THE IMPLEMENTATION OF MOBILE NUMBER PORTABILITY IN GHANA AND ITS EFFECT ON SUBSCRIBERS

BY

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DECLARATION

I hereby declare that this submission is my own work towards the Executive Masters of Business Administration and that, to the best to my knowledge, it contains no material previously published by another person nor material which has been accepted for the award of any other degree of the University, except where due acknowledgement has been made in the text

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ABSTRACT

Mobile number portability (MNP) was introduced in the Ghanaian market on 6th July, 2011 to increase competition among Ghana's six mobile phone companies. MNP requires that mobile telephone customers can keep their telephone number including the prefix when switching from one provider of mobile telecommunications services to another. The research sought to find whether the implementation of the MNP has been successful and whether it is having any effect on consumers (subscribers) in Ghana. The research utilised survey from 200 respondents from the university of Ghana and Ghana Institute of Management and Public Administration (GIMPA). The findings of the research show that the implementation of the MNP has been smooth. However lower porting rates were recorded because subscribers perceived that there was homogeneity of services on offer by the various network providers in Ghana i.e. Vodafone, MTN, Tigo, Airtel and Expresso. Contrary to literature, this research concluded that, MNP service can still be considered a success, even when porting rates are low. In that, if the threat of porting leads to improved competition among operators, and hence, lower tariffs and better services, MNP could still be considered as successful as it is becoming the case in Ghana. The researcher recommend that awareness creation exercises be carried out by the regulators NCA to ensure success. National communication authority should also enact laws and regulation to deal with providers who abuses the system to their advantage. Service providers should also enhance their network coverage to meet the growing demands of subscribers.

DEDICATION

I wholeheartedly dedicate this research work to the Lord Almighty through whose guidance and protection I have been able to reach this far in my education.
Secondly, to the people who gave meaning to my life; Mr and Mrs Okley, Mr. Mark Etsibah and my wife Mrs Rachael Tei Kartey. May the Good Lord bless you.

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CHAPTER ONE

INTRODUCTION

1.1 BACKGROUND OF STUDY

Mobile number portability (MNP) requires that mobile telephone customers can keep their telephone number including the prefix when switching from one provider of mobile telecommunications services to another. In the absence of MNP, customers have to give up their number and must adopt a new one when they switch operators. As a result, customers face switching costs associated with informing people about changing their number, printing new business cards, missing valuable calls from people that do not have the new number, etc. Based on these considerations, many regulatory authorities have imposed mandatory MNP or are about to require its introduction so as to reduce customers' switching costs, attempting to make mobile telecommunications more competitive (Buehler and Haucap, 2004). The world's first country to introduce MNP was Singapore in 1997, followed by the UK, Hong Kong and the Netherlands in 1999.

This service was introduced in the Ghanaian market on 6th July, 2011 to increase competition among Ghana's six mobile phone companies who have been keen to lure customers to their networks despite insufficient information in the public domain concerning the service. Ghana's current total mobile subscription as at August 2011 is 19,893,191 (NCA, 2011).By the end of October 2011, a total of 138,458 mobile phone subscribers in Ghana had taken advantage of the MNP system to move from one mobile

service provider to another whilst retaining their mobile number. The NCA estimates the average time to complete a port in October at 2 hours, 53 minutes (NCA, 2011).According to a cost-benefit analysis of the portability process, it is evident that there is a minimum market size below which will not provide overall benefits; as per the analysis carried out by John Horrocks, an MNP expert, the minimum is computed to be approximately 10 million (Horrocks, 2007a). As such, implementing this facility in Ghana is appropriate considering the current mobile subscription at 80.3% of a population of more than 24 million.

1.2 PROBLEM STATEMENT

Traditionally, consumers of mobile telecommunications services in Ghana were required to give up their number when switching service providers. Consumers were thus hesitant to switch from the incumbent to competing operators, thereby inhibiting more effective competition in mobile telecommunications. Lately, the picture has changed dramatically, as mobile number portability (MNP) has been implemented in the country. However, since the implementation of MNP, only 0.7% of subscribers have taken advantage of the system. The question is, Is the implementation going successful as planned? And is MNP having any effect on consumers (subscribers) in Ghana?

To the best of my knowledge, not a single empirical research has systematically examined the implementation of Mobile Number Portability (MNP) and its effect on subscribers. This would partly be blamed on the fact that MNP is extremely new in Ghana. As a researcher, this is an important gap in knowledge literature, which this work will attempt to fill.

1.3 OBJECTIVES

The objectives of this research work are as follows:

1. To measure customers' awareness of mobile number portability in the selected institutions.
2. To find out why subscribers in the selected institutions would switch their network operators.
3. To examine the effect of MNP on churn rate within the mobile telephony.
4. To measure the satisfaction levels of subscribers with their providers in the selected institutions
5. To identify challenges faced by the Network Service Operators in the implementation of mobile number portability in Ghana.

1.4 RESEARCH QUESTIONS

This study aims at addressing the following research questions:

1. Are subscribers aware of mobile number portability (MNP) and have they accepted the MNP implementation in Ghana?
2. Why would subscribers switch their network operator(s)?
3. Has the implementation MNP had any impact on market competition?
4. How satisfied are subscribers with their current network service provider(s)?
5. What are the challenges facing network service operator(s) in implementing Mobile Number Portability in Ghana?

1.5 JUSTIFICATION OF THE RESEARCH

Mobile subscribers incur switching costs when changing operators to take advantage of lower call rates and potentially better services. Several articles discuss the composition of switching costs and most suggest that it consists of the time and money expended in moving to a different operator, including having to inform contacts of a number change (Dick and Basu, 1994) and the loss of or having to give up a phone number (Buehler, et al., 2005). Such an action is perceived as a risk, both financially and psychologically (Dick and Basu, 1994, Murray, 1991). The imposition of contractual agreements and customer loyalty programs by mobile operators add to these switching costs. For business enterprises, the costs of switching operators and changing phone numbers are far greater. This is because they end up having to reprint business cards, sign boards and other paraphernalia on which their numbers are displayed, and websites have to be updated with the new contact

information. They also risk losing business opportunities through missing calls from those who are unaware of their number changes (Smura, 2004; Beuhler and Haucap, 2003).

These costs, therefore, act as a barrier to changing operators by reducing the attractiveness of switching to better alternatives; the greater the switching costs, the more likely a subscriber will not move to another carrier (Gerpot, et al., 2001; Kim, et al., 2004). For new operators in the mobile sector, high switching costs act as a barrier to winning over subscribers from competing networks; furthermore, operators have to offer tariffs low enough to outweigh the cost of switching networks (Haucap, 2003). As a result, Sutherland (2007) states that regulators have found it necessary to introduce MNP services, as they reduce switching costs and "facilitate consumer choice and ensure effective competition".

There is therefore enough reasons to implement the mobile number portability in Ghana however, enough research work need to be conducted to determine its impact on the industry starting with the consumers (subscribers) hence this research work.

1.6 SCOPE AND LIMITATION OF THE STUDY

Mobile customers', who switch operators in return for better quality of service and/or call rates, would be the major beneficiaries of the MNP facility as they do not incur any costs. As suggested by Gerpot, et al., (2001), customers put value on their phone numbers, especially when they have used that number for an extended period of time, and would rather stay with an unsatisfactory service provider in an effort to retain that phone number.

The existence of portability, therefore, enables such customers to make a simple change to an operator of their choice as a result of lower switching costs.

This study would broadly be concentrated on four thematic areas;consumer awareness of mobile number portability in Ghana,why subscribers in Ghana would switch their network operators, the effect of MNP on churn rate within the mobile telephony and finally, to find out how satisfied subscribers are with their service providers. The respondents for this study were within the age bracket of thirty-five years and below. This age bracket was largely found in the universities hence two tertiary institutions were selected for the study. The age bracket used by the researcher as a prequalificationwas based on the suggestion by Kearney/Cambridge (2004) that because the usage of mobile phones is high among the generation of 35 years and below, seeking their views on related matter was most relevant.This study is limited because it made two hundred and forty (240) randomly selected mobile phone usersfrom Accra to fill out a questionnaire provided by the researcher. They answered questions regarding mobile number portability in Ghana. The researcher is aware that drawing conclusions about the telecom industryfrom the sample size provided above could be insignificant. However, the researcher is also aware of Krejcie, et al., (1970) determining sample size for research activities, Educational and Psychological Measurement, which put the total sample for population of more than 100,000 at 384.

1.7 BRIEF METHODOLOGY

The purpose of this study is to find out how well the implementation of the mobile number portability has been and whether indeed subscribers are taking advantage of MNP to switch. To get a reliable result, it was of great importance to collect a larger amount data hence; quantitative method was used for this study. Primary data research was collected through a questionnaire survey, which consisted of questions some of which were opened ended and closed format as well as likart scale.

1.8 ORGANISATION OF THE STUDY

The research is organised into five different but related chapters. The first chapter is the general introduction which gives a brief description of the research through the background of study. It also illustrates the problems to be investigated, the research objectives and questions as well as the relevance of the research objectives.The chapter twois the literature review which relates to the study of the previous secondary data available on this topic. This chapter primarily includes the history of telecom industry in Ghana followed by theories and practices of the mobile number portability globally etc.

The chapter threeestablishes the method to be adopted to carry out this study and thus it talks about the appropriateness of quantitative research as compared to the usage of qualitative approach for this particular research. Also the use of surveywith the help of questionnaire has been reasoned in this chapter. Apart from this the criterion for the selection of the sample size is disclosed. The chapter four reveals the analysis and

interpretation of the responses which were collected with questionnaire. A wide range of sub-topics under this theme has been touched upon; some of the results are consistent with the literature review and some opposing.

The chapter fiveis related to the final conclusion where all the findings from the research have been summarized. Finally expresses the limitations that were faced while conducting this research. It also states an extensive area appropriate for future research.

CHAPTER TWO

LITERATURE REVIEW

2.1 INTRODUCTION

After switching costs were discovered and described in academic literatureregulators in many industries became preoccupied with finding the ways to eitherdecrease or eliminate switching costs that was considered a great impediment tocompetition.In particular, national regulatory authorities (NRAs) in telecommunicationsindustry began to actively discuss and even implement the regulation known asmobile number portability (MNP). The goal of MNP implementation is decreasein the consumer switching costs. In this way, it is believed, that after reduction inswitching costs, competition among the mobile carriers would increase.

2.2 HOW MOBILE NUMBER PORTABILITY WORKS ACCORDING TO THE NATIONAL COMMUNICATIONS AUTHORITY:

‘‘If you are dissatisfied with any aspect of the service provided by your present mobile network, or you just want to take advantage of offers, features, or pricing available on a different network, this is your chance to change networks. However, you should consider carefully which network you want to join. Think about coverage, quality of service, pricing, features, phones available and customer service. Whenyou have decided which network to join, visit them at any of their service outlets but remember to take along your ID (Passport, Driver’s License, Voter ID, National Health Insurance Card, or National ID Card) and your

phone. The Agentwill explain how the process works and will review the Porting Request Form with you before you sign it. You need to be sure about your desire to move to the new network because after you port, you will not have any service at all from your old network. You will be requested or assistedto send a free text message to get the porting process going. Withina few hours, it should all be done and you will be kept informed with text messages! Now all your friends, family, and business contacts will reach you at your new network and they don't have to change the number they dial to reach you'' (National Communication Authority, 2011). www.nca.org.gh

2.2.1 TERMS AND CONDITIONS

- ''You do not have to visit your old network in order to port your number. All the arrangements will be made by your new network. If you have any questions or need to report a problem during or after the porting process, discuss it with your new network.
- Your old network is not permitted to contact you during the porting process.
- Any credit you had in your account at the old network will be lost when the account is closed and your number is ported, so make sure you do not have more credit in that account than you are willing to lose.
- If you have any outstanding bills or deposits on your old network and you wish to port, you can still do so. However, you must take steps to settle the outstanding bills or retrieve your outstanding deposits from your old network once porting is

completed. Please note that porting cannot be used as an excuse to run away from legitimate debt or from contractual obligations.

- Once you have successfully ported, you are not able to port again within a 30 day period. After 30 days at your new network, you can choose to port to another network or back to your previous network.
- Anytime a number is ported from one network to another, the new network is charged a small fee by the old network which may be passed on to the consumer. However, the good news is that most networks in Ghana have announced that they will not pass this fee on to the customers who join them.'' (National Communication Authority 2011). www.nca.org.gh

2.3 TELECOMMUNICATIONS IN GHANA

Telecommunications in Ghana dates back to the colonial era when the system was established by the British administration for one basic purpose;to facilitate control and exploitation of the colony (AlloteyandAkorli, 1999; Noam, 1999). The form of state-run monopoly systems, focused mainly in areas of economic activity, thus established the basis for the structure of telecommunications after independence. This structure persisted in Ghana until the early 1990s when it was caught up in a wave of restructurings, deregulations and privatizations sweeping the continent (Sarbib, 1997).

The liberalization process was motivated by a combination of pressure from international finance agencies, WTO commitments, inefficiency in the existing system, the government's need for revenue, and a desire to promote universal service (Addy-Nayo, 2001; Bennell, 1996; FrempongandHenten, 2004; Noam, 1999; Noll & Shirley, 2002). Active design and implementation of telecommunications reform in Ghana begun with the Accelerated Development Programme 1994-2000 (ADP 2000), which sought primarily to promote competition in the telecommunications industry.

