

Exploring Consumer Behaviour towards Mobile Number Portability (MNP) in Ghana: Pursuing Sustainable MNP Adoption

Simon Gyasi Nimako¹, Robert K. Nyame², Alex Oppong^{1,*}

¹Department of Management Studies Education, University of Education, Winneba, Kumasi, Ghana

²Department of Business, GIMPA Business School, Kumasi, Ghana

*Corresponding author: sim.ekomerce@gmail.com

Abstract The mobile number portability (MNP) innovation in Ghana is expected to benefit consumers, industry players and the society as it is capable of inducing strong switching efficacy and increase competition among mobile network operators in Ghana. However, there is relatively little empirical research on consumer behaviour towards MNP adoption in the Ghana mobile telecom context. This paper attempts to fill this gap by examining consumer behaviour towards MNP in Ghana. Through a cross-sectional survey design involving 736 mobile subscribers from six telecoms in Ghana where MNP policy has recently been introduced, the results indicate that most respondents rated their perception of level of knowledge of MNP and usefulness of MNP low. Moreover, most respondents had unfavourable attitude towards MNP and perceived the porting time as unduly long and slow. Gender and age influenced consumer perception of MNP adoption. The implications of these findings to theory and practitioners have been discussed, limitation are noted and directions for future research are proposed. The paper advances our knowledge in consumer behaviour towards technological innovations in the mobile telecommunication industry in developing countries.

Keywords: number portability, demography, switching efficacy, mobile telecom industry

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1. Introduction

In the past two decades, the mobile telecommunication industry has seen the innovation of mobile number portability (MNP) policy and its implementation in both developed and developing countries. The MNP innovation simply allows mobile subscribers to retain their mobile SIM numbers while changing to use other service providers such as voice calls. MNP facility is intended to enhance effective service delivery by mobile operators and to provide consumers considerable freedom to switch between and among service providers in an attempt to increase consumer empowerment [1,2,3].

MNP was first introduced in Singapore in 1997, followed by UK, Hong Kong and the Netherlands in 1999. As of 2013, a number of other countries across the globe have successfully introduced MNP in their telecom industry [1,4,5,6]. In Africa, MNP has been implemented in countries such as Egypt, Ghana, Nigeria, Kenya, and South Africa. In West Africa, Ghana was the first to introduce the MNP policy followed by Nigeria.

In Ghana, the MNP policy was officially launched in Ghana's mobile telecommunication industry (GMTI) on July 7, 2011 [7]. This was done by National Communication Authority (NCA), the industry regulator, in close

collaboration with the mobile telecom operators. There are six mobile telecom brands and operators, namely, MTN, Tigo, Kasapa, Vodafone, Airtel and Glo [8]. MNP system in Ghana allows mobile subscribers to change from one network to another without changing any part of their mobile number [8]. The NCA [8] report shows that 817, 202 mobile numbers were successfully ported by the end of the second year since MNP was introduced. This figure represents 1.6% of the total active mobile numbers in Ghana. According to the report, majority of the customers who have ported their mobile numbers have remained on their network which they switched to. They indicated that they were also satisfied with the process and the choice they made. The rate of success of porting requests submitted rose from 75% to 82%, with an average porting speed of 5 minutes 25 seconds between 2012 and 2013.

By September 2013, MTN had loss of 275, 963, representing 2.19% of their customer base while Tigo and Vodafone consistently had great gains in porting representing 5.12% and 1.63% of their customer base respectively. According to [[7], p.14], one of the key challenges facing the MNP implementation is that some mobile telecom service providers still experience operational and technical problems that are yet to be resolved. In addition, there is low consumer awareness and education of the facility. Apart from this, [[8]. p. 9] report also reveals that some dubious behaviour by agents

of mobile networks has continued as they deceive customers who are not well-educated and knowledgeable in many ways about the policy.

The main problem of this study stems from the fact that there is the need to increase scholars' understanding of consumer behaviour towards MNP adoption from developing country perspective and provide management and telecom regulators evidence-based research for the effective management of MNP in developing and emerging countries. There is very little empirical research on consumer behaviour towards MNP adoption in developing countries in general and in Ghana telecom industry in particular. Much of the past studies on consumer adoption of MNP has been extensively conducted in developed country mobile telecom contexts [1,2,3,9-14]. Relatively few research has been done in the area of adoption of MNP innovation in developing economies and Sub-Sahara Africa (SSA) developing countries contexts [e.g., [15,16,17]] and in Ghana in particular [e.g. [4,18]]. In Ghana, much of the literature that exist on MNP [e.g., [18]] mainly provide secondary data from NCA's website and lacks rigorous empirical data from consumers' perspective. Given that the adoption of MNP policy will be beneficial to mobile subscribers and that their adoption is crucial to sustainability of the MNP success, it becomes critically important to provide more empirical evidence regarding mobile subscribers' behaviour towards the MNP policy from consumers' perspective and provide recommendations for policy makers, mobile telecom managers and all relevant stakeholders. Therefore, the main purpose of the paper is to examine consumer behaviour towards the MNP policy in Ghana since the implementation of the policy in July 2011. The study is guided by the following specific objectives:

1. To examine consumer attitude and perception towards MNP policy in Ghana
2. To examine the influence of demographic variables (gender, age, income, education and marital status) on consumer behaviour towards MNP policy in Ghana.

