



**EFFECT OF ICT FACILITIES AWARENESS AND PERCIEVED USEFULNESS ON
LEVEL OF APPLICATION BY ESTATE SURVEYING AND VALUATION FIRMS IN
BAUCHI METROPOLIS**

**ADAMU JA'AFARU KURMI; ADEGBENGA ADEYEMI (Ph.D.); & BALA ISHIYAKU
(Ph.D.)**

Department of Estate Management & Valuation, Faculty of Environmental
Technology, Abubakar Tafawa Balewa University, Bauchi

ABSTRACT

Information communication technology has penetrated the real estate profession around the world changing the way some tasks are performed. This study assessed the effect of ICT facilities awareness and perceived usefulness on level of adoption by Estate Surveying and Valuation Firms in Bauchi Metropolis, with a view to providing information that would enhance professional practice in the study area. Population of the research constitutes all staff of estate surveying and valuation firms within Bauchi Metropolis. Data was collected through the administration of 69 close-ended questionnaires from a sample frame of 75, out of which 61 were returned and analysed using SPSS. The result of the study shows that awareness on internet ranked 1st, social media platform 2nd, while awareness on office productivity software ranked the least. For level of adoption ICT facilities, internet ranked 1st, smartphones and tablet-device ranked 2nd and valuation software ranked the least. ICT facilities awareness has been found to have strong effect on the level of adoption of ICT by estate surveying and valuation firms having a beta of .437. The study concluded that awareness level of estate surveying and valuation firms is high, that the level of adoption of ICT facilities is high and that ICT facilities awareness have significant effect on level of adoption of ICT. The study recommends that of estate surveying and valuation firms should be attending training and workshop on ICT facilities relevant to their practice so as to increase their level of awareness, estate surveying and valuation firms should adopt ICT facilities more so as to put the profession on a global scale among its contemporaries, estate surveying and valuation firms

should adopt valuation software more as it enhances accuracy and produce more reliable result as evident from previous literatures.

Keywords: ICT, Facilities, Awareness, Adoption, Estate Surveying & Valuation Firms, Software

Background to the Study

Information communication technology has infiltrated almost every aspect of our life with influence in many fields such as business, commerce and social networking (Somekh, 2013). Estate Surveying and Valuation practice functions and activities globally remains the same, rather the mode of operations of the Firms is subject to changes and variations from one place to another (Reijor, Elias, Jouko, Miettinen & Gersberg, 2007). Estate Surveying and Valuation firms in the United States are employing the use of Drones which provide real-time information such as aerial videos and images which allows agents and property managers to obtain views and present them to clients which reduces inspection time and enhances sales (Luppicine, 2016 & Newel, 2017). Drone usage in the United States real estate industry stands at 72%, with 52% in France, Great Britain 48% and Germany having the least percentage of drone adoption of 24%. While 72% of the agents in both countries use the Drone technology for aerial photography, 48% of the agents use the technology for surveying countries (Kuzman, O'Sullivan, Philippe, Koehler & Coronel, 2017). Most developed countries develop and adopt computer aided valuation long time ago. This is due to the magnitude or rate of development in this countries, thus one cannot operate solely on manual process of valuation (Ahmad, Abdul, Siti & Nur, 2013). Ayotunde (2012) opined that digital divide exists between practicing Estate Surveyors and Valuers in Nigeria and their counterparts in developed countries, this is evident in Oni, (2013) that Nigerian Estate Surveyors and Valuers who are expected to adopt the use of ICTs have not yet done so. However, Adeyemo, Kemiki, Adama and Ayoola (2015) states that real estate practice is in its early years of operation in Minna, Nigeria and almost every real estate firm in the Metropolis have adopted one form of ICT or the other. Similar, Babajide, Oyetunji and Oyetunji (2018) reveals that Nigerian real estate practitioners mostly use e-mails, Microsoft Office Packages and Spreadsheets.