2.3.1 MOBILE TELEPHONY IN GHANA

The first rollout of mobile phones in Ghana was undertaken by Millicom International Cellular S.A. in 1992 with its Mobitelbrand. Millicom, a Luxembourg-based company, has operations in 17 countries in Latin America, Africa and Asia. Millicom has been operating in Africa for 14 years with Ghana being the first country it moved into (Romero, 2006). It

started out using the analog ETACS (Extended Total Access Communication System) standard and switched to digital under the brand name Buzz in 2000. The brand, and company name, was changed again to tiGoin March 2006 to conform to a global branding strategy. In terms of subscription levels, tiGo is currently the second largest network.Celtel joined the field in 1994. It is currently owned by Hutchison Telecommunications International Limited, which is based in the Cayman Islands and operates in nine markets in Africa, the Middle East and Asia. Celtel originally run on ananalog AMPS (Advanced Mobile Phone Service) system. It went digital in 2005 and is the only mobile phone network provider using the CDMA (Code Division Multiple Access) standard, a feature that was primarily determined by the company's history with its US shareholders and the spectrum the company was allotted (this is discussed below in the section on network technology).

Celtel was re-branded Kasapa in 2003 to give it a local identity, and has since then pursued a distinct strategy aimed at low-income subscribers and until recently, Espresso. Despite its relatively early entry into the market, Celtel failed to capture a significant market share due to management problems. Mobitel had so dominated the market that "mobitel" became the generic name for mobile phones in Ghana.Capital Telecom was licensed in 1995 to provide rural telephony in southern Ghana via wireless local loop. This was part of a Rural Telecommunication Project initiated by the Ministry of Telecommunications and Transport. Capital Telecom faced numerous technical, managerial and political problems, which eventually led to its collapse. Its equipment had a capacity of 10,000 lines but Capital

Telecom never installed more than 600 lines.Outside of this attempt at rural telephony, mobile phone ownership was limited to government officials and wealthy business people.

Source: (FrempongGodfred and Anders Henten 2004)

2.3.2 MOBILE ANALOG TO DIGITAL (GSM)

Mobitel began to lose its hold on the market when Scancom, entered the market in 1996 using GSM (Global System for Mobile Communication) technology, and rapidly captured the market. Scancom was taken over by Investcom LLC and renamed Areeba in 2005, and then was taken over by the MTN Group in 2006, through its acquisition of Investcom. MTN, a South African-based mobile phone network provider, is currently present in 21 countries in Africa and the Middle East. Areeba is currently the largest network provider in terms of subscriptions although it has been losing market share in the last year (56% in September 2006, down from 64% in January the same year, (Goshen, 2006). From this point onwards, each company that entered the industry opted for the GSM digital standard. The next entrant was Onetouch, a subsidiary of Ghana Telecom (GT), the incumbent national fixed line provider. Technically, Onetouch is supposed to function as an independent company; however in practice it continues to be a branch of GT. As such it is state-owned, with a foreign partner providing management services.70 The mobile phone service began in 2000 and is currently third place in terms of market share.Westel started operating as Ghana's second national telecommunications network provider in 1996, providing fixed wireless services on a CDMA network. Ownership has since shifted from full government ownership (via a government-owned entity, the Ghana National Petroleum Company,

GNPC) to part government (one-third), part strategic investor (Western Wireless of the US) and recently back to full government ownership. Plans are underway to find a new strategic partner. Management problems as well as interconnection problems with Ghana Telecom have prevented Westel from fully taking off. Subscriptions have stagnated at less than 3000 fixed wireless lines since 1999. In November 2006, the company announced that it is preparing to launch a GSM mobile phone service, which will make it the fifth mobile phone network providers. Source (National Communication Authority 2011.)

2.4 MARKET STRUCTURE

The development of the ICT market in the country is underpinned by the NTP. The objective of thepolicy in relation to the ICT market is to promote a broader opening of all market segments toprivate and competitive market forces (Ministry of Communication, 2004). The policy emphasisedthe development of an ICT industry based on the principles of open markets and fair competition.This is to provide level grounds for all operators in the market, as well as to ensure that consumersbenefit from the competitive market. Also, the new NCA Act mandates the NCA to ensurecompetition among all communication networks in the country. In effect, the policy and legalframeworks support the development of a competitive ICT market in the country.

The developments in the market demonstrate the effects of open-market policy in the country. Thetelecom market in Ghana has six mobile telephone operators and two national fixed-networkoperators. The mobile telephone operators are MTN Ghana, Tigo Ghana

Limited, Vodafone Ghana,Kasapa Telecom and Zain (Frempong, 2010). The sixth operator, Glo Mobile, is yet to commence business, but iscurrently involved in building its physical infrastructure. With the exception of MTN and Glo, theoperators are subsidiaries of multinational mobile telephone companies.Furthermore, the government has reduced its direct involvement in the market. It sold 75% interestin the then Westel to Celtel International, a subsidiary of Zain (formerly named the MTC Group) forUS$120m in 2007. Westel was initially licensed as a second national network operator as part of theduopoly introduced under the Accelerated Development Plan for Telecommunication (ADP) of1994. The objective of ADP was to liberalise and revamp the sector through the participation of theprivate sector to meet the changing needs of Ghanaians as well as ensuring effective integrationinto the global context (Atubra and Frempong, 1999). Also, the government sold its majority (70%)stake in Ghana Telecom to Vodafone for US$900m in 2008. Additionally, the telecom international gateway has been liberalised and four companies, namely Vodafone Ghana Limited, Milicom Ghana Limited, MTN Ghana and Zain have been granted licences to provide international gateway services.

2.5 UNIVERSAL ACCESS

The objective of the universal access (UA) policy is to make telecom services available in all regions and communities by the year 2010 and also expand the coverage to at least 25% of the population, which should include at least 10% penetration in rural areas. At the end of 2008, telephone penetration was 52.4% indicating part-achievement of the UA objective. However, since the term telecom was broadly defined to include data and related services, it

is obvious that access to those services is not close to the target. Further, the bulk of the telephone subscribers are in the three major cities of Ghana, namely Accra, Kumasi and Takoradi. Therefore, it cannot be said that telephones have been deployed to all communities in the country. The Electronic Communications Act, 2008, Act 775 provided a legal basis for universal access obligations in the country. The Act established the Ghana Investment Fund for Electronic Communication (GIFEC) as an independent body to manage the country's universal access fund. The object of the Fund is to provide financial resources for the establishment of universal service and access for all communities, and facilitate the provision of basic telephony, Internet services,multimedia services, broadband and broadcasting services to these communities. The policy mandates telecommunication operators to contribute 1% of their net revenue to the Fund.

The management of the Fund consists of all telecom operators with representatives from theMinistry of Communication and National Communications Authority. The GIFEC has a secretariatwith an administrator responsible for the administrative machinery of the Fund.

Source: (RIA reports; 2010).

Table 2.1 - TRENDS IN REVENUE AND EXPENDITURE OF GIFEC 2005–2008

	Collected	Disbursed	Share Disbursed
2005	1 800 000	100 000	5,6%
2006	2 100 000	136 000	6,5%
2007	7 300 000	600 000	8,2%
2008	7 100 000	1 400 000	19,7%

Source: (RIA report, 2010)

Table 2.1 provides a summary of the revenue and expenditures of the Fund between 2005 and 2008. The revenue accruing to the Fund increased from 2005 and peaked in 2007, but dropped in 2008. The drop in revenue for 2008 was due to the non-payment of contributions by the then Westel and Ghana Telecom Company. This was the period when the government was in the process of selling its shares in the two companies, and the companies withheld their contributions until the process was completed.One interesting phenomenon is that the mobile telephone companies are outpacing the GIFEC in the extension and expansion of mobile communication services to the rural and underserved areas.

Competition in the mobile telephone market is driving the service operators to expand their services across the country. In most cases, the mobile telephone operators enter earmarked communities before GIFEC and this is affecting its work. Between 2005 and 2008 GIFEC's revenues stood at GH ¢18,300,000 (US$17.62m) out of which GH¢2,236,000 (US$2.03m)

representing 12.2% had been spent over the period. Like most other universal access funds, the huge unspent revenue in its accounts epitomises the ineffectiveness of the Fund to implement its projects.

GIFEC has been funding the construction of shared facilities for the mobile telephone operators and the establishment and management of community information centres (CIC) as mechanisms to increase access to ICT services in the rural and underserved areas of the country. Data from GIFEC indicates that it has completed 39 Common Telecom Facilities in 2008 which enabled mobile telephone operators to extend their services to 273 communities. The CICs are equipped with television sets, videos, computers with Internet facilities, photocopiers, fax machines, as well as other communication gadgets. Most of these CICs face operational challenges such as ownership, management, patronage and lack of business plans. GIFEC has now expanded its scope of activities in line with its extended mandate under the Electronic Communications Act. Some of its funding activities are: Rural payphones in conjunctionwith MTN, Rural Business Centres, School Connectivity, Support to Ghana Library Board and Support to Prisons among others, but as indicated, implementation has been slow.

Source: (RIA report; 2010)

2.6 TELEPHONE PENETRATION

The telecom sector of Ghana is one of the most liberalised markets in Africa. As mentioned earlier, the market has two national fixed-network operators and five operating mobile telephone companies. The fixed-line telephone segment is almost a monopolistic market since Vodafone Ghana controls almost 98% of the market, while Zain, the second network provider, has only 2% market share. Unlike the fixed-line telephone market, there is rigorous competition in the mobile telephone market and this has contributed to an improved penetration rate in the country. In 2008, the telephone penetration stood at 52.4%, of which mobile telephones contributed 99%. The analysisshowed that the deployment of fixed-line telephones has been on the decline and between 2003and 2008; it experienced a negative CAGR of 13.1, while that of mobile telephones was 70.8% (ITU, 2009).

MTN Ghana is still the market leader with a market share of 53%. It is followed by Tigo with 23%, Vodafone Mobile with 14%, and Kasapa with the lowest market share of 2%. Zain Ghana has made significant in-roads into the mobile telephone market. The company only started operations in the last quarter of 2008, but now commands 8% of the market. The company has adopted rigorous marketing strategies, including pricing to acquire that market share, with the effect of driving down the prices of its competitors.

At the end of 2009, Ghana had over 15 million mobile telephone subscribers. Table 3 gives the actual subscriber details of the operators. The total penetration rate may be misleading due to subscribers who hold multiple SIMs. A survey conducted by Research ICT Africa in 2007/2008 revealed that 11% of mobile phone owners had multiple SIMs.

Source: (NAC report on telephony trends in voice access lines. 2011)

Table 2.2 - TABLE SHOWING NCA'S OVERVIEW OF GHANA'S TELEPHONY; TRENDS IN VOICE ACCESS LINES-2011

Ghana Telephony Industry - Trends in Voice Access Lines - 2011

	January	February	March	April	May	June	July	August
MOBILE OPERATORS								
EXPRESSO	244,674	226,924	230,269	228,178	239,815	220,290	219,290	206,606
MILLICOM (TIGO)	3,928,908	4,135,774	4,012,322	4,048,925	4,071,381	4,102,156	4,147,105	4,156,063
SCANCOM (MTN)	8,869,254	8,967,067	9,070,234	9,191,856	9,387,400	9,562,264	9,655,538	9,789,762
VODAFONE MOBILE	2,810,487	2,881,215	2,978,383	3,074,948	3,235,366	3,426,095	3,577,563	3,731,282
AIRTEL	1,583,573	1,646,501	1,700,632	1,760,238	1,818,198	1,888,332	1,928,179	2,009,478
TOTAL MOBILE	***17,436,896***	***17,857,481***	***17,991,840***	***18,304,145***	***18,752,160***	***19,199,137***	***19,527,675***	***19,893,191***
MONTH OVER MONTH GROWTH		2.4%	0.8%	1.7%	2.4%	2.4%	1.7%	1.9%
FIXED OPERATORS								
VODAFONE	266,046	283,064	270,720	277,366	282,842	270,216	269,335	285,364
AIRTEL	10,763	10,260	10,101	10,011	10,587	10,496	8,886	9,649
TOTAL FIXED	276,808	293,314	280,821	287,367	293,429	280,711	278,221	295,013
MONTH OVER MONTH GROWTH		6.0%	-4.3%	2.3%	2.1%	-4.3%	-0.9%	6.0%
TOTAL MARKET								
MOBILE	17,436,896	17,857,481	17,991,840	18,304,145	18,752,160	19,199,137	19,527,675	19,893,191
FIXED	276,808	293,314	280,821	287,367	293,429	280,711	278,221	295,013
TOTAL ACCESS LINES	17,713,704	18,150,796	18,272,661	18,591,512	19,045,589	19,479,848	19,805,896	20,188,204
MONTH OVER MONTH GROWTH		2.5%	0.7%	1.7%	2.4%	2.3%	1.7%	1.9%
POPULATION	24,379,123	24,427,881	24,476,737	24,525,690	24,574,742	24,623,891	24,673,139	24,722,486
GROWTH RATE								

PENETRATION	January	February	March	April	May	June	July	August
MOBILE	71.5%	73.1%	73.5%	74.6%	76.3%	78.0%	79.1%	80.5%
FIXED	1.1%	1.2%	1.1%	1.2%	1.2%	1.1%	1.1%	1.2%
TOTAL	72.7%	74.3%	74.7%	75.8%	77.5%	79.1%	80.3%	81.7%
MARKET SHARE								
MOBILE	98.4%	98.4%	98.5%	98.5%	98.5%	98.6%	98.6%	98.5%
FIXED	1.6%	1.6%	1.5%	1.5%	1.5%	1.4%	1.4%	1.5%

Table 2.2 shows the combined trend of mobile and fixed-line telephones penetration in the country. Generally, fixed-line telephone development and penetration has been declining since 2004, while mobile telephone penetration is accelerating very fast. In the past, fixed lines were the main backbone for access and utilisation ofInternet services, but the development in wireless technology is increasingly eroding the extent of its deployment. In addition, the increasingly popularity of mobile telephones has further contributed to its erosion. Source: National Communication Authority-2011.)