2. Literature Review and Conceptual framework

2.1. MNP Research in Developed Country Context

Much of literature on our understanding of MNP can be traced to attempts by scholars to provide a framework of network competition and switching cost. For example, [3] argues that even if number portability can increase the competition in the telecommunication market, the means by which number portability is implemented may either ensure or threaten competition and universal service. Also [19] found that MNP can be socially beneficial to stimulating participants' search for better services, and give consumers' ownership of their phone number and a right to port a number. Moreover, [20] conducted a statistical analysis to estimate the impact of MNP on the competition and social welfare and concluded that the MNP has achieved effective competition in mobile market, but MNP has not contributed to social welfare.

Furthermore, [1] also investigated the effect of MNP implementation on consumers' welfare, especially in terms of the effect of MNP on level of information available to consumers. They argued that under MNP, number prefix has no indicative power. Since callers are not able to distinguish between on- and off-network phone numbers, they may end up paying higher than average bills. In effect, with MNP implementation while the new mobile operator benefits, the incumbent will typically lose. They argued that MNP may result consumer ignorance which may limit the benefit of MNP for consumers. Their results further showed that MNP will enhance consumer welfare if mobile termination rates are regulated by telecom industry regulators and the set up costs for MNP are not prohibitive

There has been a growing interest in the MNP effects on customer behaviour in the past. In the USA, [21] investigated subscribers' perception and behaviour towards MNP and found that, although MNP implementation is expected to lower switching cost and benefit consumers, carriers have increased subscriber lock-in by making subscribers sign long-term contracts, by increasing termination charges, and by imposing the burden of hidden costs. In effect, this adversely affects the effectiveness of MNP; subscribers still feel the high level of switching barriers after the introduction of MNP, there has been little effect on the competition in the USA mobile market.

Furthermore, [13] investigated subscribers' behaviour and perceptions toward switching after the introducing of MNP in Korean telecom industry. They observed that there is a lack of understanding of the full implications of MNP, which means that MNP has not always translated into consumer benefits. Their results showed that MNP has not significantly contributed to the regulator's goal of removing switching barriers that are prevalent in subscribers' perception, and that though MNP has lower switching costs, the remaining potential switching costs are still large.

They, however, admitted that MNP has indirectly enhanced switching barriers through the increased subscriber lock-in strategy and its tactics. Their findings are partially consistent with other studies on Korean MNP such as [20], which report a brand effect among subscribers that they feel MNP demands differently. Although number portability is designed to benefit consumers, it becomes possible that the corresponding increase in marginal cost of production reduces consumer surplus and makes entrants and consumers worse off.

Thus, previous studies have emphasised the relevance of MNP but have noted the discrepancy found across countries regarding the benefits of MNP. These studies have also suggested that regulators should not just enforce MNP, but need to develop socially desirable and economically competitive policy. Regulators are also to seek to reduce consumer ignorance (or misconception) and raise customers' perceptions on MNP. This argument can be supported by previous research of [19] who investigate the effects of consumer ignorance of relevant pricing and suggest that MNP may deteriorate the customers' price information. It has also been noted that regulators face difficult practical decisions of MNP when and how to implement it, and how to reap these benefits [13].

2.2. MNP Research in Developing Country Context

Relatively few studies have been done in MNP in developing country context. In South Africa, [22] found that MNP implementation is intensifying competition among industry players. Customers have been worried over service quality issues and especially delays in the porting process. Also, [5] studied MNP among college students. He notes that there is evidence of little or no participation of MNP among college students, and argues that the threats poised by MNP functionalities regarding the loss of customer base automatically have great impact on the costing which in turn impacted on the high online connectivity rate among the college students.

Moreover, [23] also found that in South Africa, policy and regulations on MNP had both positive and negative effects. They maintain that although consumers are now able to switch operators whilst keeping their numbers, prices still remain uncompetitive and quality of service is yet to improve. Since MNP implementation has not been able to reduce prices according to consumers' expectation. This is likely to affect potential mobile subscribers' attitude, perceived benefit of the MNP facility and therefore consumer adoption of MNP in mobile telecom industry (MTI) in South Africa.

In Nigeria, prior to the implementation of MNP, [6] studied subscribers' attitude towards MNP. They found out that while most subscribers supported the implementation of MNP in Nigeria, a significant proportion believed that tariffs would not drop as long as the power problem continued. Furthermore, their results showed that demographic variables such as marital status, income and age had influence on subscriber attitudes, with age influencing most aspects of the subscriber attitudes and perceptions towards MNP in Nigeria.

In Kenya, [24] found ten factors that influence mobile number portability adoption. These factors include exit barriers, other cost, challenging and delay porting process, customer service, satisfaction, competition incentive among others. Similarly, [25] found that after the introduction of MNP in Kenya on April 1st 2011, the porting process has not been so smooth and identified ten factors that influenced mobile number portability including exit barriers, cost, process, customer service, satisfaction among others.

In Ghana, existing literature on MNP has focused only on a review of MNP and the implementation architecture, relying mostly on secondary data provided by NCA [e.g. [4,18]]. More recently, [26] demonstrate that, in Ghana, MNP can significantly reduce switching cost, and that MNP adoption is able to influence switching intentions through consumer curiosity, attitude towards switching and perceived switching cost. However, [26] did not examine the influence of demographic variables on consumers' behaviour dimensions towards MNP adoption.

