is used for the following:
  - Take off produce cost plan and bills of quantities.
  - QS plus uses dimension ( $x$ ) to speed up the taking off process.
  - Manage the monthly progress payment.
- ✓ **WIN QS:** it is used for the following;
  - The production estimates documents
  - The calculation of monthly valuations
  - The analysis of cost per building on an elemental basis
  - Contract price adjustment calculation
  - Tender analysis
  - Cost report
- ✓ **KWIKEST:** It facilitates the preparation of building cost estimate incorporating element cost analysis. Bills of Quantities rate build ups, construction cash flows, material break down and progress payments. It is an application design Quantity Surveyor, Building contractors and project managers and suitable for projects of all sites.
- ✓ **BILL COST:** This is a complete electronic estimating, scheduling and management system for the construction industry with the full set of management tools. Bill cost takes the user from initial estimating stage and manages

the total project with function such as cost control, materials order, profit calculations, the issuing of certificate, project scheduling, etc.

- ✓ **VECTOR:** This Offer fast and efficient creation of documents within the professionals, Quantity surveying office. The acclaimed flexibility of vector provides superior software for creating: breading brush estimate, cost plans, bill of Quantity, specifications, valuation, final account and measured term work. Vectors make it easy to create document from scratch even better. It is simple to incorporate part of borrow from your existing document so that have to reinvent the wheel.
- ✓ **MASTER BILL:** This allows the user store up to 15 sets of tender rate which may be entered as unit rate, lump sum, provisional sum.

### IV. CIVIL ENGINEERING SOFTWARE

There are varieties of software programs which are available for different specialized disciplines of civil engineering. Most civil engineers practice in specialized subsets of civil engineering, such as geotechnical engineering, structural engineering, transportation engineering, hydraulic engineering, project and construction management and land surveying. The trend to implement software programs into the civil engineering industry began as educational concerns for the future as civil engineering prepared to enter the 21<sup>st</sup> century. The applications are:

- ✓ **AUTOCAD:** Autocad is a software for computer aided design (CAD) and drafting. AutoCAD civil 2012 offers the ability to streamline application as well as other Autodesk programs. The software supports both 2D and 3D formats. The software is developed and sold by auto desk, inc. Cohn, (2011). The AutoCad is now used in a range of industries, employed by architect, project managers and engineers, amongst other professions. The modern AutoCad includes a full set of basic solid modeling and 3D tools. The release of AUTOCAD 2007 included the improved 3D modeling that provided better navigation when working in 3D.\
- ✓ **AUTODESK:** Autodesk program allow users to design a building and its components in 3D, annotate the model of 2D drafting elements and access building information from the building model database.
- ✓ **CIVIL DESIGNER:** This is an example of a design package which forms an integrated data gathering, drawing, surface modeling and design system for civil engineering infrastructure. Another aspect of software programs utilized by civil engineers is not only for the use of designing site infrastructure, but also to maintain it. As recent as 2011, there are programs available which allow the engineer to monitor bridges for cracks and settlements, as well as water distribution networks for failing subsurface pipes through the use of sensor installed. This has created the ability for the engineering to eliminate some of the costs and liabilities associated with human inspectors (Xeidakis, 1994)
- ✓ **COMPUTER AIDED DESIGN (CAD):** Computer aided design and drafting (CADD) is the use of computer

system to assist in the creation of modification, analysis, or optimization of a design. Computer aided drafting describes the process of creating a technical drawing with the use of computer software

#### V. QUANTITY SURVEYING PRACTICE AND INFORMATION TECHNOLOGY

Quantity surveying is a profession that is charged with overall financial management of construction projects and cost consultancy services to clients of capital and development projects ensuring that resources of the constructing industry are economy. The need for emphasis to be placed on the assertive roles of the Quality Surveyors in Nigeria cannot be more timely than now in line with the global impact of information technology on all sectors.

#### NIGERIAN QUANTITY SURVEYORS' ATTITUDE TO ICT

Adetola (1999) asserted that the attitude portrayed by Nigerian quantity surveyor to investing on or adapting to new technology was worrisome.

However, it is sad to note that the vast majority of Nigerian quantity surveyors are still in dark working with Stone Age principle. Their level of awareness of information technology is very low. The national economic down turn in Nigeria coupled with lack of willingness to break away from old pattern of work worse the matter. This situation is highly disturbing and should arouse great concern from practicing quantity surveyors and their employers. The Nigerian institute of quantity surveyors also should Nigeria woke up to this and being swept away from the competitive economy.