2.7 PRODUCTIVITY AND PROFITABILITY

Due to the paucity of financial and other critical data, a rigorous analysis of productivity of the telecom companies in terms of employment, revenue per employee, and others cannot be accomplished. However, two companies provided some financial data which can yield to some financial analysis (RIA Report, 2010). MTN Ghana provided financial data for two years; however, this does not sufficiently lend itself to trend analysis. I t does however provide some indications of the profitability of the company. MTN's net income in 2007 was GH¢179.8m (US$185.3m) and increased to GH¢234.3m (US$193.0m) in 2008, representing an increase of 76.7%(RIA Report, 2010).

Table 2.3 – A table showing MTN Ghana Financials

	2007	2008
Net income after tax (in GH₵ m)	179.8	234.3
Network Investment (in GH₵ m)	196.3	271.5
Employees	1207	1387
Revenue per employee (in GH₵ m)	0.15	0.17

Source (RIA report 2010.)

A similar trend was seen in terms of revenue per employee which increased from GH¢0.15m in 2006 to GH¢0.17 in 2008. In the case of Vodafone, its net income declined from 2005 to 2007. Thenet income fell from GH¢18.09m in 2005 to GH¢2.35 in 2006 and was registered as a loss of GH¢15.87 in 2007. Similarly, its revenue per staff was negative in 2007, in spite of the rise in earnings in 2006. Interestingly, Vodafone's network investment for 2006 and 2007 was almost the same in spite of the decline in the revenue of the company.

Table 2.4 – TABLE SHOWING VODAFONE GHANA FINANCIALS

	2005	2006	2007
Net income after tax (in GH₵ m)	18.0958	2.352	-15.868
Network Investment (in GH₵ m)	266.1967	381.824	380.199
Employees	4180	3981	4162
Revenue per employee (in GH₵ m)	4.329	5.908	-3.812

Source☹ RIA Report 2010)

Generally, there has been a decline in the average revenue per user (ARPU) of the mobile telephone companies. During the second quarter of 2008, MTN had the highest ARPU of $14. It was followed by Vodafone's One Touch ($9), Kasapa ($8) and Tigo ($7.5)13 but the ARPU declined during the first quarter of 2009 for all the operators(RIA Report, 2010). This appears to be partly attributable to increased multiple subscriptions with the entry of Zain into the mobile market in the last quarter of the previous year.Consequently, the subscribers had to spread the disposable income over their SIMs, thereby reducing the ARPU. The MTN ARPU dropped from $14 (in 2008) to $8 per month. Tigo had $5.30; Kasapa, $4.70; while Zain made $3.0014 (RIA Report, 2010). On average, the national ARPU for the first quarter of 2009 was $5.3. Zain's earnings in Ghana were the lowest among its subsidiaries across Africa and Middle East. Zain's highest ARPU was in Kuwait with US$55, followed by Bahrain (US$26) and Gabon (US$2515). Competition in the mobile telephone market segment is contributing to the fall in ARPUs. Most of the operators

have reduced their tariffs to target the lower income earners so as to increase their market share. However, these reduced tariffs are related to on-net calls and this is to increase intra-network communications. The effect of this situation is the rise of multiple SIM card usage, a phenomenon which is negatively affecting ARPUs. For example, a multiple SIM card user whose income is largely fixed has to spread what might have been spent on one company among others, and this definitely affects a user's ARPU for each company to which he/she is a subscriber.

Source (RIA report, 2010)

Consequently, the increasing rates of multiple SIM use are part of the contributory factors for the decline of ARPU in Ghana. This argument is confirmed by Obiodu (2009) when he argued that multiple SIM card owners distort market performance and that it therefore should not be used as the main determinant of profitability. Consequently, a more rigorous way should be found to measure market performance in the light of multiple SIM holders which is a symptom of users not satisfied with inter-network call charges, poor quality of service, and limited service coverage, among other factors.

2.8 THE RATIONALE FOR IMPLEMENTING MNP

Existing literature on portability contains extensive discussions on the rationale for introducing these services. Among the most commonly cited motives is the lowering of switching costs (Smura, 2004;Buehler, et al., 2005). Mobile customers' who switch operators in return for better quality of service and/or call rates, are benefited by the MNP facility as they do not incur coststo update their networks about a number change. In

addition, they are less likely to miss out on phonecalls (except during the short period when the actual number porting from one operator to anothertakes place).As discussed by Gerpot, et al., (2001), customers put a value on their phone numbers,especially when they have used that number for an extended period of time, and would rather staywith an unsatisfactory service provider in an effort to retain that phone number. This in itself is a costto the user, who has to put up with poor quality of service and maybe even make calls at uncompetitive rates. Theexistence of portability, therefore, enables such customers to make a simple change to an operator oftheir choice as a result of lower switching costs.It must be noted, however, that MNP cannot completely remove these costs – mobile subscribers willalmost certainly incur some cost in switching operators, in terms of time taken to make the switch (it ispossible that they may miss a few calls) and money spent on porting the number (the porting processinvolves a lot of technicalities, the costs of which must be covered by regulators and operators).

However, these are one-time costs, while the costs of a poor service and the compulsion to carry onmay have huge implicit costs and may reduce consumer welfare. Following from this discussion, the introduction of the MNP service is said to drive competition; it mustbe noted that the service does not create competition but only improves it. This is based on the theoryof contestability which postulates that the threat of new entrants into a market alone should ensureexisting firms behave more competitively. As stated in Buehler, et al., (2005),"the rationale of introducing mandatory MNP is simple: it is expected to bring about considerablebenefits to consumers of mobile services". MNP facilitates the movement of

customers between service providers, putting the latter under pressure to provide greater levels of service. Theintroduction of MNP entails a rethinking of business strategies beyond price wars alone, which resultin competitive tariffs among industry players (Buehler andHaucap, 2004), as they will not be enough toretain subscribers; instead, operators will have to improve their quality of service and even offer innovative services and features in order to prevent customers from changing networks. This is perceptibly beneficial to mobile subscribers (Katka, 2004), but operators have to undertake expensive marketing campaigns and advertising costs, and increase investment costs. The potential for high churn rates and loss of subscribers adds to this pressure (Keynote Capitals, 2009). While MNP may have a significant impact on market dynamics, it is difficult to distinguish the absolute effect of the service on the market. Another benefit from this service is that it helps to create a level playing field for small and new entrants (Katka, 2004). Market asymmetries will be removed to a certain extent; and every service provider is given the opportunity to attract customers regardless of how young or how established the operator is. MNP has effects on "retail prices, termination charges, price elasticity, market shares, as well as entry and investment decisions" (Buehler, et al., 2005). While MNP is expected to reduce switching costs and increase competition among industry players, the extent of these effects is contingent on how accepting operators are to the introduction of MNP services. Service providers can engage in attempts to stifle the effects of MNP by penalizing subscribers' who break their contractual agreements or by imposing hefty charges for porting their numbers. Operators can even provide phones that are locked in to their own networks, making it

difficult for subscribers to make a switch to another network, without having to purchase a new phone.

Some are even guilty of suppressing information on porting. It is for these very reasons that the success of MNP is deemed by the power wielded by the regulatory and competition authorities. The service also has implications on the reallocation of property rights (Buehler, et al, 2005), because subscribers become the sole owners of the mobile phone number that they hold, and therefore control its use. This increases the value of number or perpetuates a loyalty towards to number that a subscriber obtains.

The MNP service also encourages churn, as mentioned above, which service providers generally strive to keep at a minimum. High churn rates are especially useful for new entrants into the mobile market, because they are able to acquire subscribers to their networks. MNP helps these firms to acquire new subscribers, but operators are faced with the task of having to retain their existing subscribers, which may sometimes be harder to do (Smura, 2004). Service providers have to take extra efforts to ensure that they do not lose their own subscribers while trying to entice subscribers from other networks to take up their services, and striking this balance can be tricky. There are, therefore, both positive and negative consequences to high churn rates.

On the other hand, there are several downsides to using MNP services. With the use of MNP customers will generally be oblivious to the network they are calling. In the past, operators have had a specific number code before the remaining numbers that comprise a

phone number, in order to make it easy for callers to identify which network they are calling. With the use of MNP, however, this code serves very little purpose as it does not mean that a customer with such a code still belongs to the corresponding network. This, therefore, defeats the purpose of having such a code and has implications on national numbering plans (Ovum, 2000). Additionally, since mobile subscribers are most likely to be unaware of which network they are making calls to and operators can take the opportunity to increase termination charges (Beuhler and Haucap, 2003). In fact, mobile subscribers will be unable to know the price of any call and cannot take advantage of on-net and off-net rate differences too; however, the easiest way to overcome this problem would be to enforce a single rate tariff plan for all operators (Smura, 2004).

The service also tends to be technically costly to implement and many times the benefits achieved by the introduction of MNP are far lower than the costs incurred (Aoki and Small, 1999). There are initial one-time costs and recurring costs which are rather high, given the technology involved. Set-up costs (network set-up, systems development), customer transfer costs (porting charges including closing and opening new accounts), and call routing costs tend to be the main costs for setting up the MNP service (Lin, et al., 2003).

Smura (2004) also considers database management costs, such as upgrading and maintaining charges.As mentioned previously, operators can sometimes engage in anti-competitive behaviour to tie in their customers into long-term contracts, and this is an issue that requires intervention from the relevant authorities. Not only does it stifle competition to

a large extent, but with the introduction of MNP, it can also create large numbers of unused handsets. In many cases, when people switch operators they have no choice but to buy a new phone as their old handset is incompatible with the new network (Telecom Asia, 2004). Source: (Smura, 2004; Buehler, et al., 2005).

2.9 MEASURING THE SUCCESS OF MNP

The successful implementation of MNP is associated with high porting rates. This is because high porting rates signify that the facility is being utilized and confirms that mobile subscribers are in demand of the service. The adoption of MNP in Hong Kong, South Korea and Australia has been touted among the most successful implementations of the facility, simply because these countries have achieved high porting rates, of over 6 percent, and have reaped significant economic returns. The reasons for these successes can be attributed to several factors, including low porting times, low or even no charges allocated to subscribers for porting their numbers, promotion of the service by regulators and subscriber awareness of the service (Lago, 2007), and the entrance of new or disruptive operators. In the case of Hong Kong, waiting time for porting a number was between 1 to 2 days only.

Furthermore, the timing of introducing the MNP facility played a large role in its success; four new mobile operators entered the market at the same time that MNP was introduced,

resulting in increased competition and therefore high porting rates (Keynote Capitals, 2009). Similarly, in Australia, the regulator played a significant role to educate subscribers about the service, and porting times were limited to a matter of few hours.

However, the adoption of MNP has more often than not, failed to achieve high porting rates let alone economic success, contrary to the expectations of many. This is true of Ireland, Finland, Malta, UK and The Netherlands (Iqbal, 2007). MNP has also been rather unsuccessful in Taiwan, Japan and Singapore. Katka (2004) suggests that high porting charges, long-winded applications, lengthy porting times, and handset subsidies have suppressed the change of networks on a large scale. He cites the cases of Greece, UK and France where operators have engaged in these types of activities in order to curtail the competitive and switching effects of MNP. Taaffe (2004) explains that operators in France even stipulated that customers who wanted to break their contracts had to provide up to three months' notice before doing so. In UK, only one operator pushed for the introduction of MNP, and was supported by Oftel, the telecom regulator at the time. As a result, other operators imposed long porting times and even expected subscribers to obtain permission for moving from one network to another (Wieland, 2007). The porting process in The Netherlands took up to 5 weeks resulting in a failure of MNP in the country (Horrocks, 2007). The longer the time taken for porting, it is easier for donating operators (i.e. operators who are giving up a subscriber) to win back their customers through special promotions and personalised packages. Another reason for low porting rates is because subscribers have no need to switch networks because of the homogeneity of services on

offer. The lack of competition in Ireland meant that subscribers did not perceive any benefits from a move from one operator to another, leading to low porting rates and economic failure of MNP. In Finland, operators imposed minimum contract periods which drove down porting rates from approximately 40 percent to 10 percent (Horrocks, 2007).

In the case of Japan, mobile Internet use is very popular and many subscribers of NTT DoCoMo, the largest operator, use their phones for both calls and email. Subscribers are not able to port their email addresses along with their mobile numbers which has affected porting rates. Additionally, handsets are locked in by service providers, meaning that customers wishing to change networks have to purchase new phones. The charge for porting to a different operator is also relatively costly, working out to approximately USD 83 per port (The Economist, 2007). Singapore and Taiwan both had lengthy porting times of 4 to 7 days, which led to poor porting rates and therefore the failure of MNP (Keynote Capitals, 2009). Similarly, it is important that SMS and MMS and other mobile applications are able to be ported to another network with little routing issues as possible.