2.3. Demographic Influence and MNP Adoption

There is relatively very little empirical research on demographic influence on MNP adoption in general. For example, [27] found that age has a negative relationship with porting rates. Also, [25] found that some

demographic variables such as the period of usage, age, average amount spent on airtime have a significant, but minimal influence on the intention to switch through MNP in Kenya telecom industry. Moreover, [15] found that, in Nigeria, some demographic variables such as age had the strongest influence on subscriber attitudes towards MNP. While they found gender and educational level had significantly no influence on subscriber attitude towards MNP implementation, income and marital status had very little influence on consumer attitude towards MNP implementation. These limited findings on subscriber demography-MNP relationship suggest that some unique consumer characteristics may influence MNP depending on each research context.

From the literature reviewed so far, it is evidenced that more research is needed to understand consumer behaviour towards MNP adoption in developing country telecom context. The present study, therefore, explores consumer behaviour towards MNP adoption in GMTI. The present study extends existing and the influence of demographic variables on different aspects of consumer behaviour towards MNP adoption.

2.4. Conceptual Framework

The conceptual framework is depicted in Figure 1. Past studies have made significant efforts to provide theoretical framework to explain the factors that influence consumer behaviour in general and their adoption of innovation in different research contexts.

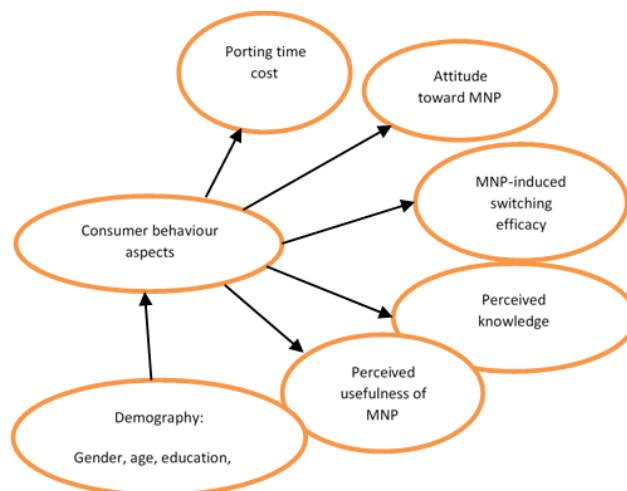


Figure 1. Conceptual Framework for the Study

Notably among the theories that help explain consumer behaviour and innovation adoption are: Theory of Planned Behaviour (TPB) by [28], Technology Adoption Theory (TAM) by [29], Theory of Innovation Diffusion (TID) by [30,31], The Unified Theory of Acceptance and Use of Technology (UTAUT) by [32], and The Unified Theory of Acceptance and Use of Technology2 (UTAUT2) by [33].

A review of these theories reveals a number of factors and aspects of consumer behaviour towards the adoption and use of innovation. These include consumer attitude towards a behaviour or innovation, perceived ease of use (or effort expectancy), perceived usefulness (or performance expectancy), perceived behaviour control or self-efficacy, social influence, consumer knowledge of innovation, among others [33,34]. These consumer

behaviour aspects have been found to be influenced by consumer demographic variables such as gender, age, income, education, marital status, among others [32,33], and in particular in the context of MNP adoption [15,25,27]. Moreover, [2], p. 121 show that “Fundamentally, MNP policy implementation provides the opportunity to switch, serves as an essential tool and resource to switch, and a facilitating condition that influences consumers’ belief in their ability to switch.” The authors first used the term MNP-induced switching efficacy to refer to an “externally oriented factor that provides the facilitating condition, resources, and opportunity to induce confidence in consumers’ ability to switch.” ([26], p. 123).

Therefore, the conceptual framework (see Figure 1) examines consumer behaviour towards MNP policy by evaluating consumer behaviour aspects such as perceived usefulness of MNP, MNP-induced switching-efficacy, perceived porting effort and time, attitude towards MNP, level of consumer knowledge of MNP policy. It will also assess the influence of consumer demographic variables such as gender, age, income, education, marital status on the aspects of consumer behaviour towards MNP policy.

3. Methodology

The population consisted of 26,591,124 individual subscribers [8] from all the six mobile telecommunication operators in Ghana, operating under these brand names: MTN Ghana, Vodafone Ghana, Airtel Ghana, Tigo, Expresso and Glo Ghana. The appropriate sample size was estimated using [35]’s formula that yielded a minimum sample size of 400. In order to collect data of high quality that reflect customers’ opinion and have quality of good representativeness, a survey was conducted from a cross-section of subscribers of mobile telecom service providers across Ghana. The survey yielded a usable 736 questionnaires returned representing 73.6% response rate for analysis.

A self-administered, structured questionnaire was developed and pre-tested to a sample of twenty (20) customers. Adjustments were made based on the pre-test to get a more effective instrument. After that the questionnaire was finally administered to mobile subscribers through personal contact by researchers for nearly three weeks. Since high predictive validity was a major concern, a five-point Likert scale was used, as recommended in previous work [36], to measure variables for the eleven research constructs. The Likert scale ranged from strongly disagree to strongly agree, coded 1 to 5 respectively. In all, the 14 measurement items were derived from previous studies and modified within the context of the mobile subscribers in GMTI as shown in Table 1. The questionnaire also contained respondents’ demographic data: gender, age, education, income, marital status, and whether customer has ported their mobile number or not.