#### VI. THE IMPACT OF INFORMATION AND COMMUNICATION TECHNOLOGY

##### ✓ ICT AS AIDS TO TEACHING AND LEARNING

The importance of ICT is quite evidence from the educational perspective. Through the chalkboard, textbooks, radio/television and film have been used for educational purpose over the years, none has quite impacted on the educational process like the computer. While television and film impact only on the audiovisual facilities of users, the computer is capable of activating the sense of sight, hearing and touch of the users. ICT has the capacity to provide higher interactive potential for user to develop their individual, intellectual and creative ability. The main purpose of ICT "consist just in the development of human mental resources, which allow people to both successfully apply the existing knowledge.

There is no doubt that ICT provides productive teaching and learning in order to increase people's creative and intellectual resources especially in today's information society.

##### ✓ ICT AS A TOOL FOR CONSTRUCTION MANAGEMENT

It is uncommon to find that many establishments in Nigeria, including construction industry, still keep records in files and tucked them away in cabinets where they accumulate dust, many of these file are often eaten up by rodents and cockroaches thus rendering them irretrievable. A great deal of routine administrative work in government establishment is still done manually with the state and the federal government showing little or no interest in embracing ICT. The official administrative drudgery in government offices and construction industry can be better managed through ICT. Administrative functions include a wide verity of activities such as governance, supervision, support services, infrastructure, finance, budgeting, accounting personnel selection and training system monitoring and evaluation, monitoring, facilities procurement and management, equipment maintenance, research, and so on.

The prevailing condition in construction management in Nigeria disheartening and discouraging. The country seems to be living in prehistoric times in the construction management while even developing countries seems to be living in prehistoric times in the construction management while even developing countries in Africa such as South Africa, Kenya, Uganda and Tanzania are far ahead of Nigeria in ICT applications. Despite its huge material resources and population endowment. Nigeria cannot be counted among progressive nations using ICT in construction management, as technology has become critical tool for achieving success in construction industries, Marshal et al (2007).

##### ✓ ICT AS INSTRUMENT OF ECONOMIC DEVELOPMENT

This has to do with the assessment of value for money and cost effectiveness in design. Relying upon analysis and evaluating techniques necessary for costing, measuring and valuing in order that the clients may be advised correctly.

The present government in Nigeria is pursuing the deregulation of the economy with a passion that has never seen in the country. It is striving for a private sector driven economy with a passion that has never seen in the country. It is striving for a private sector driven economy hence it is selling its shares in many companies in which government hold majority shares have been mismanaged over the years that have become huge burden and a financial drain-pipe to government, hence deregulation in the country today. The importance of ICT in Nigeria strongly manifests itself from an economic stand point. Today, as a result of globalization, industrial competition is increasingly harsh and companies must not only come up with innovative products and service to the global market but must do so with unprecedented speed.

##### ✓ ICT AS TOOL FOR HIGHER TECHNOLOGICAL ADVANCEMENT

In today's world, not only are we surrounded by technology, but our primary means of reaching others in far and near places are mediated by technology. There is no doubt

that one of today's realities is an extremely fast development of high – technology. This has resulted in a huge change of individual's life in business and private settings, there is strong need to know and use modern technology in our social life, the economy, the business, the construction and education. New and sophisticated breakthroughs in high technology encourage construction industry to introduce technological innovations rapidly into their construction practices. There is a high demand for highly skilled and technologically trained workers. Unfortunately, most Nigerians graduate acquired overdosed of theoretical knowledge, which does not match well with demand of workplace practices. Modern construction industry needs professionals and employees that are proactive. They need intellectual and creative Quantity Surveyor who can deal with the assessment of the value for money and cost effectiveness in design, Afri et al (2001).

Others impacts are; information and communication technology and communication technology enhance productivity, makes professionals job easier, improves presentation, upgrades social image of construction industry.

## VII. CHALLENGES OF INFORMATION AND COMMUNICATION TECHNOLOGY

In the recent past, there has been emergence of Information and Communication Technology revolution in Nigeria which has equally affected the advancement of technology in construction industry. The global community is being determined by the ease and speed with which people have access to data and how they can effectively use them to technologically improve their global outlook. These are the core theoretical aspects technology where professionals can manipulate information and communication technology hard and software gadgets to support their personalized instruction or merely surfing in the net for general information and data gathering purposes. Therefore, there is an urgent need on the part of academic institutions or partnering with private services providing agencies to acquire information and communication skill necessary for learners to use enhancing their capacity in research and development in every field of study.

