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User Acceptance of Mobile Broadband in Nigeria

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Abstract
Broadband access has been identified as a fundamental part of any thriving economy because it contributes to GDP. Besides, mobile broadband has been seen as the means for which developing countries can leapfrog into the post-industrial era. According to the figure released by Nigerian Communications Commission in April, 2014, the number of mobile internet subscribers had dropped from 64.5 to 63 million as at February, 2014 and steadily rose to 87 million in April, 2015. Considering those figures and comparing it with the national population figure of about 178 million, and the mobile telephone subscription figure of about 145 million in Nigeria, the rate of acceptance of mobile broadband is not an appreciable penetration rate to substantially drive the adoption of other e-services like mobile commerce, mobile payment services throughout the entire country, except for few cities. To bridge this gap and foster faster rate of acceptance of mobile internet, this paper sought to investigate the factors that could stimulate the intention of users to use mobile broadband in Nigeria by empirically validating an integrated research model, adopted from the unified theory of acceptance and use technology (UTUAT) model by integrating mobile broadband motivation, government support and perceived price value constructs. Online survey data was collected from 376 respondents and analyzed using partial least square (SmartPLS) technique. Result shows that mobile broadband motivation, government support, perceived price value, social influence' and facilitating conditions are significant determinants of intention behavior to use mobile broadband in Nigeria. The findings of this research are vital to telecoms and broadband service providers in understanding the factors that stimulate people's behavior for subscribing to mobile internet and for deploying infrastructures and services; it will also help government and telecoms regulators to streamline their policy towards meeting these factors. To the academia, this integrated research model presents an extended view of the UTAUT model for investigating the determinants of broadband acceptance in developing countries.
Keywords: mobile broadband, motivation, government support, Nigeria

1. Introduction

Broadband is a key propellant of national development, economic growth and competitiveness, and it is fast becoming a vital tool for not only accessing the internet but extracting information for public, academic and business good, as well as being a means of provoking industrial and "informatization" revolution of any country that has adopted and accepted it (OECD, 1996 & 2002; H Lee et al., 2003; Choudrie & Lee, 2004; Frieden, 2005; Grosso, 2006).). Therefore broadband is a pivotal of the growth of any sector of the economy of the country in which it is utilized. It creates healthy relationship between the leader and the led because access to information about government performance helps to improve accountability in government and stimulates better service delivery (Choudrie & Lee, 2004).

Government agencies and policy makers in both developed and less developed nations of the world are formulating policies and initiatives that can promote the penetration of broadband and ultra-broadband coupled with the deployment of advanced technologies infrastructures that are germane to the actualization of this noble objective as well as foster national growth and competitiveness (Belloc & Rossi, 2012). Governments of nations are constantly strategizing to make policies that could best increase and improve broadband acceptance and usage among their citizens, and others like the United States and member nations of Organization for Economic Co-operation and Development (OECD) have also identified challenges to broadband adoption among the different strata of the population and useful strategies that can be employed to address barriers to acceptance of broadband (Frieden, 2004; Grosso, 2006; Weiser, P. J. 2009; Van Gorp & Middleton 2010). This initiative have equally prompted the study of its adoption and usage among researchers, scholars and academia, and their findings are increasingly making governments around the world to see broadband and its innovative technology necessary utility as good and desirable as electricity and water. However, only few of these studies and initiatives have dealt with mobile broadband adoption in developing countries.

Recent advancement in telecommunication technology has heralded the wireless broadband access, which is a novel technology for accessing high speed mobile internet. This technology is creating a paradigm shift from fixed to mobile internet, and from using the fixed desktop to using moveable laptops and smart devices. This undoubtedly has stimulated the world to go mobile, with a global mobile phone subscription figure of over 6.8 billion (ITU, Feb, 2013). This figure means that about 6.8 billion people all over the world are could access the internet from the comfort of their mobile mobiles and smart devices.

Nigeria is the most populous black nation in the African continent, and has invariably been adjudged the fastest growing market for telecommunication services and products. The government has since 1999 strived to create a sustainable broadband internet access for its teaming population. Its telecommunication sector, which now contributes over 7.76% to GDP, was completely liberalized in 1999. The mobile penetration rate of the country has steadily grown over the last ten years to 103.91%, with a total active subscriber base of 145.5 million and active mobile internet subscription (GSM) that has steadily grown from 63 million in February 2014 to 87million in April, 2015 (NCC., 2014 & 2015). This figure only accounts for about 50% of mobile broadband penetration and the extent of digital divide within the country, and the slow rate of acceptance and use of mobile broadband.

The objective of this study is to answer the questions of what are the factors that can influence users' acceptance of mobile broadband and what the government could do to drive mobile broadband penetration in Nigeria. Since behavioral intention stimulates actual use of new technology (Ajzen & Fishbein, 2005; Walker, S. C., 2015), most adoption studies have adapted the inclusion of behavioral Intention as dependent variable to determine the factors that influence actual adoption and use (Bock et al., 2005; Amoako-Gyamph, 2007).

In this study, we adopted an integrated framework to study and empirically validated the influences of mobile broadband motivation, social influences, facilitating conditions, perceived price value and government support on behavioral intention to use mobile broadband (V. Venkatesh et al., 2003 & 2012; Maldonado et al., 2011; Daniel & Jonathan, 2013).

The implication of this paper will help academia to understand the antecedents of mobile broadband acceptance in Nigeria and in practice, will assist mobile network operators to harness these factors to increase the deployment of their services to have wider coverage across the country. The government will also understand its role in delivery of mobile broadband to the teaming population of Nigerians.

The remaining paper explores the literature reviews, research model and development of hypotheses, research method, discussion of results and implications and finally with study contributions.

1.1. Overview of Broadband

Broadband is a technology which utilizes the bandwidth of a transmission medium such as coaxial cable, optic fibre, and microwave links to deliver fast signals transmission, high speed data, and voice and video streaming, through a network of interconnected devices called the internet (Curran & Poland, 2011). The convergence of television, telephone, other smart devices and computer networks for the purposes of enhanced telecommunication experience is made possible by broadband technologies (S. Sawyer et al., 2003). The internet helps to create access to electronic resources, which are utilized by individuals, governments and businesses at affordable cost for their benefits. It enhances efficiency and provides the advantage of saving cost to the users. It provides a cheaper source of communications for video call and instant messaging over internet (Irani Z. et al., 2009).

Massive capital is needed to put in place solid broadband infrastructure and networks, to develop easily-adoptable contents, to provide efficient services, to design useful application software and to create profitable business models for broadband service delivery. Developed countries the United States, Canada, Sweden, Republic of Korea, Hong Kong and the Japan have taken drastic steps to provide high-speed internet access to their citizens including household consumers and small and medium enterprises (SMEs) which has enhanced technological innovation and advancement and foster competition at various level of their economy (S. Sawyer et al., 2003; Z. Irani et al., 2009).