4. Data Analysis Methods

A descriptive analysis was conducted using SPSS 16.0 to analyse the mean ranking of each of the consumer behaviour aspects in the research model. Secondly, a non-

parametric Kruskal-Wallis Analysis of variance (ANOVA) was conducted to test the difference in consumer behaviour towards MNP policy among demographic groups. The results of the descriptive and K-Wallis ANOVA are presented in Table 2.

5. Results

5.1. Respondents’ Background Characteristics

For the characteristics of the respondents, in terms of gender, 67.7% of the respondents were males and 32.3% were females. 20.7% of the respondents were below 25 years, 67.3% of them were within the ages of 25-36 years, 11.4% were between 37 and 50 years, and .6% were 50 years and above. This implies that majority of them were in the economically active population. All respondents were educated with about 58.7% of them having tertiary level of education, while about 5% and 33% had Senior High School (SHS) and post-SHS education respectively. About 3% had other forms of education. In terms of income, 33.5% of respondents earned monthly income up to GH¢500, while 43.9% earned between GH¢500 and GH¢1000, about 6.5% earned monthly income above GH¢1000. This indicates that most of them earned considerably low incomes. In terms of marital status, 61.7% of the respondents were married, about 36% were single (not married) and about 2% of them were in other marital category such as divorced, separated widowed, etc. The rest of the results are presented according the research objectives.

5.2. Research Objective One: Consumer Attitude and Perception towards Mobile Number Portability in Ghana

The results from Table 1 show that, generally, consumer perception of the perceived porting time is high (mean = 3.1). Due to the measurement scale (see Table 1) for this variable, the mean should be interpreted as disagree. This means considerably most of the respondents perceived the time and effort involved in the porting process to be high. The level of consumer knowledge of MNP is low (mean = 3.71), implying that most of the respondents perceive their level of knowledge and understanding of MNP policy and processes as considerably low. The consumers’ switching efficacy induced by MNP is low (mean = 2.31), implying that most of the respondents’ perception about the fact that they can switch through the MNP platform is considerably low.

The results also indicate that perceived usefulness of MNP is low (mean = 2.11), implying that most of the respondents do not perceive MNP innovation as useful to them. Finally, consumers’ attitude towards MNP is considerably unfavourable (mean = 2.30).

5.3 Research Objective Two: Influence of Demographic Factors

The results from Table 1 also indicate the, generally, some consumer demographics significantly influence different consumer behaviour towards MNP policy in Ghana. Specifically, perceived level of MNP knowledge is influenced by gender, age and education. Specifically

more females have more knowledge perception of MNP than males, older responders have more MNP knowledge than younger ones, and in terms of education, higher education respondents appear to have more knowledge than lower education. Switching efficacy is influenced by gender, age, income and marital status. Specifically, females have higher switching efficacy than males, older respondents have higher efficacy than younger ones, lower incomes earners tend to belief they have higher switching

efficacy through MNP than high income group, married respondents tend to have higher switching efficacy than singles. Attitude towards switching was influenced by only gender; females rated their attitude towards MNP more favourably than their male counterparts. Perceived usefulness of MNP was influenced by only gender; females rated their perceived usefulness of MNP higher than males. Perceived cost of porting time was not influenced by any demographic variable.

Table 1. Constructs and measurement items

Constructs	Code	Measurement items	Source
Knowledge of MNP	KNMNP1	How much knowledge do you have about the mobile number portability (MNP) policy by which you can switch to?	Developed based on [31,37]
	KNMNP2	To what extent do you really understand how the whole MNP works?	
Perceived Usefulness of MNP	PUMNP1	To what extent do you think the MNP is useful a policy?	[29,38]
	PUMNP2	To what extent do you think the MNP will benefit you?	
Attitude towards MNP	ATTMNP1	I think the idea of MNP policy is	Developed based on [9,29]
	ATTMNP2	I believe adopting the MNP policy is ...	
	ATTMNP3	Generally I have positive attitude towards the MNP policy.	
MNP-induced Self- Efficacy	MNPSEF1	The Mobile Number Portability policy (MNP) can help me to switch easily to use other mobile network services in Ghana	Developed based on [28,40,41].
	MNPSEF2	I belief that in Ghana, with the MNP, now I have every opportunity to switch to any mobile telecom network I like.	
	MNPSEF3	I belief that with the MNP, I can easily switch to any mobile network I like.	
Porting time	PPC1	To what extent do you think the process of porting your mobile number is time consuming?	[19]
	ATTSW1	For me switching from one mobile network to another is ...	
Attitude towards switching	ATTSW2	For me changing from one network to another is a decision that is.....	[33,40,41].
	ATTSW3	The idea of changing from one mobile network to another is to me a attitude.	