Meanwhile, with the proliferation of construction industry in Nigeria, and with the concept of Information and Communication Technology becoming popular in most of them, quite a huge sum of money will be expended annually on the importation of computer hardware's and other Information Technology accessories including construction technology equipment for training.

Consequently, (Durodola 2004) argued that most of these hard and software ICT materials are "inappropriate and ineffective" for use in our rural environment due to absence of electricity. Another problem which he also identified was that hard and software prototypes are hardly subjected to formative evaluation so as to determine their usefulness before such equipment can be mass produced for the use of general learning public in our educational institutions.

As regards ICT software materials, Capron (2000) also provided reasons why they considered "unsuitable for Nigeria.

Some of the reasons he gave was that the sophistication in construction and operations most equipment, the absence of adequately trained staff for maintenance and repair and the non-available of spare part for the different types ICT equipment . Finally. The reliance on electricity as the major source of power for most of the ICT equipment with little regard to the fact that these equipment may be mostly needed in rural part of Nigeria where no electricity is. From the above. The key challenges are as following:

### ✓ COST

The price of computer hardware and software continues to drop in most development countries but in developing countries, such as Nigeria, the cost of computers is several times more expensive. While a personal computer may cost less than a month's wages in the United States, the average Nigeria worker may require more than years' income to buy one.

### ✓ WEAK INFRASTRUCTURE

In Nigeria, formidable obstacle to use of information and communication technology is infrastructure deficiencies. Computer equipment was made to function with other infrastructure such as electricity under "controlled conditions" for the past fifteen years. Nigeria has been having difficulty providing stable and reliable electricity supply to every nook and cranny of the country without success. Currently, there is no part of the country, which can boast of electricity supply for 24 hours a day except probably area where government officials live. In rural Nigeria most inhabitant do not have access to electricity, thereby denying rural construction industry opportunity benefits from the use of electronic equipment.

### ✓ LACK OF SKILL

Nigerian construction industry does not lack information infrastructure, it also lacked the human skills and knowledge to fully integrate Information and Communication Technology, robotics in construction industry and concrete technology. To use all these technology in construction industry in Nigeria, the need for locally trained workers to install, maintain and support these systems cannot be over emphasized. There is acute shortage of trained personnel in application software, operating system, network administration and local technicians to service and repair computer facilities. Those who are designed to use computers in Nigeria do not received adequate training, at worst; do not receive any training at all.

### ✓ LACK OF RELEVANT SOFTWARE

There is no doubt that ultimate power of technology is the content and the communication. Through software developers and publishers in the developed countries have been trying for long to develop software and multimedia that have universal application but due to a great discrepancy between relevant software supply and demand in developing countries like

Nigeria. According to Capron H (2000), there are clear indications from many countries that supply of relevant and appropriate software is a major bottleneck obstructing wider application of the computer. Even if Nigerian tires to approach this software famine by producing software that would suit its educational philosophers, there are two major problems to be encountered. First, the cost of producing relevant software for the country construction industry system is enormous. Second, there is dearth of qualified computer software designers in the country to overcome this, people need to be trained in instructional design.

✓ LIMITED ACCESS TO THE INTERNET

In Nigeria there are few internet providers that provide internet gateway services to customers who are often exploited and defrauded. The few reputable companies, which render reliable services, charged high fees thus limiting access to the internet, the greatest technological challenge in Nigeria is how to establish reliable cost effective internet. The greatest technological challenges in Nigeria is how to establish reliable cost effective internet connectivity. In a country where only about 0.6% of the populace has home person eel computers, the few reliable internet providers who have investigated huge sum of money in the business have very small clientele. They have to charge high fees in order to recoup investment in reasonable time. Nigeria has about 500,000 internets subscriber.

Again, due to the lack of adequate electricity supply, especially in rural areas in Nigeria those areas have no access to the internet and are perpetually isolated and estranged from the world's information superhighway.

Nigeria construction industry lagging behind other Africa countries such as Uganda, Senegal, and South Africa who are already helping professional and in those countries to become better information users. All internet services providers in Nigeria are based in the urban areas.

✓ THE COST OF ENGAGING COMPUTER LITERATE PROFESSIONAL FOR ADEQUATE TRAINING

The adaptation of standardization requires a tremendous education and training effort. Hence, requires an initial immense cost. This is cited as one o he grater hindrance to the use of information and communication technology.