Broadband access has been identified as a fundamental part of any thriving economy because it contributes to GDP. It is used to enhance efficiency and robustness of the different sectors of the economy. For instance, in the transmission of electricity it is used to control and stimulate management of energy demands and consumption by homes and businesses, (Lam & Shiu, 2010). It enhances service delivery, promotes government efficiency, and facilitates open and transparent governance system. Other socially inclined benefits include, the provision of broadened and improved broadband services such as telemedicine, e-learning, e-government, e-education, smart education, e-procurement, e-commerce, e-ticketing, e- passport, internet and mobile banking as well as online sharing of pictures and information, payment transactions, which generally require greater download speed to actualize and enjoy.

Mobile broadband adoption is increasing astronomically because of the convenience, better coverage, lower cost and the functionality of using it. It accounts for huge economic growth and labor productivity and provides a faster speed of accessing the internet via mobile phones, which promises to be a stronger drivers of economic growth more than just mobile telephone alone (Bold & Davidson, 2012). It has become the most widely used means for countries without robust backbone infrastructure to access the internet and bridge the digital divide and the gender gap which have become issues of discourse in most developing countries (Castells, M. 2010; Jensen, M., 2006.), where the cost of deploying fixed broadband network and purchasing computers is still considered very high compared to their income level.

Furthermore, mobile-cellular subscription has steadily increased over the years with over 6 billion subscription across the world. This increasing mobile circular subscription has provoked massive investment in building mobile telecoms infrastructures and expanding existing networks to provide 3G, 4G and LTE services. The implication of this deployment is social propensity of people to use mobile phone and other smart devices to access the internet and social networking websites. The acceptance and sustainability of mobile broadband will increase economic of scale. This can be realized through robust mobile broadband plan for regions that have experienced high penetration. This plan can provide cheaper and wider coverage, and access as well as enhances acceptance and affordability and one of the ways to realize that is through active Public private partnership (PPP) (GSMA Mobile Asia Expo, June 2012)

2. Theoretical Foundation

Behavioral intention to use new technologies has been widely studied by scholars and researchers. Among the models that have been profoundly adopted, adapted and extended to address these studies are the theory of planned behavior (Ajzen 1985), the technology acceptance model (Davis, 1986), and the unified theory of acceptance and use of technology model (Venkatesh et al., 2003). The results of these studies only validate the hypotheses that behavioral intention precedes actual use of new technology.

Adoption of mobile broadband is a major force critical for developing countries to leapfrog and skip over some developmental stages and accelerate their admittance into the post-industrial era (Wallsten, S. J., 2005). Development of mobile broadband in different developed countries of the world varies in sequence, speed and scope, and emulating their success factors would be a trigger for developing countries like Nigeria.

Scholars have highlighted factors that stimulate and prompt user intention behavioral to accept and use broadband in different countries of the world. In South Korea, private intervention, public intervention and socio-cultural intervention and government intervention were identified as propellants of broadband penetration and adoption (Lee, H et al., 2003).

In a study conducted on four communities in Kentucky's counties in the United States to investigate what can influence the adoption of broadband in rural communities. Public education increases the perception of residents to adopt broadband (LaRose et al., 2011). In another study to ascertain the level of digital divide, Goldfarb & Prince, (2008) finds that educated people with high income formed part of the early adopters of broadband but the less educated with low attracted to adopting the internet, while the less-educated people with low income spend more time online for leisure.

In Peru, E-learning motivation and social influence were identified as significant keys to drive behavioral intention to use e-learning educational portal (Maldonado et al., 2011). Lai et al., (2009) extended UTAUT model by including disturbance concerns construct to empirically validate its influence on the "negative user's adoption behavior of mobile commerce". Their results show that behavioral intention to use mobile commerce is significantly affected by disturbance concerns. In Malaysia, subjective Norms and intention were identified as positive factors influencing the adoption of ICT for Small Medium Enterprises (SMEs) (Alam, S. S et al., 2012). In Malaysia, perceived ease of use, perceived usefulness, quality of service, cultural aspect are found to antecedents of adoption of m-learning (Chong et al., 2011), while primary influence, relative advantage, hedonic outcome, facilitating conditions resources and self-efficacy are drivers of behavioral intention to adopt broadband (Keng-Boon Ooi et al., 2011).

In Indonesia, it is found that experience of computer use, relivance, security and privacy influence the perceived ease of use of e-banking, while the perception to its use is influenced by security, interface design and perceived ease of use. The final results show that only perceived ease of use influences the attitude the bank customers in Bekasi city to really use and accept e-banking (Medyawati & Yunanto, 2011). Chong et al., (2010) shows that perceived usefulness, trust, and government support were significant drivers of intention to use online banking in Vietnam, while perceived ease of use did not show any significant influence, while in Ghana, Daniel & Jonathan, (2013) shows that perceived ease of use, perceived usefulness, trust and security, and extension of government support were critical factors that determine customers' intention to adopt online banking.

In Kenya, Mugeni et al., (2012) finds facilitating conditions and perceived knowledge of broadband were seen as key ingredients that can stimulate behavioral intention for broadband adoption, while in the case of the Kingdom of Saudi Arabia, Dwivedi & Weerakkody, (2007) finds that usefulness, service quality, age, types of connection and accommodation influence attitude towards broadband adoption. In Pakistan, primary influence, cost, perceived ease of use, and facilitating condition resources, were discovered to be the key propellants of behavioral intention of consumers to adopt broadband (Khoumbati et al., 2007).

Investigating the understand the antecedents of adoption and non-adoption of broadband, Dwivedi & Irani, (2009) identify relative advantage, hedonic outcome, social influence, resources, knowledge and skill as direct influences of behavioral intention to adopt broadband. Finally, Moon and Kim, (2001) establish that perceived ease-of-use and perceived playfulness are factors that reflect individual intrinsic belief and constitute sources of intrinsic motivation. Their findings reveal and argue that intrinsic motivation and perceived usefulness

are better antecedents of use attitude towards the World Wide Web among students than perceived usefulness and extrinsic motivation.

In all of these studies, the issue of mobile broadband adoption and acceptance have not been widely investigated. While most developed nations of the world have robust fixed broadband infrastructure, yet developing countries are lagging behind, and only have the opportunity of leapfrogging to the post-industrial era through the deployment, adoption and acceptance of mobile broadband technology. In our study, we adopt scholar advice to define the uniqueness of our research topic and conducted a different survey to define the antecedent of mobile broadband within the context of Nigeria (Williams M. D. et al., 2007).

2.1. Research Model and Hypotheses

The unified theory of acceptance and use of technology (UTAUT) model was created by Venkatesh, et al., (2003). It integrates the Theory of Reasoned Action (TRA) (Ajzen, 1985) and Technology Acceptance Model (TAM) (Davis F. D., 1989) and has been used to study behavioral intention and adoption behavior in Information System. It comprises four constructs: "Performance Expectancy (is measured by perceived usefulness, extrinsic motivation, job-fit, relative advantage and outcome expectations), Effort Expectancy (is measured by perceived ease of use, complexity and ease of use), Social Influence (is measured by subjective norm, social factors and image), and Facilitating Conditions (is measured by perceived behavioral control, facilitating conditions and compatibility). Venkatesh et al., (2012), extended this model to address consumer acceptance and use of technology by adding price value and habit.