Statement of the Problem

Rise of various ICTs over the course of years have led to new challenges to Real Estate Agents and Allied professionals causing them to adapt accordingly or become obsolete (Sawyer, Crowston, Wigand, & Allbritton, 2003; Elliot & Warren, 2005; Harjyot, 2017). Failure of Valuers to adopt ICTs such as Automated

Valuation Model (AVM) in valuation may likely lead the Valuers to be left far behind among their contemporaries which may render their valuation reports not acceptable because usage of ICTs helps in eliminating subjectivity in valuation (Rohana & Taher, 2012). Stephen and David, (2015) stated that non-usage of ICT facilities in valuation process makes valuation less-objective, less-verifiable and leads to producing non-realistic monetary value. Countries with rapid rate of development cannot operate solely on manual process of valuation, rather ICT facilities must be used in other to cope with the development rate (Ahmad, Abdul, Sitti & Nur, 2013). Firms may not operate effectively and efficiently in Real Estate and Property Management if they are not using Management Information Systems Software (Amannah, 2017).

Various studies and researches work have been conducted all over the world on use in the real estate profession including in Nigeria. Some of these research work includes that of Rolf, Kevin, Steve, and Marcel, (2001) on Information and Communication Technology in the Real Estate Industry; Muhammad, and David, (2006) assessing implementation of ICT among property management companies in Malaysia; Li, and Wang, (2006) real estate agency in China in the information age; Gitau, (2014) the application of information technology in real estate firms in Kenya; Amannah, (2017) Management Information System for Real Estate and Property Management. Nigeria also witness some research on usage of ICT in the Real Estate Profession, this includes that of Kakulu, (2003) on a computerized approach Real Estate Practice in Nigeria; Adeyemo, Kemiki, Adama, and Ayoola, (2015) investigates factors influencing the use of ICT in Real Estate Practice in Minna; Babajide, Oyetunji, and Oyetunji, (2018) assess barriers to ICT deployment in the Nigerian Real Estate Practice; Oyetunji, Ojo, and Oyetunji, (2018) investigates factors influencing the deployment of ICT in Nigerian Real Estate Practice.

In order to differentiate this study from existing once, ICT facilities awareness and perceived usefulness are added as constructs. Therefore, the study will focus on effect of ICT facilities awareness and perceived usefulness on level of adoption by Estate Surveying and Valuation Firms in Bauchi Metropolis.

Research Questions

1. What is the level of ICT facilities awareness by estate surveying and valuation firms in Bauchi Metropolis?
2. What is the level of adoption of ICT facilities by estate surveying and valuation firms in Bauchi Metropolis?

3. What is the effect of ICT facilities awareness on level of adoption of ICT facilities by estate surveying and valuation firms in Bauchi Metropolis?

Aim of the Study

This study is aimed at assessing the effect of ICT facilities awareness on level of adoption by Estate Surveying and Valuation Firms in Bauchi Metropolis, with a view to providing information that would enhance professional practice in the study area.

Objectives of the Study

1. To determine the level of ICT facilities awareness by estate surveying and valuation firms in Bauchi Metropolis.
2. To determine the level of adoption of ICT facilities by estate surveying and valuation firms in Bauchi Metropolis.
3. To determine the effect of ICT facilities awareness on level of adoption of ICT facilities by estate surveying and valuation firms in Bauchi Metropolis.

Information and Communication Technology (ICT)

World Bank defines ICT as World Bank definition of ICT as the set of activities which facilitates electronically means of processing, transmission and displaying of information. Kasim and Ang (2010), ICT is a technology dedicated to information storage, processing and communications. ICT refers to infrastructure and product development that facilitate the collection, storing and analysis of information that may be transmitted electronically (Sing, 2002). Information and Communication Technology involves combination of hardware, software and networks that transform raw data into useful information for efficient retrieval and use (Gaith, Khalim & Ismail, 2009). Information communication technology is an electronic device used for processing and managing information through software and hardware to disseminate, transmit, store, manage, control, manipulate, retrieve and convert data to information for enhancement, improvement and productivity of personal, organisational and institutional activities (Osakwe, 2012). Information and communication technology is an extended term that is usually employed in place of information technology (Hill & Shaw, 2013). ICT describes an extensive industrial spectrum of services concerning information technology, information systems, computer science, e-business and software engineering. ICT embraces both soft and hard

skills in programming development and systems, together with interpersonal communication (Ahmad & Daud, 2016; Moshood, Odubiyi, Aigbavboa & Thwala, 2019).