Table 2. Consumer behaviour towards MNP and influence of demography

Consumer behaviour aspects	Mean	Std.D.	Remarks	Kruskal-Wallis ANOVA for test of differences among sub-groups									
				Gender		Age		Education		Income		Marital status	
				Male, n = 498	Female n = 238	YON, n = 525	OLD, n = 211	LED, n = 304	HED, n = 432	LY, n = 365	HY, n = 371	SING, n = 265	MAR, n = 454
Knowledge of MNP	3.37	1.26	Low	348.62	410.09	358.50	393.38	344.13	403.13	382.00	355.22	356.16	367.90
				X ² = 13.863	Sig. = 0.000*	X ² = 4.171	Sig. = 0.041*	X ² = 14.156	Sig. = 0.000*	X ² = 3.007	Sig. = 0.671	X ² = 0.551	Sig. = 0.458
MNP switching efficacy	2.31	1.08	Low	354.09	398.66	358.33	393.80	378.68	361.34	388.32	349.00	348.16	381.56
				X ² = 7.402	Sig. = 0.007*	X ² = 4.381	Sig. = 0.036*	X ² = 1.242	Sig. = 0.265	X ² = 6.582	Sig. = 0.010*	X ² = 4.528	Sig. = 0.033*
Attitude towards MNP	2.30	0.87	Low	356.94	392.68	361.44	386.07	366.83	369.68	381.64	355.57	356.62	367.13
				X ² = 4.697	Sig. = 0.030*	X ² = 2.085	Sig. = 0.149	X ² = 0.033	Sig. = 0.856	X ² = 2.854	Sig. = 0.091	X ² = 0.442	Sig. = 0.506
Perceived usefulness of MNP policy	2.11	1.12	Low	347.46	412.53	367.15	371.86	357.44	376.28	376.67	360.46	366.31	350.59
				X ² = 15.857	Sig. = 0.000*	X ² = 0.078	Sig. = 0.780	X ² = 1.474	Sig. = 0.225	X ² = 1.124	Sig. = 0.289	X ² = 1.007	Sig. = 0.316
Perceived porting time cost of MNP	3.171	1.23	High	376.20	352.39	359.49	390.91	370.79	366.89	362.22	374.68	350.25	377.99
				X ² = 2.141	Sig. = 0.143	X ² = 3.484	Sig. = 0.062	X ² = 0.064	Sig. = 0.801	X ² = 0.671	Sig. = 0.413	X ² = 0.316	Sig. = 0.077

N = 736, scale strongly agree to strongly disagree, coded 1 – 5 respectively, * all p-values are significant at 0.05; all chi-square values have one (1) degree of freedom; young consumers - below 32, old – above 32; low education (LED)– below degree, high education (HED)– degree; low income (LY) – less than GH 500 per month, high income (HY) more than GH 500 per month; Single (SING) – single not married, married (MAR) – married

6. Discussion of Results

The overarching purpose of this study was to provide empirical evidence on consumer behaviour towards MNP innovation in the mobile telecom network in Ghana. It also sought to assess which demographic variables have significant influence on consumer behaviour towards MNP policy. Findings on consumer behaviour towards MNP adoption appear to be consistent with much of the literature on MNP adoption among consumer in other mobile telecom industries.

The present study found that, generally, consumer perception of the perceived porting time during the porting process is high. This finding is consistent with a number of previous studies that found that delays in the porting process can affect consumer perception and adoption of MNP [22,24,42]. The finding implies that, even though consumers stand to benefit when they adopt MNP, as consumers consider the porting process to be more and more effort demanding and time consuming, the less likely will they be motivated to accept and port their mobile numbers to other networks. In GMTI, In spite of the fact that average porting speed has been stable around 5 minutes 25 seconds between 2012 and 2013 [8], the

results indicate that consumers' still perceived porting time to be high. Comparing this with other countries, porting speed is worse in countries like Kenya (2 days), USA (2 hours) and in the Republic of Ireland (20 minutes). Ghana, however, can beat the porting time downwards as done in Australia (3 minutes) and New Zealand (seconds) [42].

Related to the porting time is delays in the porting process which is likely to negatively affect different types of customers and subscribers. In this regard, ([22], p. 124) notes that in Kenya, "There have been cases in courts where customers accuse some providers of delays in porting hence loss of business." To overcome porting delays, it is recommended that industry regulators, mobile network operators and all relevant stakeholders who facilitate any aspect of the MNP porting process should endeavour to speed up the porting process, make it more and more easier to complete within an insignificantly shorter period, and make purposeful attempts to reduce mobile subscribers' effort in the whole porting process.

Also, the results show that consumers' switching efficacy induced by MNP is low and that subscribers' perception of the usefulness of MNP is considerably low. Moreover, the present study found that generally, the level of mobile subscribers' knowledge of MNP is low in Ghana. The implication of this finding is though MNP is supposed to benefit mobile subscribers, as long as consumers' level of knowledge is low, the full understanding of the benefits of the MNP and how they can take advantage of the innovation will elude them. The role of knowledge of innovation among end-users or potential innovation adopters has been emphasized long in the innovation literature [26,31].

Knowledge of innovation has been found to be a key driver of virtually all types of innovations in electronic environment and other social contexts [31,37,39]. Moreover, consumer knowledge of MNP has been found to be a key driver of switching efficacy, positive attitude towards MNP policy and even consumer curiosity to adopt MNP innovation [26]. In a similar study in Korean telecom industry, [13] investigate subscribers' behaviour and perceptions toward switching after the introduction of MNP and observe that there is a lack of understanding of the full implications of MNP. This means that MNP has not always translated into consumer benefits. Also, [19] found that consumer ignorance of relevant pricing in the MNP policy may deteriorate the customers' price in price information, which can reduce consumer benefit of MNP. These findings have implication for more intensive and effective consumer education on MNP using all available media in Ghana's mobile telecom industry by the industry regulator, NCA, together with mobile network operators and all relevant stakeholders [26].