In this study, we tailored our research model around UTAUT model with the addition of mobile broadband motivation (MBM), perceived price value (PPV) and government support (GS) to empirically investigate the antecedent of behavioral intention to accept mobile broadband.

2.1.1. Mobile Broadband Motivation

Intrinsic and extrinsic motivation have been predicted to be determinant of behavioral intention to use new technology and it predicts an enjoyable experience in using a new technology (Davis et al, 1992). Intrinsic motivation is an internal motivation derived from using a new technology to actualize one's task or job. Intrinsic motivation influences the perceived ease of use and perceived usefulness of new technology, and these three have been investigated to be the antecedent of behavioral intention to use a new technology (Venkatesh et al., 2002). Intrinsic motivation consists of perceived enjoyment and it triggers self-determination, competency, interest, inner joy, excitement and flow, which cumulate to drive people intention to use a new technology (Deci & Ryan, 1985).

Furthermore, previous findings have shown that people will be intrinsically motivated to use computer system if they are playful and competent with it (R.A. Shang et al., 2005). We believe that it is not limited to computer alone but every new technology that has such interface as computer just like mobile and smart phones. Extrinsic motivation is an external influence derived from external satisfaction. It is a reward that comes from the environment of the new technology. Perceived usefulness is a subset of extrinsic motivation just as perceived enjoyment is a subset of intrinsic motivation. Intrinsic and extrinsic have been attributed to the driver of performance of action or activity (Teo, T. S. et al., 1999).

Other studies have also showed that perceived usefulness, perceived ease of use, perceived fun, and perceived enjoyment and they positively influence behavioral intentions to use information systems (Moon & Kim, 2001; Kim & Malhotra, 2005; and Venkatesh et al., 2012). Maldonado et al., (2011) extended UTAUT to include "E-Learning motivation" to investigate the propensity to find e-learning portal enjoyable, easy to use and useful. Her findings reveal that ELM significantly influences the behavioral intention to use the Peruvian E-Learning portal. E-learning portal is an online educational platform designed to create behavioral intention in users to adopt and use broadband services. E-Learning been investigated to be one of the first demonstrable steps relevant for the utilization of broadband by non-adopters if schools and other Computer Assisted Instructors (CAIs) are connected to broadband internet (Bates et al., 2012). High-speed broadband plays an important role in advancing the knowledge society because one of the uses of broadband is in the implementation of e-learning service and usage (Mason & Rennie, 2004).

In this study we adapted the E-learning motivation and its definitions and rephrased it to be mobile broadband motivation (MBM). Venkatesh et al., (2003) shows that Utilitarian (extrinsic) motivation influences behavioral intention to use new technology and Vallerand (1997) shows that hedonic (intrinsic) motivation influences acceptance to use new technology, while anxiety and efficacy do not play any significant influence. Venkatesh et al., (2012) shows that hedonic (intrinsic) motivation is the fun or pleasure of using technology. Mobile broadband motivation is developed from utilitarian and hedonic motivation, and performance and effort expectancy. In UTAUT model, performance expectancy is defined as the extent to which one believes that using a system will enhance one's job performance while effort expectancy is the extent of ease of using a system (Venkatesh et al., 2003).

In view of the above explanation, we hypothesize that
Hypothesis 1: mobile Broadband Motivation will have significantly positive influence on users' behavioral intention to accept mobile broadband

2.1.2. Social Influence

Social influence is defined as the degree to which a user feels that other users who are close to him or who are held in esteem believe that he should or should not perform a referent behavior. These users could be friends, family members or esteemed persons and they play major role in influencing adoption, acceptance and usage of technologies. Social influence is a subjective norms, social factor or image and it plays an important role in determining intention to use any information communication technology (Fishbein & Ajzen, 1975; Venkatesh & Davis, 2000).

Kelman, H.C. (1958) categorizes the processes of social influence into three levels at which influences that take place: compliance, identification and internalization. Compliance is behavior that a user exhibits because he believes that there is favorable reward for him. When a user believes that there is something gainful from using mobile broadband, his behavior will be influence to accept it; Identification is the behavior that a use exhibits because he agrees to be influenced in order to maintain certain level of self-satisfying relationships with others-persons or groups. When a user believes that using mobile broadband will help to maintain his relationships with his friends or groups, his behavior will be influenced to accept and use mobile broadband. Internalization is a behavior that a user exhibits because such behavior is in agreement with his behavior and norms and values. If a user sees mobile broadband compatible with his lifestyle, he naturally accept and use the technology without any recourse to external influences.

Social influence is a significant tool for evaluating acceptance, behavioral intention, and future usage behavior of users of new information system (Malhotra & Galletta, 1999). It is also an external influence on a citizen's intention to adopt a technology. Thus we hypothesize that
Hypothesis 2: Social influence will have significantly positive influence on users' behavioral intention to accept mobile Broadband.

2.1.3. Facilitating Condition

Facilitating conditions is a strong determinant of user's intention. It is defined as users' awareness of the resources, incentives, and organizational and technical support available and accessible to him for adopting and using information system (Venkatesh et al., 2003). It defines the factors that eradicates barriers to the acceptance and use of new technologies and motivates users to use information systems. Facilitating conditions is one of the important variables of perceived behavioral control and it controls a user's behavior and belief in two ways: resources initiative such as time and money, technology compatibility initiative (Taylor & Todd, 1995).

Facilitating conditions is an environmental factor that makes the use of information system easier to accomplish one's task or job through the provision of technical and infrastructural supports; and these support could be in the provision of personal computer to users to facilitate system utilization or provision of training and technical support to users of new technology (Thompson et al., 1991). Facilitating conditions also defines the extent to which new technologies are compatible with existing ones in terms of users' skill, experience, needs and values and they motivate users to accept and use new technologies (Venkatesh et al., 2003).

Facilitating condition is an unbiased factor that makes a user feels that it is easier to take an action under certain specific environment due to salient encouraging factors that he believes stimulate intention. It could also be seen as some fair plays that a user considers healthy in an environment to accomplish his task or use an information system. Time, cost and opportunity are also factors that facilitate users' behavioral intention to use new technology. To perform an acceptance behavior, users' abilities, opportunities and resources are determinants variables necessary to accept to use information system (Venkatesh et al., 2012). Base on the above scholars perspectives we hypothesize thus:
Hypothesis 3: facilitating Condition will have significantly positive influence on users' behavioral intention to accept mobile broadband

2.1.4. Government Support

Massive government investment in ICT infrastructure has been proved as one of the salient propellants of diffusion and adoption of broadband in some Asian countries like Japan, Singapore, Malaysia, and Korea (Chong et al., 2010). Government support could be dispensed as intervention to facilitate mobile broadband diffusion or in the provision of leadership role (Goh, 1995) just like South Korea. In Singapore, local government played key role in driving information communication technology diffusion (Tan & Tao, 2000). We posit that Government will be a major driving force in the diffusion and adoption of mobile broadband by helping to provide broadband infrastructure like backbone networks, efficient policies, grants and incentives to operators.