✓ RESISTANCE TO CHANGES

Many professionals in construction industries are reluctant to adopt information and communication technology. This is due to the fact that many professionals are familiar with the conventional system and they are not ready to change.

Other challenges include; Lack of search skill. Availability in the market, fear of new technology making professionals redundant, inadequate job order to encourage the investment in computer.

VIII. RESEARCH METHODOLOGY

With the review of existing literatures relating to the subject matter, it is intended to fashion out an appropriate methodology for the study, which can advise a specific objectives of the research. This discusses issues such as target population, the sample design in the data collection, sampling techniques and sample size, the method of data collection, the instrument of data collection and method of data analysis.

A descriptive survey was employed. In practice, it is difficult to find complete list or record of the element in the survey population. The target populations for this study are the professionals in the construction industry at the western part of Nigeria. The sample sizes are draw from quantity surveyors, Architects, Civil Engineers and Builders etc. Hundred [100] questionnaires were distributed while a total of Eighty [80] were collected which are duly considered for analysis of results. The sample frame is the list of the entire population from which a sample can be selected from the population. The information gathered as a sample for this research was derived from construction organization, government parastatals and individuals enterprise.

The method used for the analysis of this research work is basically statistical package for social science [SPSS] using ranking. During the analysis of data for this research, the method employed is the frequency method under which two of its tools were adopted. The tools are; Percentile method, Mean score method. The background information of respondents was analysed using percentage. The mean level of score questions was assessed by the mean score. The confident interval will be 95% while the significant level will be 5%.

- ✓ Percentile method [%]
- ✓ During the analysis of the data those questions relating to the respondent were analysed by rating option as a percentage of the total. This is achieved by giving the highest percentage as the most valid option of each question.
- ✓ Mean score method [x]

This frequency method helps to derive the average of more option and arriving at mean score for decision making.

The mean score here is derived as:  $\frac{\sum x}{\sum f}$

Therefore, the empirical will be: X = means F = frequency

s/n	Items	frequency	Percentage[%]	Cum.percentage [%]
2.	Years of experience	2	2.50	2.50
i	[80]	6	7.50	10.00
iii	0 – 5	21	26.25	36.25
iv	6 – 10	39	48.75	85.00
v	11 – 15	12	15.00	100
	16 – 20			
	21 and above			
3.	Number of project handled [80]	1	1.25	1.25
i		17	21.25	22.50
ii	0 – 5	27	33.75	56.25
iii	6 – 10	32	40.00	96.25
iv	11 – 15	3	3.75	100
v	16 – 20			
	21 and			

	above			
4.	Qualification			
i	of	37	46.25	46.25
ii	respondent	31	38.75	85.00
iii	[80]	8	10.00	95.00
iv	HND	1	1.25	96.25
v	B.Sc	3	3.75	100
	M.Sc			
	Ph. D			
	OTHERS			

Source: Field Survey 2018

Table 1: Presentation Of Bio-Data Section Of The Questionnaire

From table 1.0, it can be observed that 25 percent of the respondents are Architects, 48.75 percent are Quantity Surveyors, 12.50 percent are Civil Engineers, 11.25 percent are Builders and 2.50 percent are others.

For the year of experience, 2.50 percent has year of experience of 0-5 years, 7.50 percent has year of experience of 6-10 years, 26.25 percent has year of experience of 11-15 year, 48.75 percent has years of experience of 16-20 year while 15 percent has years of experience of 21 year and above.

On the number of project handled, it can be observed that respondents of between 0-5 handled 1.25 percent of the project, 6-10 of the respondents handled 21.25 percent, 11-15 of the respondents handled 33.75 percent, 16-20 of the respondents handled 40 percent while 21 years and above handled 3.75 percent.

Likewise, out of 80 respondents that were used for the study, it was observed that 46.25 percent of the respondents are HND graduate, 38.75 percent of the respondents are B.Sc graduate, 10 percent of the respondents are M.Sc graduate, 1.25 percent of respondents are Ph.D graduate and 3.75 percent of the respondents were covered by others.

THE IMPACT	MEAN	RANK
ICT as an instrument of economic Development	4.78	1 <sup>st</sup>
ICT as a tool for technological advancement	4.78	1 <sup>st</sup>
ICT enhance productivity	4.66	3 <sup>rd</sup>
ICT makes professionals job easier	4.64	4 <sup>th</sup>
ICT as a tool for construction management	4.60	5 <sup>th</sup>
ICT aids to teaching and learning	4.58	6 <sup>th</sup>
ICT upgrades social image of construction industry	4.50	7 <sup>th</sup>
ICT improve presentation	3.50	8 <sup>th</sup>

Source: Field Survey 2018

Table 2: The Impact of Information and Communication Technology to Professionals

Table 2. shows the survey ranking of respondent opinion to the impact of information in communication technology to professionals. The ranking is from the mean range 4.78 to 3.50 The respondent strongly agree that information and communication is an instrument of economic development and also a tool for technological advancement, the ca t is that information and communication technology enhance good productivity.