The MNP service can still be considered a success, even when these rates are low, if the threat of porting leads to improved competition among operators, and hence, lower tariffs and better services. The purpose of regulation is to facilitate a level playing field and foster competition so that end-users are able to acquire the most optimal levels of quality at competitive prices (Melody, 1999; Samarajiva 2002). As such, it could be said that if there has been a substantial effect on tariffs and quality of service post-implementation of MNP,

leading to satisfied customers it may be considered that the implementation of MNP is successful. In any case, the argument for high porting rates being the sole indicator for the success of the MNP service is erroneous. Based on intuition, even if high porting rates are achieved initially, they will slow down eventually until they plateau, once subscribers are satisfied with the level of service they receive and the tariffs they are charged. Moreover, low porting rates may be an indicator of the fact that contestability or the threat of switching is leading to services and tariffs that the customers are satisfied with.

Other indicators of successful MNP include a pleasant porting experience for subscribers, simplicity and speed of porting, minimized customer complaints and minimized operator porting overheads (PTA, 2007).

2.10 PRECONDITIONS FOR IMPLEMENTING MNP

Following from the previous section, it's evident that the success of MNP is dependent on a variety of factors. Among the most important of these preconditions is that there has to be sufficient demand from subscribers (or what is referred to as the minimum threshold market size), highly competitive operators and mature telecom markets, and independent and strong regulators who can drive the adoption of the service.

2.10.1 MINIMUM THRESHOLD MARKET SIZE

Customers should be willing to switch networks. If the demand for porting to other networks (i.e. if thelikely number of ports) is low, there will be no need to introduce such a

service. Not only is it costly to do so, in terms of re-working the routing systems, managing the databases and promoting the service to customers, but these costs will be unrecoverable if the service is left unused, and the adoption of MNP will be an economic failure. There are many factors which may possibly prevent users from taking advantage of MNP services, including:

a) The placement of "artificial" barriers (possibly because of collusive behavior) instigated by operators to porting numbers, such as creating artificial delays in processing requests;

b) A perceived level of distrust in the proper functioning of this service; and

c)The financial cost of switching. Taaffe (2004) suggests that a casual attitude or 'inertia' towards switching operators by subscribers is another reason for the failure of the MNP service in France.

He explains that subscribers are driven to make a change only if their operator charges excessively high call rates or are unhappy with the level of customer service they receive. However, it is also possible for quality of service based competition to stimulate subscribers to consider switching operators. It is therefore important that regulators determine the minimum threshold market size. According to a cost-benefit analysis of the portability process, it is evident that there is a minimum market size below which will not provide overall benefits; as per the analysis carried out by John Horrocks, an MNP expert, the minimum is computed to be approximately 10 million (Horrocks, 2007a). As such,implementing this facility in countries with small populations and even smaller mobile markets proves to be economically infeasible, because the costs outweigh the benefits by a

significant amount. This is clearly the case of MNP in Malta, where there has been no impact on competition and prices even after the introduction of the service. The island nation has a population of only about 4 million; a clear indicator that the mobile market size and demand for porting would be too low to be economically viable. However, given that all of European Union had regulations to adopt the service, Malta had little choice but to comply. In such countries, it makes more sense for operators and regulators to agree to facilitate number changes when requested by subscribers. Operators could offer to send out free SMS to all the subscriber's contacts, or maintain the old number in parallel for a given time period. The regulators must also make more efforts to increase competition to ensure that subscribers in these small states are provided with high QoS and tariffs (Horrocks, 2007a).

2.10.2 LEVEL OF COMPETITION

The level of competition between operators determines the post-MNP competition and therefore success of the service. Haucap (2003) stresses the importance of the level of competition and maturity of the market when deciding on introducing MNP. According to his article, the more competition there is, the lower the need for the MNP service, because operators are likely to provide subscribers with the best tariffs and service quality possible. They are likely to find the need to innovate and outdo their competitors in order to retain their subscribers. He states, however, that this does not mean that MNP should not be introduced – the service reduces switching costs for those subscribers who do want to change networks and therefore should be considered a standard service in advanced telecom

markets. The importance of competition is evident from the failure of Ireland's MNP implementation. The market comprised of three operators, two incumbents and a weak and young competitor, meant that competition in the market was lacking. As a result, subscribers saw no benefit from switching from one operator to another, even with the availability of the MNP service, leading to poor porting rates (Iqbal, 2007).

Another consideration is how mature the mobile market is. An indication of this would be the levels of mobile penetration; the higher the penetration levels, the less chance for new entrants and/or competitive operators to disrupt the existing market structure. Unless MNP is introduced in such a market, it is unlikely that these operators will be able to survive in the long term. In order to ensure that the market remains competitive and operators are always under pressure to retain their customers, regulators need to push for the MNP facility. This does not mean, however, that MNP should not be introduced in a young and emerging market. The case of MNP in The Netherlands shows that the service need not be relegated to only mature and saturated markets, when competition is diminishing; The Netherlands introduced the service when it had a tele density of only 10 percent (Madhani 2006). Although it was an economic failure, the low penetration levels had little to do with this factor. Gans, et al,. (2001) also discuss the importance of a having a dynamic market and as many willing operators as possible. This will help regulators to work with a group of driven individuals ideally pushing for the facility.

Furthermore, MNP may not be recommended in countries where a budget network model of service provision has been adopted. According to observations made by LIRNE-Asia, operators in South Asia are employing a business model that is vastly different to those adopted by their more developed counterparts around the world. While most operators in Europe and the USA follow a model where they place importance in high average revenue per user (ARPU) subscribers, operators in emerging South Asia focus on lower income users and higher network utilization (Nokia, 2008). This model enables operators to take advantage of long-tail markets, charging very low tariffs that are close to marginal costs (Samarajiva, 2008). Since operators using this model are most likely to provide the most optimal call rates already, they can only gain competitive advantages through product and service differentiation. The introduction of MNP in such a market may not be as successful, therefore, in terms of high porting rates. This is because subscribers in these economies, especially those at the middle or bottom of the pyramid make up the bulk of all subscribers, and are generally not driven to mobile use by the extra features and services. They have different phone habits due to affordability constraints and therefore will look for the operator with the most competitive rates and best quality of service. As such, the implementation of MNP may not have as significant an effect on markets that employ this kind of business model. However, if a new entrant enters such a market and provides much better quality of service, then the impact of MNP will be higher, making this an exceptional case in a market that employs the budget network model of service provision.

2.10.3 REGULATORY CONTROL

It is imperative that the telecom regulatory agency is an independent and powerful entity (Iqbal, 2007).The regulator should be able to wield significant authority over the sector and be committed to driving the facility in order to ensure that MNP is successful. When MNP in Finland was failing, regulators stepped in to ensure that operators did not provide handset subsidies and long-term contracts; they also imposed a requirement for user-friendly and free porting of numbers between networks, in order to encourage subscribers to switch providers (Smura. 2004). Oftel in UK and regulators in The Netherlands played a very minimal role in the implementation phase of MNP, leading to a poorly regulated and implemented facility (Horrocks, 2007c). It is evident, therefore, that the regulatory authority needs to have the necessary resources and power in order to drive the initiative and ensure that subscribers as well as operators are at the receiving end of a fair deal.

2.10.4 POLICY AND REGULATORY IMPLICATIONS

There are several aspects of telecom policy that are affected by the introduction of MNP. Regulatory authorities have to be concerned on the technical aspects of implementation, and pricing and payment mechanisms (Gans, et al.,, 2001). The latter is especially important if porting rates and churn is low among operators, because it raises the question of who will bear the costs(Haucap, 2003). Another consideration will be the national numbering plans of a country; this will need to be streamlined and regulators may have to reallocate numbers in order to ensure the efficient use of phone numbers. According to Gans, et al., (2001), these

policy decisions are affected by and dependent upon the questions posed in the previous section.

Implementing MNP requires technical proficiency and it is important for the regulator to have the relevant expertise in this area. The call and message routing system (all call query, onward routing, call drop back, query on release, or call forwarding), the type of number portability database(centralized, decentralized or hybrid), and the use of ENUM and next generation networks (NGN) and other such decisions are dependent on factors like regulatory independence and power sharing among industry players. The database is a crucial tool in providing MNP facilities as it holds a record of all existing mobile numbers; it is important that all mobile service providers are given the necessary incentives to link to this database. As technology develops, regulators need to stay on the ball and ensure that the technical solution they have implemented does not become obsolete. Most countries that have adopted MNP have opted for a centralized database, with very few using a decentralized or hybrid (centralized and decentralized) database. According to Katka (2004), both operators and regulators are under the impression that a central database with a direct routing system is what works best most of the time; and this technology has been successfully utilized around the world. In many cases, an independent entity or company has been created in order to handle the MNP service and manage the routing and database functions. This is so, especially in countries where the regulatory authority has limited control over the sector and/or if it lacks the internal resources to carry out these tasks (Horrocks, 2007). Such an arrangement has worked well in many countries too.

With the changes in call routing as a result of MNP, the regulatory authority should ensure that interconnection agreements between service providers remain fair and that no one operator is treated unjustly. Regulatory authorities are also required to make decisions with regards to pricing and allocating costs incurred by the implementation of MNP. As with the technical decisions, these are dependent on how willing operators are to accept the introduction of MNP, the strength of the regulator and expected churn or porting rates. Given the complex technological requirements for providing this facility, there are many direct and indirect costs incurred in setting up, developing and implementing. While the setting up and implementation of MNP incurs costs such as both non-recurrent and recurrent costs such as actual porting costs, additional conveyance costs, and costs incurred due to the lack of transparency in calling destinations (as explained above, callers are unable to determine which network or service provider they are calling if MNP is implemented; Buehler, et al.,2005), the actual numbers are based on the technical solution adopted. Each technical alternative has varying costs and therefore it is a very important decision that regulators will have to make.

As a result of the competition brought on by MNP, regulatory bodies might find that they need to invest less to regulate prices. They may find that time consuming and resource intensive regulatory tools for setting prices, such as rate of return regulation, etc, can be done away with, except unless there is no tariff regulation at all. Alternatively, regulatory authorities may have to expend greater resources on regulating interconnection rates as a

result of the introduction of the MNP facility. There is also significant amount of debate on how the costs of MNP are allocated among subscribers, operators and maybe even regulators, and this has implications on the billing procedures and systems of all the operators involved. Gans, et al., (2001) stated that users should not be burdened with these costs because it plays a role in their decision to change networks. If the charge is excessive, subscribers are unlikely to port their numbers even if it means better service or call rates.

Lin, et al., (2003) agreed that operators should bear the costs of MNP, but concede that both equity and efficiency are important factors that should be taken into account when making the actual decision. These authors suggest that all operators should pay for the initial costs of setting up the facility, while the actual porting costs should be borne by the donor and recipient operators. On the other hand, it could be said that it is not fair for a donor operator to pay for porting because they are the ones losing a subscriber, and it is the receiver operator who should pay for porting. Some even recommend that porting should be totally paid for by a subscriber because it is initiated from their end. In such a situation, service providers charge an initial fee for porting a number and in some instances subscribers are liable to pay a monthly fee to cover the administrative costs involved. Most countries, however, have adopted the allocation as described by Lin, et al., (2003). From a policy perspective, making operators pay for the service can seem like a disincentive for them to provide an efficient MNP service. Regulators have to ensure that sufficient incentives are offered to operators to encourage them to advertise and keep their subscribers in the know about their options for switching networks.

With regards to the national numbering plan, MNP calls for a reallocation of numbers. As explained before, it was the general practice for operators to be assigned a short code identifiable with the operator's network and brand. With the use of MNP, this code serves no purpose and therefore several combinations of numbers are freed for use. This is particularly useful in countries with large numbers of subscribers because the more numbers available for use, the better. Non-assignment of blocks of numbers can reduce allocation inefficiencies and curtail the distortion of distort competition; alternatively, this can also mean that there is less structure in the numbering plan (Bernardi andNuijten, 2000). As a result of these changes in number allocations, ownership rights to numbers are seemingly passed from operators to subscribers, who control the use of the number(s) they have been assigned. This could lead to users valuing their number more than before, and as discussed, will rely on the existence of MNP to avail of the best mobile telecom services in the market (Bernardi and Nuijten, 2000).

2.11 CONCEPT OF CUSTOMER SATISFACTION

Customer satisfaction (CS) is a term that has received considerable attention and interest among scholars and practitioners perhaps because of its importance as a key element of business strategy, and goal for all business activities especially in today's competitive market (Anderson, Fornell, and Lehmann, 1994; Gro¨nroos, 1984; Lovelock &Wirtz, 2007). The concept has been variously defined by many authors. ''Satisfaction is a person's feeling

of pleasure or disappointment resulting from comparing a product's performance (outcome) in relation to his or her expectation'' (Kotler& Keller, 2006 p. 144).