Government can also facilitate the supply of mobile broadband by promoting and enhancing the adoption of online services. In Singapore for instance, the electronic data exchange (EDI) and online banking were successfully adopted because of government involvement at enlightening Singaporeans on their use (Gurbaxani et al., 1990; Tan & Tao, 2000), and in Malaysia, the government embarked on massive campaigns through media advertorial towards sensitizing the Malays to use e-government websites, and in Vietnam, the government invested massively in building solid e-commerce infrastructure as a springboard to getting the Vietnamese to adopt and use online banking (Chong et al., 2010). The UK, Sweden, Korea, are key examples of developed countries that achieved diffusion status through appropriate government interventions and support program (Belloc et al., 2012; Picot & Wernick, 2007).

In South Korea, the government has since 1998 been committed to creating a knowledge-based economy through massive regulatory reforms and investment in infrastructure. National strategies like the e-Korea, u-Korea, Giga-Korea are some of the government initiatives geared towards the computerization of every facet of the Korea economic and with the aim of accelerating the adoption and use of broadband among Korean people (H. Lee et al., 2003). Government support has direct effects on behavioral intention to accept and use a technology; for instance, government support was shown to play significant influence on the internet adoption and diffusion in Kenya (Macharia & Nyakwende, 2009), while in Ghana and Malaysia government support played the keys roles in using internet banking (Chong et al., 2010; Daniel & Jonathan, 2013). The role of government at providing training on basic computer skill to increase the level of computer literacy is one of the ways that government can help to enhance broadband acceptance and diffusion.

In view of the above findings coupled with the fact that information communication services run on broadband networks. The foundation for the realization of m-services rests on a robust broadband infrastructure network, which the government can assist in providing. We hereby hypothesize that:

Hypothesis 4: Government Support will have significantly positive influence on users' behavioral intention to accept mobile broadband

2.1.5. Perceived Price Value

The influence of price has been investigated to affect the use of technology. Price structure consists of the actual and perceived price, however the acceptance of technology based on its price, is predicated on the incomes of the users (Moore & Benbasat, 1991). In users' perspective, pricing plays key role in adoption behavior and intention. In comparison to user's income, the price of mobile broadband service that might be expensive to one user, might not be expensive to another. Most users bear these price and cost expenditure alone, while in the organizational perspective where the use of information technologies and mobile broadband are freely provided, users within that organizational settings use these facilities freely (Venkatesh et al., 2012). Venkatesh et al, (2012) incorporated price value into UTAUT-2 to evaluate the effects of time and effort on behavioral intention to use technology. He noted that the usage of information technology might be affected by the price for the services that the technology offers. For instance, accessing information on the internet alone might not be as expensive as when it is being used to access some broadband services like video download and upload, and video streaming and video calling.

The relationship between value and quality, benefit and price has been established (Dodd et al, 1991) through the conceptual model that Monroe (1979) provides to explain the relationship between price and the willingness to buy a product through the interactive processes of perceived price, perceived quality, perceived sacrifice and perceived value. The perception of price determines the buying behavior of a customer because price reflects the cost that is sacrificed to buy a product and the degree of quality that the product offers. Cooper (1969) asserts that low price attract suspicion of the quality of a product and by inference the perceived value of that product. Perceived value is the perception of value for money that is sacrificed to make a purchase. Therefore the perception of value significantly affects the willingness to buy a product. This relationship was hypothesized by Szybillo & Jacob (1974) that the perception of value of a product increases the price of that product. However when the price become too high that it reaches an unacceptable level, the perceived value falls (Dodd et al., 1991). It can then be advanced that price and quality influence extrinsic motivation to make a purchase while perceived value for money is an intrinsic motivation (Szybillo & Jacob, 1974).

In this study we adopt perceived price value to evaluate the effects of intrinsic and extrinsic motivation on users to use mobile broadband by the instrumentalities of perceived value for money and price and quality mobile broadband service. The perceived price value reflects the quality of a product and the quality reflects the benefit, which in turn defines the perceived value for money. The perceived price value is considered positive if the benefit of using a technology is considered higher than the monetary cost sacrificed. It is this benefit, which is perceived to be higher than the monetary cost that inspires the intention to use a technology. Therefore perceived price value will significantly influence the intention to use a technology if the benefit is higher than the amount expended (Venkatesh et al., 2012) and as such:

Hypothesis 5: Perceived Price value will significantly influence users' behavioral intention to accept mobile broadband if the benefit derive from mobile broadband is higher than the price paid.

2.1.6. Behavioral Intention to Accept Mobile Broadband

Behavioral Intention (BI) is an influence or a factor that motivates an individual to realize a conceived desire (or intention); when that desire or acceptance becomes stronger than what an individual can control, the influence to perform it is exerted in favour of what is desired or accepted. That action when performed becomes a behavior that is motivated by either a desire or an acceptance. This is called behavioral intention (Ajzen, I. 1991), and it is defined in this paper as the behavioral intention to accept, use and continue to subscribe to mobile broadband (Brow & Venkatesh, 2005). As a dependent variable, mobile broadband motivation, social influence, facilitating condition, perceived price value and government support are hypothesized to significantly influence behavioral intention to accept mobile broadband as conceptualized.

The conceptual of the integrated research model and hypotheses are shown in the figure 1 below.