Furthermore, the present study found that, generally, respondents have unfavourable attitude towards MNP. This situation is quite disheartening because consumers' attitude towards any innovation has been found to be a key driver of their adoption and use of the innovation [29,31,39]. Therefore, if consumers' attitude is unfavourable, as it is in the case of MNP in Ghana, then the innovative policy of MNP might not be able to drive consumer adoption significantly over an appreciable time period.

Generally, several factors have been found to influence consumers' attitude towards most behaviour and adoption of many innovations including perceived ease of use (or

effort expectancy), perceived usefulness (or performance expectancy), social influence and other external facilitating conditions such as education, training and self-efficacy [28,29,40,41]. These findings on attitude have important implications for management and policy makers in mobile telecom industry in developing country to develop effective strategies to manage induce positive consumer attitude towards MNP policy. Practically, the findings provide some hope that, even though in practice consumers may have some unfavourable attitude towards MNP, especially at the initial stages of its introduction as it is in Ghana, with the necessary consumer education, MNP could have positive results on consumer adoption of MNP and switching intentions.

On the demographic characteristics and consumer behaviour towards MNP, the findings of the present study indicate that gender has considerable influence on consumer behaviour towards MNP in Ghana, which is different from the finding of [15] which suggests that gender had no significant influence on attitude towards MNP in Nigeria telecom industry. Apart from gender, age also had influence on most consumer behaviour such as perceived level of MNP knowledge and switching efficacy, confirming some previous studies [15,25,27]. Moreover, education, income and marital status of subscribers had insignificantly little influence on consumer behaviour towards the adoption of MNP, providing support for similar finding in existing MNP literature [15,25,27].

These findings suggest that gender and age are most likely to be unique demographic factors in influencing mobile subscriber behaviour towards MNP adoption in Ghana. However, age appears to be very important demographic factor that might influence consumer behaviour towards the adoption of MNP among mobile subscribers in both developed and developing countries.

7. Implications of Study

7.1. Theoretical Contribution

In spite of the fact that the present paper focused more on managerial relevance, it has some theoretical significance as well. Theoretically, the paper provides empirical evidence of the nature of consumer behaviour towards MNP adoption in mobile telecoms in general and GMTI in particular, and how consumer demography influences consumer behaviour towards MNP adoption. This contributions is two-fold. First it has helped increase knowledge of MNP in developing country SSA context. Second, the consistency and deviations of the findings from existing studies on MNP provide avenues for further development of theoretical models to enhance scholars' understanding of MNP adoption in general.

As pointed out in the literature review, relatively few studies have been done in MNP in developing country context [e.g., [5,6,16,22,23]]. In Ghana, while existing literature on MNP has focused only on a review of MNP and the implementation architecture, relying mostly on secondary data provided by NCA [e.g., [4,18]], the present paper has contributed to increasing our theoretical understanding of some of the key consumer behaviour factors related to the adoption of MNP in GMTI. The fact that this study relied on empirical data from consumer

perspective adds to the importance of the results as basis for developing evidence-based policies and strategies for managing MNP in SSA and Ghana in particular.

7.2. Practical Contribution

The findings suggest four important areas of practical implications. Generally, there is the need for management, mobile telecoms and industry regulators, to promote MNP adoption through marketing promotion, consumer education and by reducing other switching barriers in order to reap the full benefit of MNP implementation by service providers and regulators, its adoption by consumers.

First, in order to achieve the desired MNP objectives of facilitating switching and increasing competition in the mobile telecom industry, both industry regulators and individual network service providers should put in collaborative effort to encourage consumer adoption of the MNP policy through effective marketing promotional activities. Such promotional activities should include the use of all available media such as TV broadcast, consumer networks, consumer welfare symposia, radio and FM stations, internet and text messaging, viral marketing, advertisement and event sponsorship avenues, creating online forums, chats, social network pages and complaint channels for MNP, among others.

Second, the findings provide some hope that, even though in practice consumers may have some unfavourable behaviour towards MNP, especially at the initial stages of its introduction as it is in Ghana, with the necessary consumer education, MNP could have positive results on consumer adoption of MNP and switching intentions. Managerially, it implies that Ghana's mobile telecom industry regulator, NCA, together with mobile network operators and all relevant stakeholders should make efforts to increase consumer education and knowledge of MNP policy and its adoption. In addition, industry regulator, NCA, mobile operators and other stakeholders should find ways of rewarding consumer for their loyalty towards MNP adoption and promotion in Ghana. In this regard, [42] maintains that porting is likely to be high where marketing campaigns are intense.

Such education should provide consistent emphasis on the meaning of MNP, its benefits, porting process, information required of mobile subscribers for success porting process, designated places for porting, who to contact for porting and at what time periods, complaint avenues, among others [26]. The consumer education could be a key factors in influencing positively consumers' behaviour towards MNP in terms of level of knowledge, perceived usefulness, porting costs, positive attitude towards MNP, consumer curiosity to adopt MNP and switching efficacy.

As consumer education increases for MNP adoption, it could indirectly influence positively other consumer switching behaviour such as consumer attitude towards switching, perceived switching cost, peer influence to switch, among others, in order to achieve a ripple effect on consumer switching in general as expected for effective competition in mobile telecommunication industry developing countries, especially, GMTI.