Satisfaction is a ''psychological concept that involves the feeling of wellbeing and pleasure that results from obtaining what one hopes for and expects from an appealing product and/or service'' (WTO, 1985). CS is "as an attitude is like judgement following a purchase act or a series of consumer product interactions" Youjae Yi (1990 cited in Lovelock &Wirtz 2007). CS is ''a consumer's post purchase evaluation and affective response to the overall product or service experience'' (Oliver, 1992). ''Satisfaction is merely the result of things not going wrong; satisfying the needs and desires of consumers.''(Besterfield 1994); CS is ''an experience-based assessment made by the customer of how far his own expectations about the individual characteristics or the overall functionality of the services obtained from the provider have been fulfilled'' (Bruhn, 2003). Admittedly, satisfaction is more complex to define to accurately fit every context and measure. In the words of Oliver (1997), "everyone knows what [satisfaction] is until asked to give a definition. Then it seems, nobody knows". From marketing perspectives, customer satisfaction has multi-dimensionality. The object of customer satisfaction may be varied and can be related to different dimensions of multiple experiences with product/service provider (Surenshchandar et al. 2002 cited in Satari,2007).

While most definitions expect a relation between customer satisfaction and quality of a product or service offering (Kotler& Keller, 2006; www.theacsu.org), satisfaction can as well be related to other non-quality dimensions (Singh 1991; Garland and Westbrook. 1989).

It may be related to an on-going business relationship or with price-performance, satisfaction with the time or service delivery or the service experience, service context and satisfaction with entire reputation and outlook of an organisation. Even with the product or service quality there can be several dimensions (Gro¨nroos, 2000, 2001; Bo Edvardsson 2005), such as what product offers, product or service reliability, timeliness, friendliness of the service providers, and the like. Therefore depending on the purpose one wants to achieve, one can relate satisfaction to any object of interest.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 INTRODUCTION

Methodology is the answer to the why and how the research was carried out in the first place. This increases the possibility of receiving appropriate answers to the research questions and derives valuable insights into the topic at hand. The choice of research approach is the first topic discussed in this chapter, followed by data collection, sample selection and data analysis

3.2 RESEARCH DESIGN

Research means different things to different people (Amartunga et al, 2002) and the intention behind it are to investigate innumerable data, theories, experiences, concepts and law. The two broad and distinct approaches to social research cover the Quantitative and Qualitative methods of enquiry. The purpose of this study is to find out how the implementation of the mobile number portability is going and whether indeed consumers are taking advantage of MNP to switch. To get a reliable result, it will be of great importance to collect a larger amount of data hence, quantitative method fits this study. Frechtling and sharp (1997) characterized the common data collection techniques used in quantitative research as questionnaires, tests and existing literature .A survey study was deemed appropriate for this research.

3.3 POPULATION

The population of relevance were all students on the campuses of University of Ghana, Ghana Institute of Management and Public Administration (GIMPA) and each of the Mobile Telephone service providers; (Mtn, Airtel, Vodafone, Tigo, Expresso, and Glo.)

The two university campuses were selected for the subscribers, therefore, population selection was done on the campuses of these two universities and each of the mobile service providers.

Towards the goals of effect of implementation of Mobile Number Portability on subscriber connectivity in Ghana, the researcher conducted the research in line with Dix, Finlay, Abowd and Beale (1998), who suggested that the best way to find out how a system meets users' requirement and expectation is to ask the user. According to Kearney / Cambridge (2004) the usage of mobile phones is high among the generation of 35 years and below. Therefore seeking the views of those within that age group (18 – 35 years) regarding the implementation of the mobile number portability is most relevant. Again, the usage of age range as a prequalification instrument for the selection for the respondents decreases the variations in the population data (Saunders, 2000).The age bracket of 18-35 is largely found in the universities hence the selection of the two institutions; university of Ghana and Ghana Institute of Management and Public Administration (GIMPA).

3.4 SAMPLING TECHNIQUES AND METHOD

From the population, two hundred and forty students (240 students) and a manager from each of the six service providers in the country were randomly selected to constitute the final sample size for this study. The choice of the sample was informed by a review of some previous researches. For instance Burns (2000) suggested that researchers should use large sample sizes ranging from about 200 to 1000 respondents. In fact he advised novice in researcher to use large sample sizes as much as possible because it maximizes the possibility that the mean, percentages and other statistics will reflects the true estimates of the population. Convenient sampling of the population is highly favoured and was more appropriate in this study.

Survey was used as the query techniques to obtain information from the respondents. Whilst interview was used to gather data form the service providers, questionnaires were used for the students. It needs to be noted that the use of questionnaires is an inexpensive way to gather data from potentially large number of respondents.

3.5 SURVEY DATA COLLECTION AND ANALYSIS

Data collected specifically for the research project undertaken is the definition of primary research as provided by Saunders et.al (2003). The various ways of gathering primary data is through surveys, focus group, observations and interviews. A questionnaire and interview survey were selected for this research work. Therefore, data for this research was collected

through a questionnaire and an interview survey, which consisted of questions some of which were open ended and closed format as well as likart scale. This is an adoption of the Likart technique which Corbetta (2003) stated that Likart (1932) proposed the scaling at the beginning of 1930s. The style expects the user to judge a specific statement on numeric scale of 1 to 5, usually corresponding to a measure of agreement or disagreement and may be in ascending or descending order of importance. It is perceived better that the most positive response must be mapped with the highest digit on the scale. Also, a 'Yes' or 'No' question was included to get affirmative answer from the respondent.

Two hundred and forty questionnaires (240) were issued to two hundred and forty respondents at random on the campuses of two prominent tertiary institutions in Accra, namely; University of Ghana (Legon) and Ghana Institute of Management and Public Administration (GIMPA). All the two institutions had equal number of one hundred and twenty (120) questionnaires dispatched. Two hundred responses were returned with no errors, that constitutes a response rate of 83.3%.

The analysis for the survey data will be done by collating, grouping and manually counting of the survey. The SPSS 17.0 was also helpful in the analysis of the data. The analysed results are presented in tabular form. Pictorial analysis using chart will also be used.

CHAPTER FOUR

DATA PRESENTATION AND ANALYSIS

4.1 INTRODUCTION

This chapter will provide the presentation of empirical data findings. It will also provide the reader with a discussion and analysis of findings.

4.2 DESCRIPTIVE PRESENTATION OF SURVEY QUESTIONS

This field survey was conducted in May 2012. The survey utilized a questionnaire designed to collect data regarding the the implementation of mobile number portability (MNP) in Ghana and its effect on mobile subscribers.

Two hundred and forty questionnaires (240) were issued to two hundred and forty respondents at random on the campuses of two prominent tertiary institutions in Accra, namely; University of Ghana (Legon) and Ghana Institute of Management and Public Administration (GIMPA). All the two institutions had equal number of hundred and twenty (120) questionnaires dispatched. Two hundred responses were returned with no errors, that constitutes a response rate of 83.3%.

All the questions on the questionnaires were designed specifically to respond to each objective. The early part of the questionnaire dealt with the demography of the respondents.

The only criteria or pre-qualification used for this selecting the respondents was the age bracket of 18-35 who are largely found in the universities hence the choice of those two institutions. The researcher used the above age bracket of 18 to 35 was because the usage of mobile phones is high among the generation of 35 years and below (Kearney/Cambridge 2004). Therefore seeking the views of those within that age group regarding the implementation of the mobile number portability is most relevant. Again, the age range of 18 to 35 years was used as the main prequalification instrument for the selection for the respondents because it decreases the variations in the population data (Saunders, 2000).

4.2.1 DEMOGRAPHIC VARIABLES

The following presents the various demographic variables that were measured;

Table 4.1 – A table showing the gender of the respondents

	Frequency	Percent	Valid Percent	Cumulative Percent
MALE	102	51.0	51.0	51.0
FEMALE	98	49.0	49.0	100.0
Total	200	100.0	100.0	

Table 4.1 above shows the gender dispositions of the respondents used for this study. From the above there were a total 102 representing 51.0% of respondents being males and female were 49.0% of the total respondents.

Table 4.2 – A table showing the various mobile networks used by the respondents

	Frequency	Percent (%)	Valid Percent	Cumulative Percent
Vodafone	49	24.5	24.5	24.5
Airtel	47	23.5	23.5	48.0
Tigo	37	18.5	18.5	66.5
MTN	54	27.0	27.0	93.5
Expresso	13	6.5	6.5	100.0
Total	200	100.0	100.0	

Table 4.2 above shows the various mobile networks used by the respondents. The table above shows that, majority of the 27% of the respondents used MTN. A further 24.5% said they use Vodafone while 23.5% said they used the Airtel network. About 18.5% said they use the Tigo network and a little over 6.5% said the use the Expresso network.

Table 4.3 – A table showing the mode of respondents mobile connection

	Frequency	Percent	Valid Percent	Cumulative Percent
PREPAID	188	94.0	94.0	94.0
POSTPAID	12	6.0	6.0	100.0
Total	200	100.0	100.0	

The above table 4.3 shows the type of service the respondents are using with regards to the Mobile Connection. As many as 94% of the respondents are on the prepaid services whiles a further 6% are on the post-paid service.

Table 4.4 – A table showing monthly expenditure of respondents on their mobile connections

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	HIGH	59	29.5	29.5	29.5
	MEDIUM	76	38.0	38.0	67.5
	LOW	65	32.5	32.5	100.0
	Total	200	100.0	100.0	

The table above shows the monthly expenditure of respondents on their mobile connections. The table 4.4 shows that, approximately 38% said that their monthly expenditure on their mobile connections. About 32.5% said that the monthly expenditure was low, while a further 29.5% said that their monthly expenditure was high.

4.3 SUBSCRIBERS AWARENESS AND ACCEPTANCE OF THE MOBILE NUMBER PORTABILITY IMPLEMENTATION IN GHANA

Table 4.5 – A table showing whether respondents Know MNP

	Frequency	Percent	Valid Percent	Cumulative Percent
YES	171	85.5	85.5	85.5
NO	29	14.5	14.5	100.0
Total	200	100.0	100.0	

The table 4.5 above shows whether respondents know the mobile number portability (MNP). The table shows that, 85.5% said that they know what the mobile number portability (MNP) is. Only 14.5% said they do not have the knowledge of the MNP.

Table 4.6 – Have respondents on the various mobile networks have changed or switched their network operator

		Changed or Switched Network operator		
		Yes	**No**	**Total**
Mobile Network Service Provider	**Vodafone**	19	30	49
	Airtel	20	27	47
	Tigo	14	23	37
	MTN	22	32	54
	Expresso	5	8	13
Total		80	120	200

The table 4.6 above shows whether respondents on the various mobile networks have switched or changed their service provider. The table shows that, 66.7% have not switched their mobile network operators. However 33.3% of the respondents said they have changed their mobile network service providers.

The table 4.6 and the figure 4.1 above shows that, out of a total of 49 Vodafone respondents 19 said they had switched from another networks to Vodafone while 30 of the Vodafone respondents said that they have not changed their networks. Again, 20 respondents who use Airtel said that they had ported their numbers from their previous network to Airtel. A further 27 Airtel respondents said they have not switched or change their network operator. Out of a total of 37 Tigo respondents 14 of them said they had switched networks to Tigo while another 23 respondents that they had not changed their network operator.

Table 4.7 - A table showing where respondents on the various mobile networks have ported their numbers to.

		Switched		
		IN	OUT	Total
Mobile Network Service Provider	**Vodafone**	17	3	20
	Airtel	12	8	20
	Tigo	7	7	14
	MTN	9	13	22
	Expresso	3	2	5
Total		48	32	80

Table 4.7 showing whether respondents on the various mobile networks have ported their numbers. Out of the total number of 80 respondents who said they had ported their numbers. The graph above shows to which network they had left or gone to. They graph shows that, 17 respondent said they ported their numbers to Vodafone whiles an additional 3 respondents said they left Vodafone. Another 12 respondents said they had ported to Airtel while 2 respondents said they left Airtel network. Equal number of 7 respondents had left Tigo or joined Tigo through the mobile portability. With regards to MTN, 9 respondents said they ported their numbers to MTN while 12 respondents said they had switched to different networks.

Table 4.8 - A table showing whether respondents on mobile network service provider would change their network operator in future.

		Would you change your operator			
		Yes, I will	NO, I WOULDN'T	MAY BE	Total
Mobile Network Service Provider	**Vodafone**	9	15	6	30
	Airtel	7	13	7	27
	Tigo	4	13	6	23
	MTN	3	17	12	32
	Expresso	1	5	2	8
Total		24	63	33	120

Table 4.8 showing whether respondents on the various mobile networks would ported their numbers in future. Out of the total number of 120 respondents who said they had not already ported their numbers, 24 respondents across all network said they would port their numbers in future. Sixty three (63) of the respondents said they would not port their numbers. Another 33 respondents said they may in future port their number.