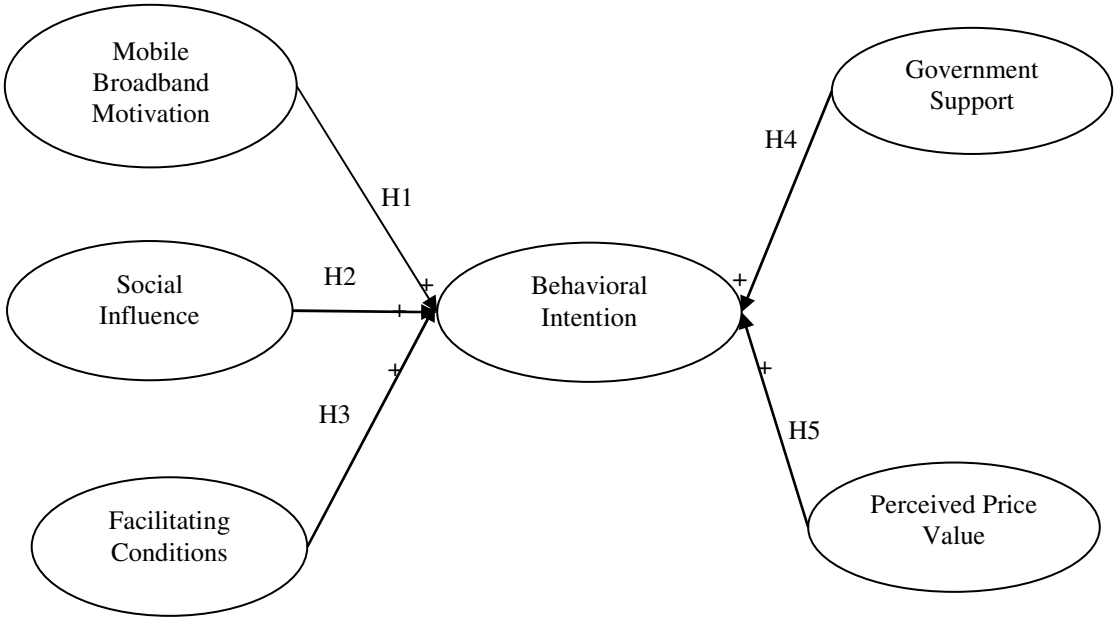

Figure 1. Integrated Research Model

3. Methodology and Analysis

3.1. Data Collection, Procedure, Analysis and Results

We conducted a pilot survey to which 129 persons responded and used it to test our proposed model and the understanding of our respondents about our adapted measurement items. We made some corrections of our measurement items and ran the second and final online survey to test of the integrated research model and its constructs. The questionnaire consisted of 26 statements, and was sub-divided into two sections. The first section comprised questionnaires that aims to get the respondent's demographic information and the kinds of access device(s)' they are using, and the second section consisted of statements designed using a "seven-point" Likert Scale, ranging from "strongly disagree" (1) to "strongly agree" (7) to measure the different constructs. The questionnaire was designed so as to get respondents' feelings and responses about the model measurement items and the factors that can motivate them to accept mobile broadband. We used Partial least square (PLS) statistical tool to run our data and test our research model. The items on the constructs show high reliability of over 0.7 (Hulland, 1999) and accurate discriminant validity (Fornell & Larcker, 1981). The questionnaire revealed no problem, and the discriminant validity shows that the model has internal consistency reliability. A total of three hundred and seventy-six (376) persons comprising 55% male and 45% female, responded to the online survey. 126 of the respondents reported that they use regular mobile phones, while 49 others use smart phones to access the mobile internet as at the time of survey. Table 1 contains sample of the measurement items as adapted for this research.

Table 1. Construct measurement items

Constructs	Measuring Items	references
Mobile Broadband Motivation	MBM 1: Using mobile broadband (internet access) makes my work easier MBM 2: I enjoy getting information from using mobile broadband (internet) access MBM 3: enjoy browsing and chatting and networking when I use my mobile phone or smartphone or tablet PC to access the internet MBM 4: I enjoy doing my homeworks using mobile broadband (internet) access	Venkatesh et al., 2012; Maldonado et al., 2011
Social Influence	SI 1: My close friends think I should use mobile broadband (internet) access SI 2: My family members think I should use mobile broadband (internet) access SI 3: People who are important to me think I should use mobile broadband (internet) access	Venkatesh et., 2012; Y. K. Dwivedi et al., 2007
Facilitating Conditions	FC 1: I have the resources to use mobile broadband (internet) access FC 2: broadband (internet) is compatible with other systems that I use FC 3: Help is available when I have difficulty using my mobile broadband (internet) access	Venkatesh et al., 2012; Maldonado et al., 2011
Government Support	GS 1: Government encourages and promotes the usage of mobile broadband (internet) access in Nigeria GS 2: The broadband (internet) infrastructure and facilities such as bandwidth, fibre optic backbone and government incentive are sufficiently provided for high speed mobile broadband (internet) access GS 3: Government has regulations and laws that promotes the provision and adoption of broadband (internet) access	Chong et al., 2010; Perkins and Annan, 2013
Perceived Price value	PPV 1: At current price, I enjoy better data capacity and speed from my broadband (internet) service provider PPV 2: At the current price, accessing the Mobile broadband (internet) from my phones and tablet PCs is a good value for the money PPV 3: At current price, Mobile broadband (internet) service provision is reasonably priced	Venkatesh et al., 2012; Dodd et al., 1991; Zeithaml, V. A., 1998
Behavioral Intention	BIA 1: I believe I will continue to use mobile broadband (internet) access from my smartphone/mobile phones or other smart devices BIA 2: What are the chances that you will continue to use mobile broadband (internet) access? 1% (1) – 100% (7) BIA 3: I intend to continue to use mobile broadband in the future to communicate with friends and families and transact businesses BIA 4: I intend to use mobile broadband (internet) access to do my official work or academic work or homework	Venkatesh et al., 2012; Maldonado et al., 2011

3.2. Evaluation of the Reflective Measurement Models

The results show that the measurement model is completely satisfactory. First, the indicators' outer model loadings and cross loading (as highlighted in Table 2), are greater than 0.707, therefore the reliability of each indicator's loading is acceptable (Carmines & Zeller, 1979). Secondly, the composite reliabilities (ρc) of the six reflective constructs are greater than 0.70 (Nunnally, 1978), therefore the constructs have satisfied the prerequisite for constructs' reliability. Since Smart PLS does not assume that all indicators are equally weighted (Chin, 1998), the results show that the reflective constructs have high internal consistency reliabilities (table 3). Thirdly, the average variance extracted (AVE) measures of the latent constructs is greater than the 0.5 level, revealing that the constructs have achieved convergent validity (Table 3). Finally, the results show that discriminant validity has been established because the square roots of the average variance extracted (AVE) of each latent construct is greater than the correlations of its own construct and the correlations of the other latent constructs in the PLS (Fornell & Larcker, 1981) (Table 3).

Table 2. Constructs Cross Loading (Extended model)

Indicators	**Constructs or (Latent Variable)**					
	BIA	**FC**	**GS**	**MBM**	**PPV**	**SI**
BIA 1	**0.946**	0.800	0.603	0.830	0.790	0.777
BIA 2	**0.955**	0.819	0.590	0.837	0.787	0.814
BIA 3	**0.948**	0.819	0.598	0.836	0.786	0.802
BIA 4	**0.948**	0.827	0.584	0.862	0.800	0.806
FC 1	0.801	**0.917**	0.586	0.804	0.844	0.784
FC 2	0.649	**0.831**	0.626	0.676	0.709	0.578
FC3	0.832	**0.921**	0.552	0.843	0.769	0.785
GS 1	0.583	0.616	**0.925**	0.564	0.596	0.579
GS 2	0.548	0.605	**0.935**	0.539	0.607	0.550
GS 3	0.611	0.605	**0.931**	0.532	0.590	0.539
MBM 1	0.851	0.836	0.572	**0.945**	0.795	0.817
MBM 2	0.848	0.836	0.543	**0.960**	0.794	0.836
MBM 3	0.827	0.820	0.551	**0.942**	0.786	0.790
MBM 4	0.831	0.820	0.554	**0.941**	0.795	0.808
PPV 1	0.808	0.818	0.612	0.820	**0.934**	0.814
PPV 2	0.774	0.826	0.592	0.780	**0.943**	0.772
PPV 3	0.762	0.806	0.602	0.753	**0.937**	0.742
SI 1	0.802	0.782	0.563	0.833	0.788	**0.935**
SI 2	0.797	0.767	0.584	0.805	0.769	**0.950**
SI 3	0.796	0.757	0.551	0.802	0.797	**0.958**