Concept of Awareness

Awareness is to perceive, to feel, or to be conscious of events, objects, thoughts, emotions or sensory patterns. Awareness can be done through lectures, orientation, seminars, conferences, bill boards, demonstrations and guided tours (Okonoko and Eruvwe, 2020). Awareness refers to public or common knowledge or understanding about a social, scientific or political issues. Awareness leads to utilisation, because if an individual is aware of event, he makes use that event (Izard, 2007). In the Islamic context awareness means consumer have special experience or acute information about a product and are aware of the permissibility aspect of such product (Ambali & Bakar, 2014). Awareness means to know, to realise or interested in knowing about something or to know that something is important. Awareness means being knowledgeable, being conscious, being informed or being alert. Awareness is the ability to perceive, to feel or to be conscious of events, objects or sensory patterns (Abdulgafoor, 2012).

Technology awareness

Awareness is a precondition for adoption of technologies, partial awareness of ICT facilities leads to gap in its adoption (Kazembe, 2021). Technology awareness is an important precondition for ICT facilities adoption to occur. Individuals may be aware of new ICT facilities because they are targeted by researchers or extension workers based on their higher probability of adoption. It may also be as a result of the individual's self-interest and effort to get exposed to the new technology (Simtowe, Muange, Munyua & Diagne, 2012). Awareness plays an important role in the acceptance of technology (Bjorn, Fitzgerald, & Scupola, n.d). Technology awareness is related to technology cognisance (Nambisan, Agarwal & Tanniru, 1999). Technology awareness is users' knowledge about the capabilities of a technology, its features, potential use, cost and benefits (Rogers, 1995). Barba-Sanchez, Martinez-Ruz, and Jimenez-Zarco, (2007) found out that lack of awareness of ICT facilities benefits and lack of training is the major barrier to ICT facilities adoption in Small and Medium Enterprises. A highly educated workforce is more likely to apply ICT facilities in their organisation running (Harindranath, Dyerson & Barnes, 2008).

Adoption of ICT Facilities by Estate Surveying and Valuation Firms

ICT facilities training is a primary organisational factors that helps users understand the usefulness of ICT facilities and the thereby adopt them (Barba-Sanchez, Martinez-Ruz, & Jimenez-Zarco, 2007). Kirkwood (2003) states that Geographical Information Systems (GIS) adoption in real estate practice makes practice easier, faster and more efficient. Babajide, Oyetunji and Oyetunji (2018) in a study conducted on barriers to ICT deployment in the Nigerian real estate practice in Lagos Metropolis, the study showed that ICT facilities are adopted in office record administration, real estate agency, real estate marketing, property management, book keeping and accounting, project management, portfolio management and consultancy services. Muhammad and David (2006) in a study in Malaysia found out that most Real Estate firms have adopted basic ICT facility. The study also shows that few of the Firms uses Laptop Computers, Scanners, Network Printer, Video Camera. Local Area Network, spread-sheets, email, data base management Software, project management software, graphic design software, mass appraisal software, asset management and property valuation software. Chukwuemeka (2012) identifies websites as form of ICTs in which property information is published and real estate transactions takes place. Muhammad and David (2007) in another study investigates the implementation of Information and Communication Technology (ICT) tools within the real estate profession and found out that appraisers adopt ICT during property inspections, preparation of valuation reports, document handling, while the usage of valuation software, project management software. Adeyemo, Kemiki, Adama and Ayoola, (2015) mention various ICT application and software that are useful in estate surveying and valuation which ranges from common applications and tools such as Laptop, Tablet Devices, office productivity software, graphics design software. The study further mentions few software that are directly related to real estate practice including Argu Valuation DCF, Corporate Real Estate Management, Database management Software, Eva Property.com, Apartment Manager XP.

Conceptual Framework

The conceptual framework for this research has two independent variables ICT Facilities Awareness and Perceived Usefulness with one dependent variable as Level of adoption, this can be seen in Figure 1.