COMPUTER SOFTWARE	MEAN	RANK
AutoCAD	4.62	1 <sup>st</sup>
Master bill	4.10	2 <sup>nd</sup>
Computer aided design	3.84	3 <sup>rd</sup>
Vector	3.58	4 <sup>th</sup>
Autodesk	2.82	5 <sup>th</sup>
QS plus	3.28	6 <sup>th</sup>
Bill cost	2.96	7 <sup>th</sup>
Kwikest	2.82	8 <sup>th</sup>
Primavera	2.44	9 <sup>th</sup>
Catia	2.38	10 <sup>th</sup>
Win QS	2.38	11 <sup>th</sup>
Sketch up	2.22	12 <sup>th</sup>
Continue Education unit	1.56	13 <sup>th</sup>

Source Field Survey 2018

Table 3: Extent at Which Usage of Computer Software to Professionals Performs Efficiently

Table 3: illustrates the respondent's assessment on the level of the use of the various computer software uses by professionals in construction industry. The ranking fell between mean range 4.62 to 1.56. the ranking describe that the level of the usage of AutoCAD is very high, there the software with low level is the continue education unit.

However, this give an indication that the use of software by professionals will makes their works efficient and effective if is been highly adopted.

CHALLENGES	MEAN	RANK
Resistance to changes	5.86	1 <sup>st</sup>
Lack of search skill	4.80	2 <sup>nd</sup>
Lack of relevant software	4.78	3 <sup>rd</sup>
High initial cost of acquisition	4.78	3 <sup>rd</sup>
Lukewarm attitude towards information and communication technology	4.74	5 <sup>th</sup>
The cost of engaging computer literate		
Professionals for adequate training	4.74	5 <sup>th</sup>
Limited access to internet	4.70	7 <sup>th</sup>
Poor electricity / irregular power supply	4.70	7 <sup>th</sup>
Fear of new technology making professionals redundant	4.68	9 <sup>th</sup>
Inadequate job order to encourage the investment in Computer	4.68	9 <sup>th</sup>
Over reliance on old system by professional	4.68	9 <sup>th</sup>
Availability of the market	3.04	12 <sup>th</sup>

Source: Field Survey 2018

Table 4 Challenges Of Information And Communication Technology In Construction Industry

Table 4. shows the level of challenges of the information and communication technology. The ranking range from the mean 5.86 to 3.04. the rating response shows that professionals are strongly reluctant of using new information and communication technology as they resist changing from their traditional system. They are adapted with traditional

system which makes information and communication technology totally new to them. However, the respondents denied the fact that there is insufficient information and communication technology equipment's and software in the market. This compliments the fact that the cost of acquisition of information and communication technology equipment and software is very high but there is availability in market.

#### IX. CONCLUSION

This paper appraised the sue of ICT by the professionals in Nigeria Construction Industry. Based on the information gathered, the following conclusion can be made on the attitude of professionals to ICT in construction industry.

It is evident that a lot of development has trailed the advent of ICT in the construction industry. It is therefore necessary for the professionals to be abreast of this and keep themselves plugged in to the development. We cannot afford to live in the dark in perpetuity. Thus, awareness should be made in order for the professionals to internalize the accruing benefits and adopt new technologies while professional bodies of each profession should organize workshops and seminars to introduce their members to work with software and equipment which will aid their work without wasting time. We will get there.

#### X. RECOMMENDATION

- ✓ Professionals in construction industry should actively improve themselves of the application and use of new technologies.
- ✓ The professionals body of each profession should organize workshops and seminars to introduce their members to work with software and equipment which will aid their work without wasting time.
- ✓ More generous financial support to be made available to provide the basic infrastructural facilities and modern equipment and machinery and experienced professionals for adequate training of the employees for the use of all the new technology and investment on heavy equipment for mechanized construction system.
- ✓ Awareness should be made in order for the professionals to internalize the accruing benefits and adopt new technology.

- ✓ The use of huge potential and knowledge by the construction industry and policy bodies to create construction innovation is an absolute need.

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