Table. 3. Reliability, convergent and discriminant validity of the construct

Composite reliability	**AVE**	**SQR (AVE)**		**BIA**	**FC**	**GS**	**MBM**	**PPV**	**SI**
0.973	0.901	0.954	**BIA**	**0.954**					
0.920	0.793	0.891	**FC**	0.860	**0.891**				
0.951	0.865	0.930	**GS**	0.625	0.654	**0.930**			
0.969	0.913	0.947	**MBM**	0.886	0.875	0.586	**0.947**		
0.957	0.881	0.938	**PPV**	0.833	0.870	0.642	0.837	**0.938**	
0.964	0.898	0.948	**SI**	0.842	0.812	0.597	0.858	0.828	**0.948**

The square root of AVE highlighted on the diagonal are greater than the latent construct correlations (off-diagonal) on all columns for discriminant validity to be established

3.3. Evaluation of the Structural Model and conclusion of Hypotheses

The coefficient of determination (R2 = 0.836) (as shown in figures 2) is highly substantial (Chin, 1998), and it gives the minimum level of explanatory power for the relationships between the exogenous and the endogenous constructs, and is sufficient to understand the factors that influence behavioral intention to accept and use mobile broadband in Nigeria. Also, he factor loading of each of the measurement items (or indicators) is highly significant ($p<0.0001$) with the constructs at t-statistic ranging from 31 to 215 as shown in table 4. Finally, (in Table 5), it is observed that all the path coefficient values are positive, and all constructs are statistically significant at $p < 0.05$; however, mobile broadband motivation (MBM) (beta =0.4103, $p <0.01$), social influence (SI) (beta =0.1954, $p<0.01$) and facilitating conditions (FC) (beta = 0.2102, $p <0.01$) are highly significant at ($p<0.01$).

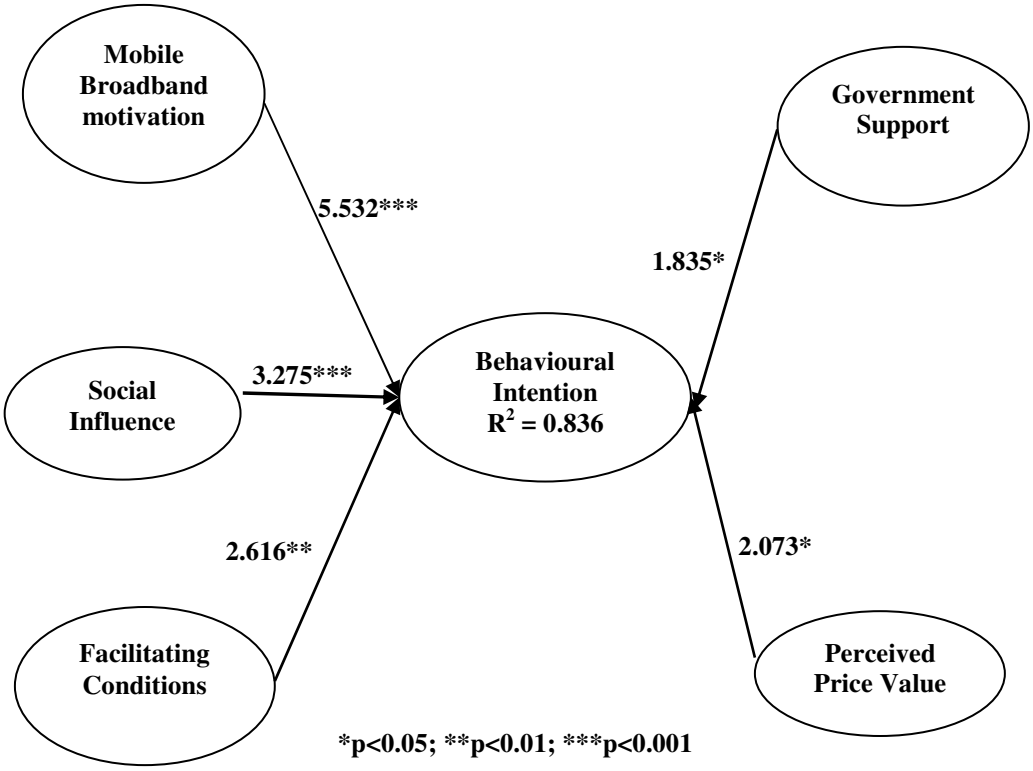

Figure 2. Results of Structural Model

Table 4. Result Summary of Reflective outer Model

Latent Variable	Indicators	Loadings	Loadings T-statistic	Indicator Reliability	Composite Reliability	AVE	Construct T-Statistic
BIA	BIA 1	0.946	123.639	0.895	0.973	0.901	2.616
	BIA 2	0.955	179.009	0.912			
	BIA 3	0.948	148.128	0.899			
	BIA 4	0.948	158.340	0.899			
MBM	MBM 1	0.945	152.883	0.892	0.969	0.913	5.532
	MBM 2	0.960	215.901	0.922			
	MBM 3	0.942	112.614	0.886			
	MBM 4	0.941	137.924	0.886			
SI	SI 1	0.935	121.816	0.740	0.964	0.898	3.275
	SI 2	0.950	183.006	0.902			
	SI 3	0.958	188.905	0.918			
FC	FC 1	0.917	88.974	0.841	0.920	0.793	2.616
	FC 2	0.921	115.130	0.849			
	FC 3	0.831	31.094	0.690			
GS	GS 1	0.925	81.677	0.856	0.951	0.865	1.835
	GS 2	0.935	93.555	0.874			
	GS 3	0.931	79.924	0.866			
	GS 1	0.925	81.677	0.856			
PPV	PPV 1	0.934	110.016	0.873	0.957	0.881	2.073
	PPV 2	0.943	156.750	0.890			
	PPV 3	0.937	94.101	0.879			

Each factor loading of each indicator is highly significant ($p<0.0001$) at t-statistics ranging from 31 to 215.

Table 5. Summary of hypotheses testing results.

Hypothesis	Influence	Path Coefficient	P-value	t- Statistics (bootstrap)	Support
H1: MBM -> BIA	HS	0.4103***	0.000	5.5321	Yes
H2: SI -> BIA	HS	0.1954***	0.000	3.2752	Yes
H3: FC -> BIA	HS	0.2102**	0.004	2.6157	Yes
H4 : GS -> BIA	S	0.0642*	0.033	1.8351	Yes
H5: PPV -> BIA	S	0.1039*	0.019	2.0731	Yes

*p<0.05; **p<0.01; ***p<0.001 (based on t(4,999), one-tailed test); Highly significant (HS) and significant (S)

In conclusion and consistent with the hypotheses for this research model, it can be deduced from the results of this test that all the exogenous constructs: mobile broadband motivation (MBM), social influence (SI), facilitating conditions (FC), government support (GS), and perceived price value (PPV) have positive significant influences on the endogenous construct (Behavioral intention) (BIA), and can be used to explain the factors that influence behavioral intention to accept mobile broadband in Nigeria. Figure 2 is the result of the structural model for user's acceptance on mobile broadband in Nigeria.