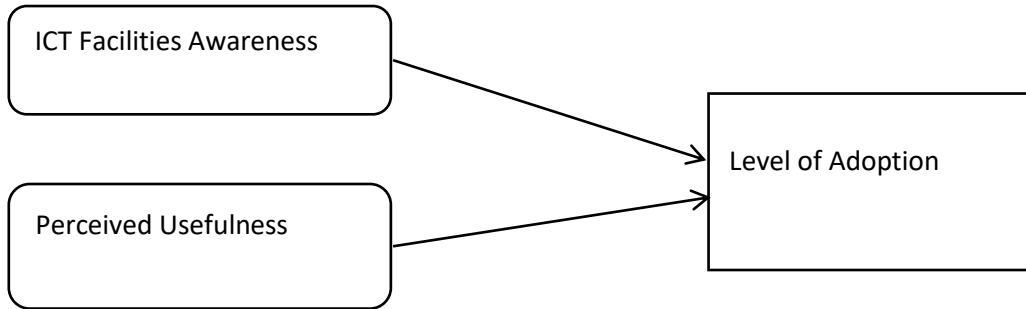


Figure 1: Conceptual Framework

Theoretical Framework

This study is supported by Technology Acceptance Model (TAM) formulated by Davis, (1989) used to explain user acceptance behaviour of new technology. TAM is increasingly applied as a fitting theory for the information management, it is widely used for predicting the acceptance, adoption and use of information technology (Chen, Li & Li, 2011). The Technology Acceptance Model has two main constructs; perceived usefulness and perceived ease of use. This study is interested in the perceived usefulness as it is one of the variable of the study. Perceived usefulness is the degree to which a person believes that using a particular system would enhance his or her job performance (Davis, 1989). The measurement items of perceived usefulness are discussed in literature review. The Technology Acceptance Model by Davis (1989) is presented in Figure 2.

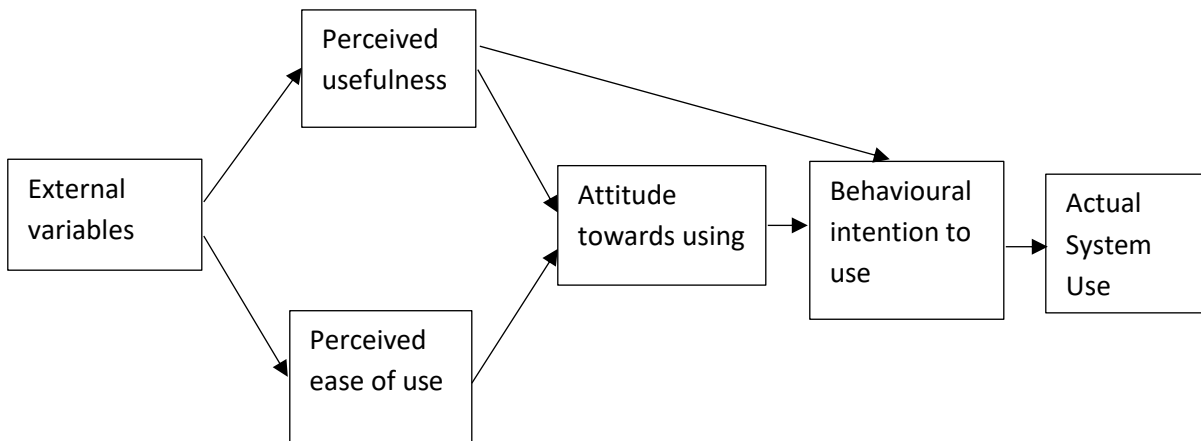


Figure 2: Technology Acceptance model

RESEARCH METHODOLOGY

Research Design

This research work used quantitative research design because the study uses numerical data and seeks to establish effect of the independent variables on the

dependent variable. The study uses survey research because data is collected in a consistent and systematic way by means of questionnaire.

Population of the Study

Professionals working under all Estate Surveying and Valuation Firms in Bauchi Metropolis constitutes the study population for this research work.

Sample Frame and Sample Size

The sample frame of 75 is gotten from a pilot survey, while sample size of 69 was found adequate and used. Determined from Krejcie and Morgan's (1970) Sample size table. Simple random sampling technique was used as sampling techniques to avoid bias and so that the entire population have equal chance of being selected

DATA PRESENTATION AND ANALYSIS

Analysis of Questionnaire Administered

A total of 69 questionnaires were administered, 61 were retrieved and analysed. All the 61 questionnaires were completely filled and found valid for analysis with an overall response rate of 88%, the result is presented in Table 1.