4.4 REASONS SUBSCRIBERS SWITCH THEIR NETWORK OPERATOR(S)

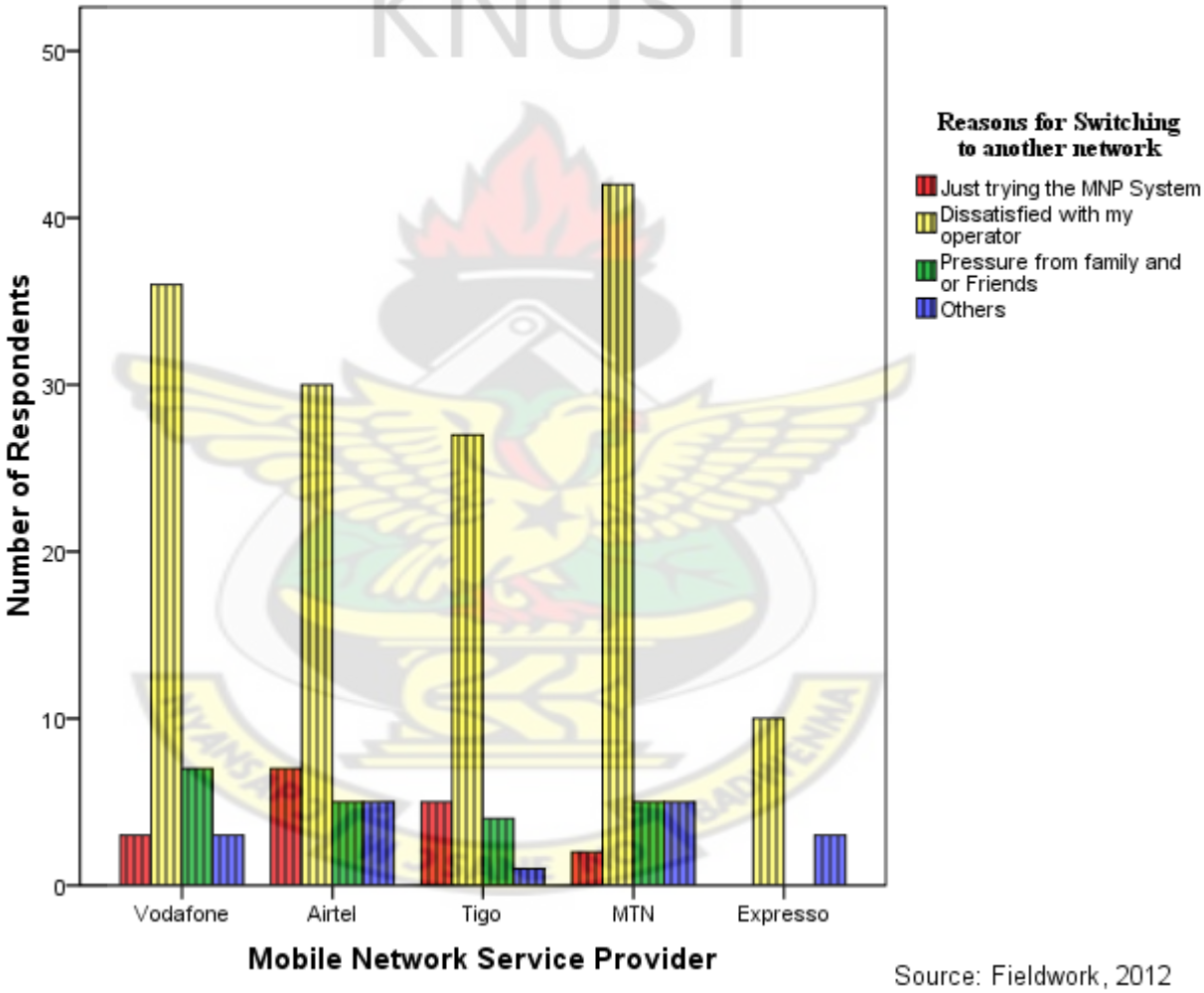
Table 4.9 - A table showing the reason why respondents on all mobile network would change their operator(s)

		Reasons for Switching to another network				
		Just trying the MNP System	Dissatisfied with my operator	Pressure from family and or Friends	Others	Total
Mobile Network Service Provider	Vodafone	3	36	7	3	49
	Airtel	7	30	5	5	47
	Tigo	5	27	4	1	37
	MTN	2	42	5	5	54
	Expresso	0	10	0	3	13
Total		17	145	21	17	200

The table 4.9 above shows the reason why respondents on all mobile networks would change their operator(s). Majority of respondents said they have ported their numbers or intend to port their numbers because they are dissatisfied with their network service operator. About 21 respondents also said they ported their numbers or intend to port their

numbers because of pressures from their families. Seventeen (17) a piece said the switched their network operator intend to because of reasons other than the options stated and also because they were trying the MNP system.

Figure 4.3 - A Bar Chart showing the reasons why respondents switched from one networks to another



Source: Fieldwork, 2012

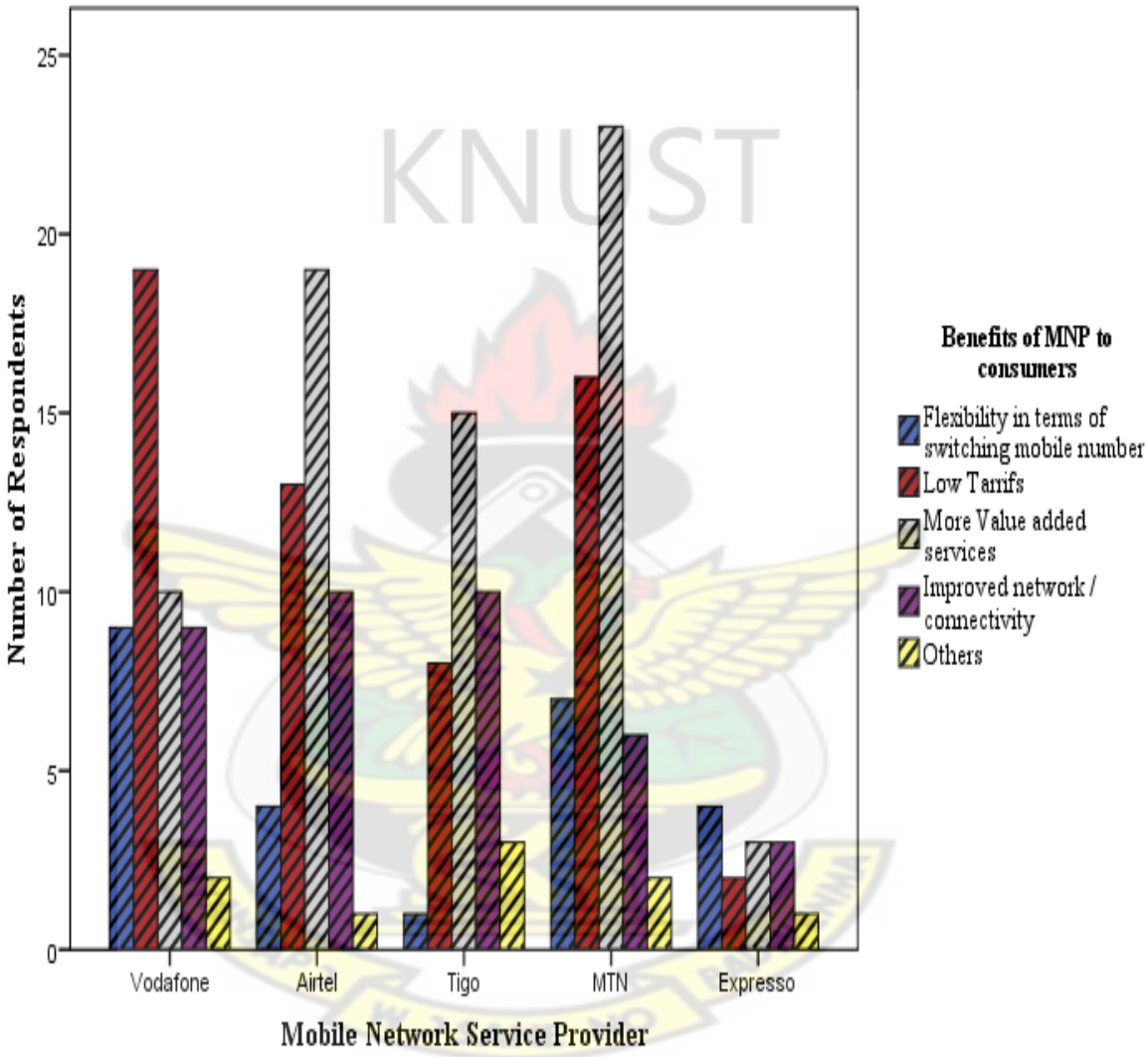
The figure 4.3 above shows the reason why respondents on all mobile networks would change their operator(s). Majority of respondents said they have ported their numbers or

intend to port their numbers because they are dissatisfied with their network service operator. About 21 respondents also said they ported their numbers or intend to port their numbers because of pressures from their families. Seventeen (17) a piece said the switched their network operator intend to because of reasons other than the options stated and also because they were trying the MNP system. The graph again elaborate that the dissatisfaction is indeed across the various networks. Again, it seems that respondents who were on Vodafone network were greatly influenced by their families to port to Vodafone or from Vodafone to other networks

4.4 MNP IMPACT ON MARKET COMPETITION.

Figure 4.4 above shows a bar chart on whether respondents agreed that the main advantage of MNP is the opportunity it gives the customer to maintain his/her original number. Majority of the respondents across networks somewhat agreed with that statement. This was followed by the respondents who said they are undecided with regards to that statement. Again a significant number also said they strongly agree with the main advantage as being the ability of the subscriber to maintain his or her original number.

Figure 4.5 - A Bar Chart showing benefits of MNP to consumers

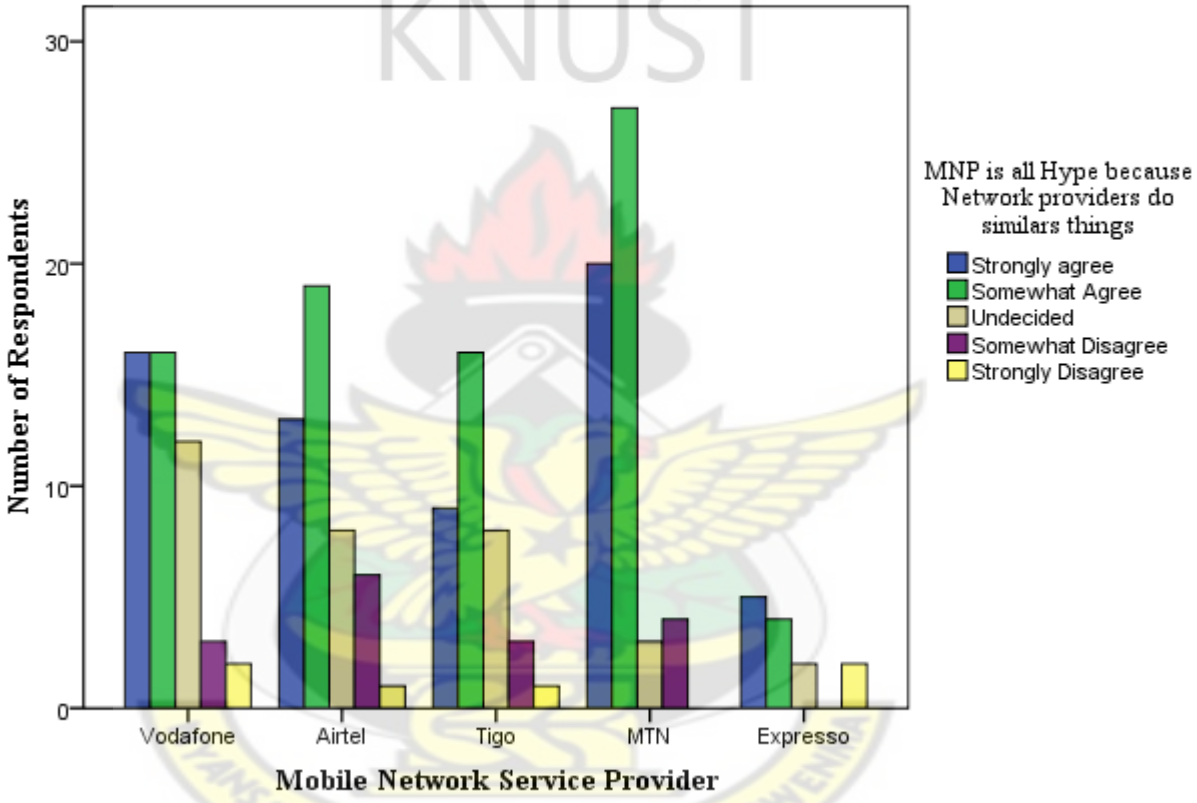


Source: Fieldwork, 2012

The figure 4.5 above shows other benefits of MNP to consumers. Most of the respondents across the various network said that MNP has given them more value added service benefits. This was followed by the lower tariffs and improved networks and better

connectivity. Others also said the MNP provide flexibility in terms of switching mobile number.