4. Discussions

4.1. Overview of findings

The goal of this research was to empirically validate the proposed integrated research model and investigate the influences of mobile broadband motivation (MBM), social influence (SI), facilitating conditions (FC), government support (GS) and perceived price value (PPV) on behavioral intention (BI) to accept and use mobile broadband in Nigeria. The empirical test results and its effects on the proposed hypotheses are summarized in Table 5. The structural model in Figure 2 shows that the proposed research model in Figure 1 has been empirically validated and all the hypotheses for the relationships between the exogenous constructs and endogenous construct have been fully tested and proved.

The coefficient of determination (R2 = 0.836) (Figure 2) suggests that the exogenous constructs are relevant for understanding the factors that influence behavioral intention to use mobile broadband in Nigeria, and shows that the proposed integrated research model and constructs have been empirically validated for any adoption study. Our hypotheses are supported by other scholars' hypotheses that have been adapted for previous adoption studies; also our findings are consistent with previous research findings in which one or more of the adapted construct(s) have been utilized (Venkatesh et al., 2003; Maldonado et al., 2011; Venkatesh et al., 2012; Daniel & Jonathan, 2013).

The findings of this research will be of help the Federal Government of Nigeria and its MDAs, broadband providers and private telecoms operators, the academia and ICT experts, as well as the general public, to take informed steps at stimulating behavioral intentions in Nigerians to use mobile broadband.

4.2. Discussion and Recommendation

Mobile broadband motivation (MBM) (β = 0.4103***; ρ = 0.00001) has the highest influence on behavioral intention and it is vital for predicting intention to use mobile broadband in Nigeria (Table 5). The results reveal that intention behavior is motivated by the usefulness of mobile broadband. Users want to use mobile broadband to do their jobs more easily; they want to use it to get information online each time they surf the internet; they want to use it as a medium of communication to exchange instant messages; and the students want to use it to do their home-works. If mobile broadband can make it easier and enjoyable for realizing these desires, they will be motivated to use the service.

This motivation can further be enhanced if mobile broadband can provide speedy internet access via users' mobile phones and other smart devices. This finding is consistent with that of Maldonado et al., (2011) on the influence of "E-learning motivation" on Peruvians' intention to use Peru's e-learning education portal.

The implication of this finding to the telecoms and broadband providers is to improve their service delivery machineries by providing enhanced, efficient and seamless mobile internet connectivity for their customers. The service will increase their customers' motivation and influence use intention if it enjoyable and easily accessible through mobile devices. Users use the internet for official job, academic work, information sourcing, social networking, browsing and communication. This service need be delivered at faster broadband speed and higher data capacity. This calls for the expansion and upgrade of existing backbone infrastructures, networks and bandwidth capacity to accommodate the enormous data traffic that could be generated from multiple downloads and video streaming, IMs, conferencing and VoIP. However, this requires huge capital investment, suitable spectrum bandwidth, and appropriate content and applications development

Social influence (SI) (β = 0.1954***; ρ = 0.00050), also plays a strong role in propelling behavioral intention to use mobile broadband (Table 5). This could be stimulated by close friends, family members or individuals that one holds in high esteem. These influencers are strategic in encouraging and inspiring non-adopters and late adopters of mobile broadband to use the technology.

This finding is consistent with the works of Viswanath Venkatesh, (2003), which reveals the direct impacts of social influence on behavioral intention to adopt and use information technology. In promoting acceptance and use of technology, schools and universities have been viewed as the anchors for promoting such influences among students, who could in turn, serve as positive influences on their peers and family members to accept and use broadband (Chong et al., 2010; Ooi, K. B et al., 2011). This can be adopted in the Nigeria context if the schools and universities are well-equipped with mobile broadband connectivity. Government and service providers could support such initiative by helping to equip schools, universities, polytechnics and colleges of educations with broadband facilities for students to access the mobile internet from their PCs and mobile phones at an affordable or subsidized cost to the institutions. This, like the case of South Korea, can help the students to develop their ICT skills and stimulate their intention and use behavior for mobile broadband. This could have a spill-over effects on their parents to subscribe for mobile broadband (Choudrie & Lee, 2004).

The use of word-of-mouth communication could also serve to influence and educate friends and family members on the benefits of using mobile broadband. Word-of-mouth is a two-way communication approach, which has been seen to influence awareness, purchase intention, perceptions, attitude, consumer behavior, behavioral intention and expectation (Buttle, 1998), and as a tool that influences and drives intention behavior, it can help to socially influence non-adopters, late adopter, friends and family members to use mobile broadband.

The implication of this finding is a call for government and policy makers to embark on initiatives that can influence the citizens towards the acceptance of mobile broadband in the country, like the Girls Club Initiative (commtech.gov.ng), the Government service portals where people can do online transactions with the government, and provision of e-government services like e-health, e-passport, e-driver's license etc. The government can equally give free ICT training to Nigerians, particularly the senior citizens, housewives, school children and those living with disabilities to promote the use of mobile broadband. The positive effect of the move by the government will encourage the private operators and service providers to roll out of more exciting and useful services, applications and contents that will increase the motivation.

The Government of Nigeria through the Galaxy Backbone PLC has started to provide federal ministries and extra-ministerial agencies with broadband facilities and connectivity (Galaxy Backbone PLC). This could be extended to other government institutions like the hospitals, schools, colleges of education, polytechnics and universities coupled with the creation of public access points for the general public to access and use mobile broadband at subsidized rates if not free.

Facilitating conditions (FC) ($\beta = 0.2102^{**}$; $\rho = 0.00440$) is another influencing factor (Table 5) and shows that users' propensity to use mobile broadband could be highly facilitated by the availability of resources, compatibility of mobile broadband internet service with other mobile devices that are used to access the internet, as well as the promptness in accessing technical and moral assistance (help) in using the technology. This finding is consistent with the results of previous studies in which facilitating conditions were seen to influence broadband and mobile banking adoptions such as in the cases of Malaysia (Ooi K. B. et al., 2011), Australia (Hill et al, 2011), Ghana (Crabbe et al., 2009).

Perceived price value (PPV) ($\beta = 0.1039^{*}$; $\rho = 0.01910$) exerts a significant influence on intention behavior to use mobile broadband. The test sought to find out how citizen is responding to price of the mobile internet subscription with respect to the benefit they are deriving from using the service. The survey investigated the quality of data services to users, the perceived value for money of using mobile broadband service and the reasonability of the current price. The result reveals that people will pay the price that is commensurate with the value of benefit that mobile broadband offers. Besides, price does not play much role in influencing intention as much as the perceived benefit of using the service.