Table 1: Questionnaire Administration

Questionnaire	Number	Response Rate
Administered	69	-
Retrieved	61	88%
Valid	61	88%

Demographic Information of the Respondent

Table demographic information of the respondents is presented in Table 2. The frequency and percentage are presented in the table 2 and analysed.

Table 2: Demographic Information of the Respondent

Variables	Attributes	Frequency	Percentage
Gender	Male	51	83.6%
	Female	10	16.4%
Age range	20 – 30 years	18	29.5%
	31 – 40 years	35	57.4%
	41 – 50 years	4	6.6%

	51 years and above	4	6.6%
Professional Qualification	FNIVS	1	1.6%
	ANIVS	3	4.9%
	ESV	13	21.3%
	Graduate	19	31.1%
	None	25	41.0%
Years in Practice	1 – 5 years	27	44.3%
	6 – 10 years	20	32.8%
	11 – 15 years	11	18.0%
	16 – 30 years	3	4.9%
Academic Qualification	SSCE	15	24.6%
	ND	15	24.6%
	HND	11	18.0%
	B.Tech/B.Sc	13	21.3%
	M.Tech/M.Sc	5	8.2%
	Ph.D	2	3.3%

Table 2 shows the demographic information of the respondents. In terms of gender, male is 83.6% while female 16.4%. in terms of age distribution of the respondents, 20 – 30 years 29.5%, 31 – 40 years 57.4%, 41 – 50 years 6.6% 51 and above 6.6%. For professional qualification 27.8% respondents are registered professionals, while 72.1% are none registered professionals. In terms of years in practice, 1 – 5 years 44.3%, 6 – 10 years 32.8%, 11 – 15 years 18.0% and 16 – 30 years 4.9%. For academic qualifications, respondents with SSCE are 24.6%, ND 24.6%, HND 18.0%, B.Tech/B.Sc 21.3%, M.Tech/M.Sc 8.2% and Ph.D 3.3%.

ICT Facilities Awareness by Estate Surveying and Valuation Firms in Bauchi Metropolis

A descriptive analysis was carried out based on mean ranking to determine the level of ICT facilities awareness staffs of estate surveying and valuation firms in Bauchi Metropolis, the result is presented in Table 4.

Table 3 Level of ICT Facilities Awareness

	Mean	Std. Deviation	Ranking	Remark
Awareness on adoption of the Internet	4.5246	.72126	1 st	Strongly Agree
Awareness on adoption of Social Media Platforms	4.2951	.84349	2 nd	Agree

Awareness on adoption of Valuation software	4.2623	.85443	3 rd	Agree
Awareness on adoption of Smart Phone	4.2459	1.0107	4 th	Agree
Awareness on adoption of Digital Camera	4.0328	1.07962	5 th	Agree
Awareness on adoption of Graphic Design software	4.0164	.82647	6 th	Agree
Awareness on adoption of Network Printers	4.0000	1.0000	7 th	Agree
Awareness on adoption of office productivity software	3.9508	.78371	8 th	Agree

Table 3 shows the ranking of the respondents as to the level of ICT facilities awareness. The result shows that awareness on adoption of Internet ranked 1st with a mean of 4.5246, social media platforms ranked 2nd, awareness on adoption of valuation software 3rd, awareness on adoption of smartphones 4th, awareness on adoption of digital camera 5th, awareness on adoption of graphic design software ranked 6th, awareness on adoption of network printer 7th, while awareness on adoption office productivity software 8th. This finding is also in line with that of Fadamiro and Oke (2019) that members construction industry is aware that Graphics design software is utilise by professionals. Similarly, this finding is in line with the finding of Ogunnowo, Iroham and Oloke (2021) that about 50% of estate surveying and valuation firms in Lagos State are aware of the existence of valuation software.