Third, to encourage consumer adoption, mobile network providers and industry regulators should

endeavour to reduce other switching barriers, especially long porting time and efforts that results in delays in porting process. Delays in the porting process which is likely to negatively affect different types of customers and subscribers, since porting time has been found to induce significant effect on intention to switch through porting mobile number [25]. In this regard, [[22], p.124) notes that in Kenya, "There have been cases in courts where customers accuse some providers of delays in porting hence loss of business." Also, [[25], p. 91] maintain that, "increasing the speed of porting is crucial for fostering the use of MNP, and that porting time depends both on the technical porting systems and on the willingness of networks to speed up the porting process." In Ghana, in spite of the fact that average porting speed has been stable around 5 minutes 25 seconds between 2012 and 2013 [8], consumers' still perceived porting time to be high. The porting time and consumer efforts that results in delays and frustrations should be reduced considerably as done in Australia (3 minutes) and New Zealand (seconds) [42]. It is, therefore, recommended that industry regulators, mobile network operators and all relevant stakeholders who facilitate any aspect of the MNP porting process should endeavour to speed up the porting process, make it more and more easier to complete within a insignificantly shorter period, and make purposeful attempts to reduce mobile subscribers' effort in the whole porting process.

Fourth, the findings on the differences in consumer behaviour towards MNP in Ghana among various consumer demographic groups have implication for promotion and education on MNP by industry regulator and mobile telecom service providers. Notably communications and strategies to enhance consumer perception and attitude towards MNP adoption in Ghana should be gender-sensitive, and should take into consideration subscribers' age, educational, income and marital status difference.

8. Limitations and Future Research

The main limitation of the study is that it is limited to the Ghana mobile telecom industry. Moreover, it did not also examine the influence of other demographic variables such as consumer personality traits, number of phones used, consumer phone/mobile device preferences and previous networks switched. It is, therefore, recommended that future research should examine how these demographic variables and others influence consumers' behaviour towards MNP adoption. Finally, future research should extent the study to other African countries where MNP has been adopted.

9. Conclusion

The aim of this study was to examine consumer behaviour towards the adoption of MNP in SSA, using Ghana mobile telecom industry as the research context. The findings are that, generally, consumer behaviour towards MNP adoption appear to be unfavourable in many aspects in GMTI. Specifically, the findings indicate that most of the respondents perceived the porting process to be too time consuming and effort demanding. The level of

consumer knowledge and understanding of MNP policy and its processes is considerably low. Most respondents' perception of their switching efficacy induced by MNP is considerably low. Perceived usefulness of MNP is low and consumers' attitude towards MNP appears considerably unfavourable. It also found support for the effect of demographic factors on consumer behaviour towards MNP in Ghana. The findings have implications for consumer education and strategic management direction for managing MNP with respect to consumer behaviour, and also provides important avenues for future research.