The perceived price value explains the influence of the perceived benefit as a measure of the perception of the value for money of using mobile broadband. If the perceived price value is positive, it shows that the benefit of using it is higher than the amount paid for the service. This perception of benefit is what triggers the intention to use mobile broadband. Perceived benefit is derived from the level of quality of mobile broadband service. This value for money is encapsulated in quality of mobile broadband service with respect to data capacity, speed, and accessibility. Our findings show that the perceived price value of mobile broadband service is commensurate with perceived benefit of current services that is being delivered to our respondents. This result is in agreement with that of (Venkatesh et al., 2012), where "price value" had direct influence on behavioral intention to use and accept information technology.

If the benefits are enormous, it shows the service quality is good and the monetary or the economic cost of using it could just be a trade-off for using the mobile broadband service (Valarie, 1988). The implication of this result is that users are willing to pay for mobile broadband services if the service quality is good and efficient to deliver the anticipated benefits. Telecom/broadband service providers would need to improve on their service quality so that the benefit of subscribing

While the scope of this study does not cover the reason for the poor services complained about by most of the respondents on our social media, the Federal Government of Nigeria could ensure that the service quality

is enhanced by enabling laws and incentives as well as possible sanctions where appropriate. The efficiency of any supply is substantiated by the demand. When the demand for mobile broadband services is low, the return on investment will be slow and low, and broadband service providers will be discouraged to deploy further services to the affected areas and region; and in return will focus only on the major cities where the demands for broadband services by individuals, schools, companies and banks etc. are high.

Finally, government support (GS) ($\beta = 0.0642^*$; $\rho = 0.03330$), has the least influence (Table 5) needed to stimulate the use of mobile broadband. This result is in harmony with those of previous research in which government support was adopted and found to be significantly determinant of intention. For instance, government support plays a role in the adoption of e-commerce and online banking in Malaysia and Ghana (Chong et al., 2010; Daniel & Jonathan, 2013); it was found to have played a key role in the adoption of electronic data interchange in Singapore (Tan, M. and Tao, T.S.H, 2000); and in the adoption of internet adoption and diffusion in Kenya (Macharia & Nyakwende, 2009). Government support can help to promote and encourage the use and diffusion of mobile broadband. This can be realized by providing broadband infrastructures such as high capacity spectrum bandwidth and efficient backbone networks (fiber and microwaves). The government of Korea assisted in the massive diffusion of broadband by given grants and incentives to private operators and enacted efficient spectrum and broadband policies and regulations, and in the promotion of efficient broadband supply and demand.

In supporting the operators, the government could allocate more spectrum frequencies suitable for providing fast mobile internet service, and encourage the development of local contents and applications, with provision of appropriate intellectual property right of protection for developed contents. The government could also put in place policies that could help to reduce the cost of bandwidth and extend backbone networks to the unserved and underserved regions in the country by encouraging private investors into the sector to build fiber optic backbone networks, which could be leased out to service providers.

The need to lay additional submarine cables of larger bandwidth capacity with landing presence in other states of the federation could be encouraged through subsidy initiated scheme. Policy that encourages infrastructural sharing, open access and local loop unbundling among operators could be enacted and encouraged through the provision of incentive like the exemption of right-of-way, granting of loans at special interest rates to private telecoms and broadband providers for the provision of telecommunication infrastructure and services.

The Nigeria government could emulate the Republic of Korea in providing leadership role in the deployment of critical telecommunication infrastructure through grants of special loans, incentives, tax rebate and subsidies for provision of high-speed broadband services; enact policies that can enhance broadband quality and experience and cover internet privacy, cyber-security, intellectual property right and protection, patent right and any support for e-services that can promote awareness and broadband acceptance. If these are well implemented, it will positively stimulate the consciousness of reliability on any broadband-driven services and applications and provides the culture that promotes the use of broadband. It is also pertinent to note that the Nigerian government has been involved in initiatives targeted at increasing ICT awareness, literacy and skill among youths and girls so as to stimulate broadband demand and deepen broadband penetration through projects like “Wired Nigeria project (WIN)”, “State Accelerated Broadband Initiative (SABI)”, “Community Communication Centre (CCC)”, and “Rural Broadband Internet (RUBI) Access” (USPF, 2012). These projects and centers need to be made to be highly functional and operational to deliver on the purposes for which they have been set up.

5. Conclusion

This research explored the factors influencing behavioral intention to use mobile broadband in Nigeria. And in conclusion, all the variables adapted for this study were found to be significant predictors of intention behavior to use mobile broadband. The results present the stimulants of mobile broadband acceptance in Nigeria and provides useful information to both operators and government in the deployment of infrastructure and services as well as in policy making.

This research contributes to current body of knowledge of adoption for following reasons: First, the study and all its constructs were based on previous theoretical and empirical literatures on adoption, behavioral intention, acceptance and use of information systems. Second, empirically validated research model could be adopted for future adopt studies. Third, this study empirically examined the effects of mobile broadband motivation (MBM), social influence (SI), facilitating conditions (FC), government support (GS) and perceived price value (PPV) and found them relevant in provoking mobile broadband acceptance in the context of Nigeria. And finally, the discussion of the findings centers on extant literatures contained in the literature review and theoretical basis, as well as on the statements of survey used for collecting data. Therefore, these results are in consonance with previous findings and suggests that the study contributes to current knowledge by addressing behavioral intention to use mobile broadband in the context of Nigeria.

However, there are limitations. First, online distribution of survey and data collection took around

three months and might not be a full representation of the views of over 178 million Nigerians. Future studies could give more time for data collections and possibly employ random sampling and physical interview of respondents or focus on each state or geo-political zones of the country. Second, none of the constructs was moderated in line with the UTAUT model.

Future study could adopt moderating variable like age, gender, political zones or state to moderate the effects of some of the constructs on behavioral intention to accept mobile broadband. And owing to the current success in the mobile internet penetration brought about by the GSM operators and the complaints that some of the respondents to our survey made with regard to mobile internet service, we would suggest a research direction to address the satisfaction and continued intention of consumers to use mobile broadband with the topic: consumer's satisfaction and continued intention of mobile broadband in Nigeria. The emphasis should focus on some key cities like Lagos state, Port-Harcourt state and Abuja where there are companies. Also the e-commerce business is gaining momentum in Nigeria. We suggest that future study can also take a study on the impact of mobile broadband on the mobile commerce, mobile banking and mobile money in Nigeria. Furthermore, owing to the fear of consumer on the viability of the security feature of financial mobile services, we suggest that future research could consider consumer's perception of quality and security of mobile broadband services in Nigeria. Finally, the Nigeria e-government master plan has just been designed and waiting for full implementation, we suggest that future research direction could address the acceptance, usage and impact of mobile broadband in driving e-Government services.

In conclusion, the findings of this research is only for the case of Nigeria, and it might not be advisable to fully adopt all the findings of this research to judge other countries' broadband situation. Therefore, in line with the advice of (William et al., 2007), we advise that different survey data be collected from the country for which case the model is to be adopted.

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