Level of Adoption ICT Facilities by Estate Surveying and Valuation Firms in Bauchi Metropolis

	Mean	Std. Deviation	Ranking	Remark
Level of use of The Internet	4.7541	.53714	1 st	Very High
Level of use Smart Phones and Tablet-Devices	4.7213	.45207	2 nd	Very High
Level of use of Office productivity software	4.4590	.62112	3 rd	High
Level of use of Graphics Design Software	4.2951	.86302	4 th	High
Level of use of Digital Camera	4.1311	.86555	5 th	High
Level of use of Network Printer	3.6393	.73104	6 th	High
Level of use of Social Media Platforms	3.5574	1.02509	7 th	High
Level of use of Valuation software	3.1475	1.03015	8 th	Moderate

Table 4 shows the mean ranking of the level of adoption of ICT facilities by estate surveying and valuation firms in Bauchi metropolis determined with descriptive statistics based on mean ranking. Adoption of the Internet ranked 1st with a mean

of 4.6825, adoption of Smartphones and Tablet-devices ranked 2nd, Graphics design software 3rd, office productivity software 4th, digital camera 5th, Network printer 6th, social media platform ranked 7th and adoption of valuation software ranked 8th with mean of 2.9683. This finding is in line with that of Babatunde, Ajayi and Timothy (2016) that Real estate firms use social media in real estate transactions. Findings of the study is also similar to that of Oyetunji, Ojo, and Oyetunji (2018) that real estate firms highly utilise office productivity software, Graphics design software usage is also very high. Findings of Ogunnowo, Iroham and Oloke (2021) showed that about 35% of estate surveying and valuation firms in Lagos State adopts valuation software in their firms which is also in line with the findings of this study that estate firms adopt ICT facilities.

Effect of ICT facilities awareness on level of adoption of ICT facilities by estate surveying and valuation firms in Bauchi Metropolis

Linear regression was carried out to determine the effect of ICT facilities awareness on level of adoption of ICT facilities by estate surveying and valuation firms in Bauchi Metropolis.

Table 5 Model Summary and ANOVA

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	F	Sig.
1	.437 ^a	.191	.177	2.90378	13.900	.000 ^b

Table 5 indicates how well the linear regression model fits the data, R² value of .191 indicates a weak fit showing that 19.1% variance exist in the independent variable ICT facilities awareness, however, the regression is significant with a P-value of .000 (p<0.005) showing that the regression is good for analysis.

Table 6: Coefficient of ICT Facilities Awareness

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	24.810	2.150		11.539	.000
Awareness	.237	.064	.437	3.728	.000

Table 6 shows that ICT facilities awareness with a P-value .000 (P<0.05) is making a statistically significant unique contribution to the prediction of the

equation and a beta value of .437 indicating a strong unique contribution to explaining the dependent variable. Wainaina (2014) found out that application of information technology in real estate firms in Kenya has positive effect on the operations and activities of real estate firms, though the effect is not that of the constructs ICT facilities awareness on level of adoption of ICT, the finding is in line with this study.

Summary of Findings

Findings of survey on level of ICT facilities awareness among estate surveying and valuation firms showed that respondents strongly agree that they are aware estate surveying and valuation firms adopt the use of the internet, Similarly, the respondents agree that they are aware of estate surveying and valuation firms adopts social media platforms, valuation software, smartphones and tablet-devices, digital camera, Graphic design software, Network Printer and Office productivity software. Survey on level of adoption of ICT facilities showed that adoption of internet, smartphones and tablet-devices are very high, adoption of Graphics design software, office productivity software, digital camera, Network printer and social media platform is found to be high, while adoption of valuation software is found to be moderate. Findings on the effect of ICT facilities awareness and perceived usefulness showed both ICT facilities awareness and perceive usefulness have contributed to the prediction of the dependent variable. ICT facilities awareness has been found to have strong effect on the dependent variable having a standardised beta of .437.

Conclusion

The awareness level of estate surveying and valuation firms in Bauchi Metropolis on the use of ICT facilities by firms is high. The level of adoption of ICT facilities by estate surveying and valuation firms is found to be high. ICT facilities awareness has significant effect on level of adoption by Estate Surveying and Valuation firms of Bauchi Metropolis.

Recommendations

Based on the findings of this study and the literatures reviewed in this work, the following are recommended: Estate surveying and valuation firms should be attending training and workshop on ICT facilities relevant to their practice so as to increase their level of awareness. Estate surveying and valuation firms should adopt ICT facilities more so as to put the profession on a global scale among its

contemporaries. Estate surveying and valuation firms should adopt valuation software more as it enhances accuracy and produce more reliable result as evident from previous literatures.

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