References

- [1] Buehler, S., and Haucap, J. (2004) 'Mobile Numbering and Number Portability in Ireland. A report to the ODTR, Ovum: London, *Journal of Industry, Competition and Trade*, 4(3), 223-238.
- [2] Lin, Y., Chlamtac, I., and Yu, H., (2003) 'Mobile number portability,' *IEEE Network*, 17, 8-16.
- [3] Reinke, T. H. (1998) 'Local Number portability and local loop competition,' *Telecommunications policy*, 22(1), 73-87.
- [4] Larkotey, W. O., Ansong, E. D., Damoah, D., Abandoh-Sam, J. (2012) 'Mobile Number Portability in Developing Countries: Its successes and failures. Case Study—West African Sub-Region,' *International Journal of Societal Applications of Computer Science*, 1(1), 44-55.
- [5] Odunaike, S. A. (2010) 'The Impact of Mobile Number Portability on TUT students On-line Connectivity. ISECON Proceedings, v27, 13-48.
- [6] Tihamiyu, O. A., and Mejabi, O. V. (2012) 'Evaluation of Subscriber Attitude to Mobile Number Portability Implementation in Nigeria,' *Journal of Emerging Trends in Computing and Information Sciences*, 3(4), 526-533.
- [7] National Communication Authority. (2012) 'Mobile Number Portability in Ghana,'—First Year Report—July 18, 2012. Retrieved from http://nca.org.gh/downloads/MNP_at_2Years_Report_3rd_September_2013.pdf.
- [8] National Communication Authority. (2013) 'Mobile Number Portability in Ghana,'—Second Year Report—July31, 2013. Retrieved from http://nca.org.gh/downloads/MNP_at_2Years_Report_3rd_September_2013.pdf.
- [9] Lee, M. K. O., Cheung, C. M. K., and Chen, Z. (2005) 'Acceptance of Internet-based learning medium: The role of extrinsic and intrinsic motivation,' *Information and Management*, 42, 1095-1104.
- [10] Maicas, J. P., Polo, Y., and Javier Sese, F. (2009) 'Reducing the level of switching costs in mobile communications: The case of Mobile Number Portability,' *Telecommunications Policy*, 33(9), 544-554.
- [11] Oftel. (1997) 'Economic Evaluation of Number Portability in the UK Mobile Telephony Market,' Oftel. London, July 1997.
- [12] Ovum. (2000) 'Mobile Numbering and Number Portability in Ireland. A Report to the ODTR,' Ovum. London, October 2000.
- [13] Shin, D. H., and Kim, W. Y. (2007) 'Mobile number portability on customer switching behavior: in the case of the Korean mobile market,' *info*, 9(4), 38-54.
- [14] Seo, D., Ranganathan, C., and Babad, Y. (2008) 'Two-level model of customer retention in the US mobile telecommunications service market,' *Telecommunications Policy*, 32(3), 182-196.
- [15] Abdramon, T. O., and Mejabi, O. V. (2012) 'Evaluation of Subscriber Attitude to Mobile Number Portability Implementation in Nigeria,' *Journal of Emerging Trends in Computing and Information Sciences*, 3(4), 526-533.
- [16] Durukan, T. Bozaci, I., & Dogan, T.T. (2011). Mobile number portability in Turkey: An empirical analysis of consumer switching behavior. *European Journal of Social Sciences*. [On-line] 20 (4), 572-585.
- [17] Suthar, B. K., Sharma, K. J., and Gwal, A. (2012) 'A study on Consumer behaviour after mobile number portability with reference to Gujarat Telecom Circle,' *BAUDDHIK*, 3(2), 1-7.
- [18] Agyekum, K. A., Tchao, E. T., and Affum, E. (2013) 'Evaluation of Mobile Number Portability Implementation in Ghana,' *IJCST*, 4(10), 30-33.
- [19] Gans, J. S., and King, S. P. (2000) 'Mobile network competition, customer ignorance and fixed-to mobile call prices,' *Inform. Econ. Policy*, 12, 301-327.
- [20] Park, M., Kim, D., and Lee, S. (2007) 'Demand for number portability in the Korean telecom market,' *Journal of Global Information Management*, 15(1), pp. 43-64.
- [21] Shin, D. (2006) 'A study of mobile number portability effects in the United States,' *Telematics and Informatics*, 24 (1), 1-14.
- [22] Chweya, R. (2013) 'Mobile Number Portability: Is it worth in Kenya?' *World*, 1(4), 121-126.
- [23] Dube, T. F. (2011) 'The Effects of Mobile Number Portability on Consumers,' Doctoral dissertation, University of the Witwatersrand.
- [24] Kagwathi, G. S., Kamau, J. N., Njau, M. M., and Kagiira, E. K. (2013) 'Factor Influencing Mobile Number Portability (MNP) In Kenya: The Case of Africa Nazarene University,' *European Scientific Journal*, 9(21).
- [25] Ooko, D., Nzomoi, J., and Mumo, R. (2014) 'Determinants of Consumer Switching Behavior in Mobile Telephony Industry in Kenya,' *International Journal of Business and Commerce*, 3(5), 82-98.
- [26] Nimako, S. G., Ntim B. A, and Mensah A. F. (2014) 'Effect of Mobile Number Portability Adoption on Consumer Switching Intention,' *International Journal of Marketing Studies*, 6 (2), 117-134.
- [27] Homburg, C., and Giering, A. (2001) 'Personal Characteristics as Moderators of the Relationship Between Customer Satisfaction and Loyalty – An Empirical Analysis,' *Psychology and Marketing*, 18 (1), 43-66.
- [28] Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50, 179-211.
- [29] Davis, F. D., Bagozzi, R. P., and Warshaw, P. R. (1989) 'User acceptance of computer technology: A comparison of two theoretical models,' *Management Science*, 35(8), 982-1003.
- [30] Rogers, E. M. (1962) 'Diffusion of Innovations,' New York The Free Press.
- [31] Rogers, E. M. (2003). 'Diffusion of innovations (5th ed.),' New York, NY: Free Press.
- [32] Venkatesh, V., Morris, M. G., Davis, G. B., and Davis, F. D. (2003) 'User acceptance of information technology: toward a unified view,' *MIS Quarterly*, 27(3), 425-478.
- [33] Venkatesh, V., Thong, J. Y. L., and Xu, X. (2012) 'Consumer acceptance and use of information technology: extending the unified theory of acceptance and use of technology,' *MIS Quarterly*, 36(1), 157-178.
- [34] Hoehle, H., and Scornavacca, E., and Huff, S. (2012) 'Three decades of research on consumer adoption and utilization of electronic banking channels: A literature analysis,' *Decision Support Systems*, 54, 122-132.
- [35] Yamane, T. (1967). 'Statistics: an introductory analysis,' New York: Harper and Row.
- [36] Danaher, P. J., and Haddrell, V. (1996) 'A comparison of question scales used for measuring customer satisfaction,' *International Journal of Service Industry Management*, 7(4), 4-26.
- [37] Cordell, V. V. (1997) 'Consumer Knowledge Measures as Predictors in Product Evaluation,' *Psychology and Marketing*, 14, 241-260.
- [38] Legris, P., Ingham, J., and Collette, P. (2003) 'Why do people use information technology? A critical review of the technology acceptance model,' *Information and Management*, 40, 191-204.
- [39] Park, S. Y. (2009) 'An Analysis of the Technology Acceptance Model in Understanding University Students' Behavioral Intention to Use e-Learning,' *Educational Technology and Society*, 12(3), 150-162.
- [40] Ajzen, I., and Fishbein, M. (2005) 'The Influence of Attitudes on Behavior'. In D. Albarracín, B. T. Johnson, and M. P. Zanna (Eds.), *The Handbook of Attitudes* (pp. 173-221). Mahwah, NJ: Erlbaum.
- [41] Ajzen, I., and Fishbein, M. (2000) 'Attitudes and the Attitude Behavior Relation: Reasoned and Automatic Processes,' *European Review of Social Psychology*, 11(1), 1-33.
- [42] Kangangi, M.T (2011) 'The Consequences of Mobile Number Portability in Kenya and its usage factors,' School of Business, University of Nairobi.