Figure 4.6 - A Bar Chart showing how respondents agreed or disagreed with the statement that MNP is all hype and that not much benefits would be accrued to consumers because all the operators provide the same kinds of services

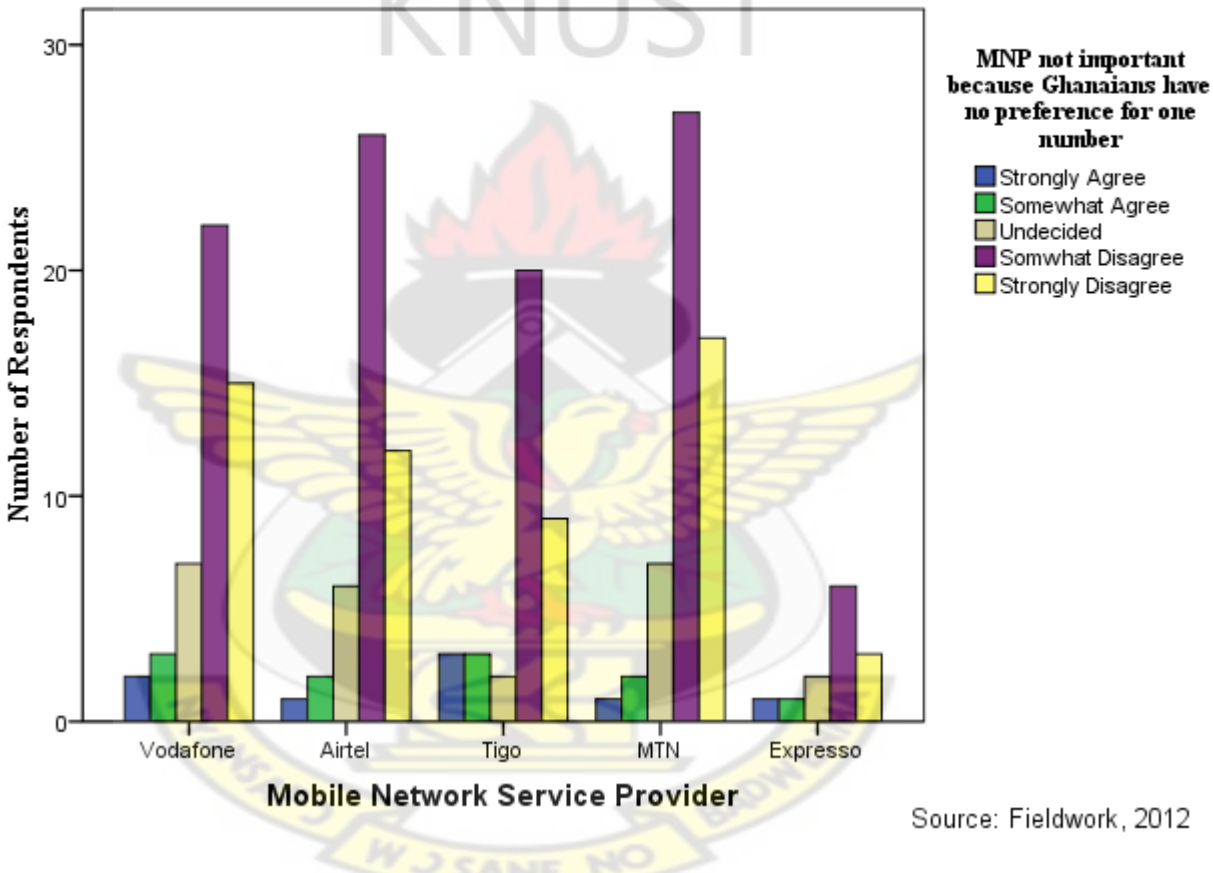


Source: Fieldwork, 2012

Figure 4.6 above shows how respondents agreed or disagreed with the statement that MNP is all hype and that not much benefits would be accrued to consumers because all the operators provide the same kinds of services. Majority of the respondents strongly or somewhat agreed with the statement. Followed by those who responded that they have not

decided on the options available to them. Fewer respondents disagreed or strongly disagreed with that statement.

Figure 4.7 - A Bar Chart showing how respondents agreed or disagreed with the statement that MNP is not important because Ghanaians have no preference for a single mobile number

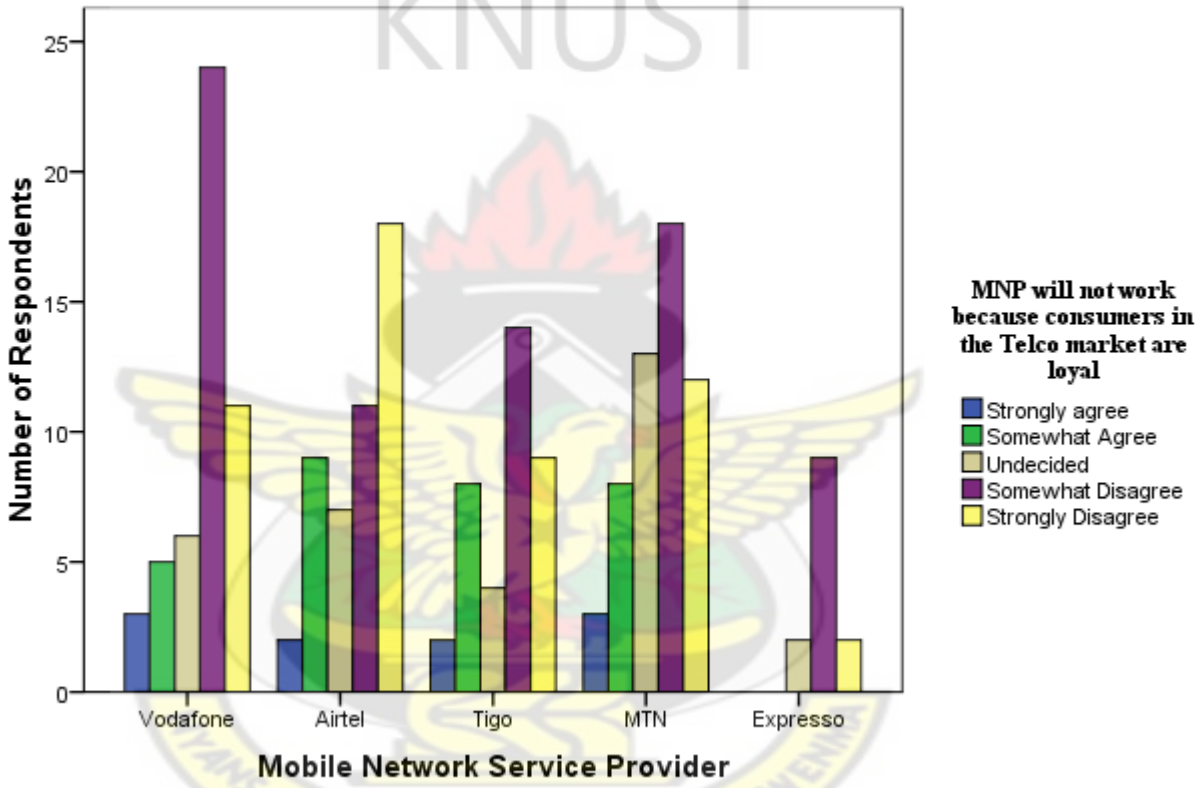


Source: Fieldwork, 2012

The figure 4.7 above shows the how respondents agreed or disagreed with the statement that MNP is not important because Ghanaians have not important because Ghanaians have no preference for a single mobile number. From the graph above majority of the respondents somewhat disagreed and strongly disagreed. With a lesser number of respondents who

responded as undecided. There fewer respondents who agreed or disagreed with the statement.

Figure 4.8 - A Bar Chart showing how respondents agreed or disagreed with the statement that MNP would not work because consumers in the telecommunication industry are loyal

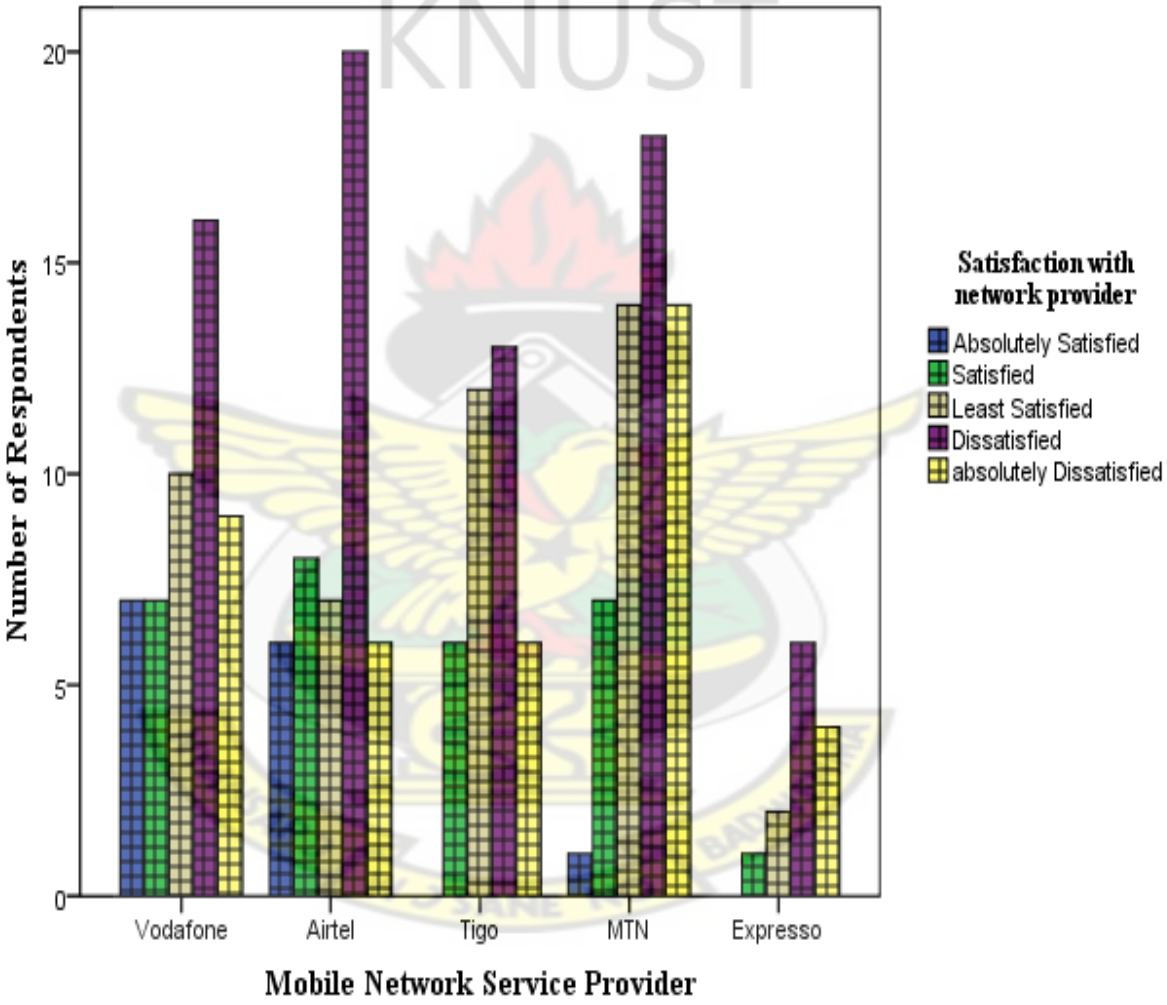


Source: Fieldwork, 2012

The figure 4.8 above showing how respondents agreed or disagreed with the statement that MNP would not work because consumers in the telecommunication industry are loyal. From the graph above majority of the respondents somewhat disagreed and strongly disagreed. With a lesser number of respondents who responded as undecided. There fewer respondents who agreed or disagreed with the statement.

4.6 THE SATISFACTION LEVEL OF SUBSCRIBERS WITH NETWORK SERVICE PROVIDER

Figure 4.9 - A Bar Chart showing how satisfied respondents are with their network operators

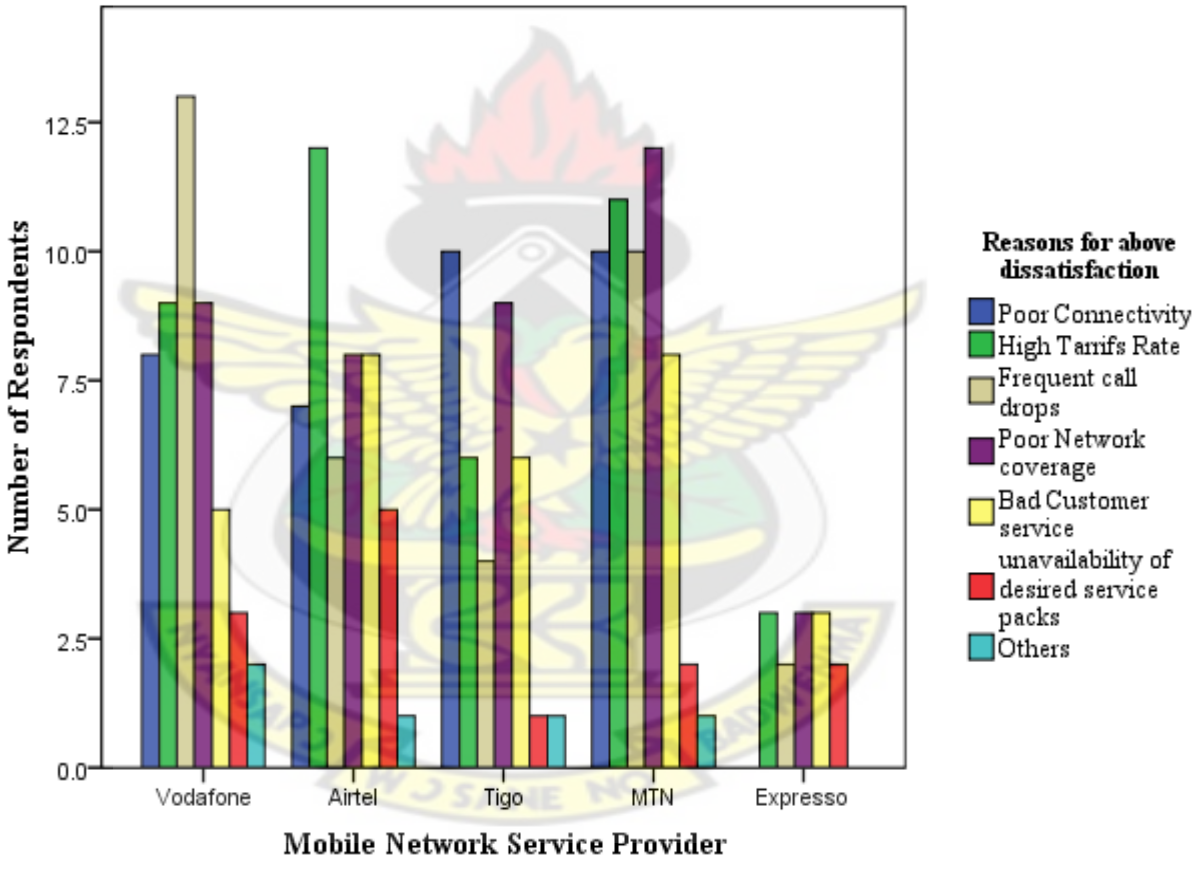


Source: Fieldwork, 2012

The figure 4.9 above shows how satisfied respondents are with their network operators. From the graph above most of the respondents are dissatisfied with their network providers.

There were a significant number of respondents who sad that they were least satisfied with their network providers. Others also said they were satisfied with a lesser number of respondents who responded as undecided. There fewer respondents who agreed or disagreed with the statement.

Figure 4.10 - A Bar Chart showing the major reasons for consumer dissatisfaction in telecommunication industry



Source: Fieldwork, 2012

The figure 4.10 above shows the major reasons for consumer dissatisfaction in telecommunication industry. Among the reasons provided as an option to the respondents, poor network coverage, high tariffs rate, poor connectivity, bad customer service,

unavailability of desired service packs and others are the best selected options in the descending order. With specific reference to the network operators, most respondents on Vodafone said they were dissatisfied with their operator because of frequent call drops. Most respondents on Airtel said they were dissatisfied because of high tariff rate. Respondents on Tigo most said poor connectivity is their main reason for dissatisfaction. Respondents on MTN said poor network coverage was their main reason for dissatisfaction.

4.7 DISCUSSION ON THE ABOVE FINDINGS

The rationale for implementing the MNP among the most commonly cited motives is the lowering of switching costs (Smura, 2004; Buehler, Dewenter&Haucap, 2005). Mobile customers' who switch operators in return for better quality of service (QoS) and/or call rates, are benefited by the MNP facility as they do not incur costs to update their networks about a number change. In addition, they are less likely to miss out on phone calls (except during the short period when the actual number porting from one operator to another takes place).

As discussed by Gerpot, Rams & Schindler (2001), customers put a value on their phone numbers, especially when they have used that number for an extended period of time, and would rather stay with an unsatisfactory service provider in an effort to retain that phone number. This in itself is a cost to the user, who has to put up with poor QoS and maybe even make calls at uncompetitive rates. The existence of portability, therefore, enables such customers to make a simple change to an operator of their choice as a result of lower

switching costs. It must be noted, however, that MNP cannot completely remove these costs mobile subscribers will almost certainly incur some cost in switching operators, in terms of time taken to make the switch (it is possible that they may miss a few calls) and money spent on porting the number (the porting process involves a lot of technicalities, the costs of which must be covered by regulators and operators).However, these are one-time costs, while the costs of a poor service and the compulsion to carry on may have huge implicit costs and may reduce consumer welfare.

Majority of the respondents said they agreed that MNP gives the customer the opportunity to maintain his/her original number. Other benefits MNP would offer are more value added service, lower tariffs and improved networks and better connectivity. These benefits as suggested by respondents accrue only to those who take the opportunity to port their numbers. Again, consumers might be getting those benefits enumerated above because already most people are having double sim cards and in most cases triple sim cards.

That is why most of the respondents agreed that MNP is all hype and that not much benefit would be accrued to consumers because all the operators provide the same kinds of services. Again the research shows that, Ghanaians indeed have preference for a single mobile number. And that they hold dear their mobile numbers because they find it personal. However, consumers in the telecommunication industry are not loyal to a service provider. They readily stay on one network if they so become dissatisfied.

The above findings confirm the statement made by Buehler, Dewenter and Haucap (2005, p.1) that, "the rationale of introducing mandatory MNP is simple: it is expected to bring about considerable benefits to consumers of mobile services".

MNP facilitates the movement of customers' between service providers, putting the latter under pressure to provide greater levels of service. The introduction of MNP entails a rethinking of business strategies beyond price wars alone, which result in competitive tariffs among industry players (Buehler &Haucap, 2004), as they will not be enough to retain subscribers; instead, operators will have to improve their QoS and even offer innovative services and features in order to prevent customers from changing networks. This is perceptibly beneficial to mobile subscribers (Katka, 2004), but operators have to undertake expensive marketing campaigns and advertising costs, and increase investment costs. The potential for high churn rates and loss of subscribers adds to this pressure (Keynote Capitals, 2009).

No doubt, the idea that prompted the design of MNP is great, but implementation did not gather the required momentum, according to the survey, it is not widely accepted as lasting solution for our high call and interconnection rates but rather as a quick fix. The call and inter connection rates are still on the high side and cut short the promise to deliver better alternative. Poor network coverage, high tariffs rate, poor connectivity, bad customer service, unavailability of desired service packs were rated high in the descending order as the highest causes of the dissatisfaction in the telecommunication industry.

However, MNP will create a healthy and vibrant competition among the Mobile phone Service providers because each operator would be striving hard to maintain and retain its customer base. The competition would ultimately come to connectivity rate and availabilities which were rated high as dissatisfaction factors.

4.8 AN INTERVIEW WITH NETWORK SERVICE PROVIDERS ON THE CHALLENGES OF THE IMPLEMENTATION OF MOBILE NUMBER PORTABILITY IN GHANA.

The implementation of mobile number portability in Ghana has given subscriber the opportunity to freely move to any service provider of their choice, enjoy better connectivity, lower call tariffs, value added service (VAS) improved customer service among other. This service has also introduced a stiffer competition among the service providers of the various network companies in Ghana. An interview section with the various network service providers reveals the following challenges.

4.8.1 NUMBER PORTING TIME

Although the estimated time for a successful number porting is two hours fifty minutes (2hrs, 50min), most of the services providers are not able to complete the process within the estimated time. The service providers cited lack of proper coordination among the competing firm in processing a customer number for porting.

4.8.2 LACK OF AWARENESS OF THE SERVICE

All the network service providers interviewed (mtn, vodafone, tigo, airtel, expressoandglo) by the researcher indicated that, a large majority of subscribers are not aware of mobile number portability whilst a greater minority of subscribers are not well informed on the said topic. The interview with the network service operators also revealed that only a few subscribers have a better understanding on the topic and the benefits thereof for subscribers.

4.8.3 UNFAIR MARKETING PRACTICES.

Some of the service providers interviewed disclosed that some of their competitor's field persons take advantage of the ignorance of the subscribers to port their numbers from their network especially in the rural and urban market centres. This practice greatly affects their subscriber base, market share and revenue in the long run.

CHAPTER FIVE

CONCLUSION AND RECOMMENDATIONS

a. INTRODUCTION

This chapter provides a summary of the study which includes previous literature reviewed, methodological discussions and findings with interpretations presented in chapter four. It also highlights the critical lessons drawn from the study. The chapter ends with a conclusion and appropriate recommendations aimed at informing players of all the industries and companies.

5.2 SUMMARY OF FINDINGS

The summary of findings of this research has been presented below according to the objectives of the research.

5.2.1 CUSTOMERS' AWARENESS OF MOBILE NUMBER PORTABILITY IN THE SELECTED INSTITUTIONS.

The research established that greater numbers of the respondents are indeed aware of the implementation of the MNP in Ghana. Again the research shows that, Ghanaians indeed have preference for a single mobile number. And that they hold dear their mobile numbers because they find it personal. However, consumers in the telecommunication industry are not loyal to a service provider. They readily stay on one network if they so become dissatisfied.

5.2.2 REASONS WHY SUBSCRIBERS IN THE SELECTED TERTIARY INSTITUTIONS WOULD SWITCH TO ANOTHER NETWORK OPERATORS.

Majority of the respondents said they agreed that MNP gives the customer the opportunity to maintain his/her original number. Other benefits MNP would offer are more value added service, lower tariffs and improved networks and better connectivity. These benefits as suggested by respondents accrue only to those who take the opportunity to port their numbers. Again, consumers might be getting those benefits enumerated above because already most people are having double sim cards and in most cases triple sim cards.

That is why most of the respondents agreed that MNP is all hype and that not much benefit would be accrued to consumers because all the operators provide the same kinds of services. Again the research shows that, Ghanaians indeed have preference for a single mobile number. And that they hold dear their mobile numbers because they find it personal. The rationale for implementing the MNP among the most commonly cited motives is the lowering of switching costs (Smura, 2004; Buehler, Dewenter&Haucap, 2005). Mobile customers' who switch operators in return for better quality of service (QoS) and/or call rates, are benefited by the MNP facility as they do not incur costs to update their networks about a number change. In addition, they are less likely to miss out on phone calls (except during the short period when the actual number porting from one operator to another takes place). Majority of the respondents said they agreed that MNP gives the customer the opportunity to maintain his/her original number. Other benefits MNP would offer are more value added service, lower tariffs and improved networks and better connectivity. These

benefits as suggested by respondents accrue only to those who take the opportunity to port their numbers. Again, consumers might be getting those benefits enumerated above because already most people are having double sim cards and in most cases triple sim cards.

5.2.3 THE EFFECT OF MNP ON CHURN RATE WITHIN THE MOBILE TELEPHONY

The finding of this research suggests that consumers in the telecommunication industry are not loyal to a service provider. They hardly stay on one network if they so become dissatisfied. However, the MNP has not caused a significant churn amongst subscribers. The successful implementation of MNP is associated with high porting rates. This is because high porting rates signify that the facility is being utilized and confirms that mobile subscribers are in demand of the service. The reasons for the smooth implementation can be attributed to several factors, including low porting times, low or even no charges allocated to subscribers for porting their numbers, promotion of the service by regulators and subscriber awareness of the service, and the entrance of new or disruptive operators.

However, the research established that in terms of numbers, majority of the respondents have not ported their numbers. A reason for low porting rates is because subscribers perceive there is no need to switch networks because of the homogeneity of services on offer by the various network providers in Ghana i.e. Vodafone, MTN, Tigo, Airtel and Expresso. That is why most of the respondents agreed that MNP is all hype and that not much benefit would be accrued to consumers because all the operators provide the same

kinds of services. However, MNP will create a healthy and vibrant competition among the Mobile phone Service providers because each operator would be striving hard to maintain and retain its customer base. The competition would ultimately come to connectivity rate and availabilities which were rated high as dissatisfaction factors.

5.2.4 THE SATISFACTION LEVELS OF SUBSCRIBERS WITH THEIR PROVIDERS IN THE SELECTED INSTITUTIONS

Subscribers in the selected institutions are generally not satisfied with all the telecommunication network service providers currently operating in Ghana. Poor network coverage, high tariffs rate, poor connectivity, bad customer service, unavailability of desired service packs were rated high in the descending order as the highest causes of the dissatisfaction in the telecommunication industry. Subscribers also believe that call and inter connection rates are also high and hence cut short the new entrant mantra to deliver better alternative.

5.2.5. CHALLENGES OF MOBILE NUMBER PORTABILITY IMPLEMENTATION IN GHANA BY SERVICE PROVIDERS.

Network service providers in Ghana have difficulty with the time taken for a number to be ported successfully from one service provider to the other. There are also unfair practices in relation to number porting coupled with the lack of awareness of the service and its resultant benefits.

5.3 CONCLUSION

While most of the literature attaches the success of MNP with high porting/churn rates, this research argues otherwise. The MNP service can still be considered a success, even when these rates are low, if the threat of porting leads to improved competition among operators, and hence, lower tariffs and better services. The purpose of regulation is to facilitate a level playing field and foster competition so that end-users are able to acquire the most optimal levels of quality at competitive prices (Melody,1999; Samarajiva 2002). As such, it could be said that if there has been a substantial effect on tariffs and quality of service post-implementation of MNP, leading to satisfied customers it may be considered that the implementation of MNP is successful.

5.4 RECOMMENDATIONS

MNP is considered a must-have facility in every country due to the flexibility and freedom it provides to mobile subscribers. Unlike the mobile markets in most western countries where the economies have achieved high levels of penetration and competition and are able to withstand the policy implications of the introduction of the service, Countries like Ghana on the other hand, are yet to achieve that and therefore lack the necessary factors that will ensure the success in terms of porting rates.

Therefore, given the topography, existing market structures and subscribers the researcher recommends that an extensive education and awareness creation on mobile number portability and it benefits be done to ensure higher churn or porting rate for effective completion.

The researcher also recommends that the National Communication Authority should enact laws and regulation to guide against unlawful porting.

Further studies should also be conducted in the following areas:

- The demand for MNP from both subscribers and operators.
- The effect on market size or the threshold market size on MNP.
- The strength and independence of the National Communication Agency (NCA) in regulation pricing cutting that comes as a results of the MNP.

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Thesis Questionnaire

My name is Isaac Tei Kartey a CEMBA student at KNUST. I am undertaking a research on "the implementation of Mobile Number Portability in Ghana and its effect on subscribers" as my final year thesis work. This questionnaire is an important part of my thesis. Please spare a few minutes and fill it up. The questionnaire consists of 4 sections. All four sections need to be filled except when specifically redirected to other question(s). Please make sure you read all questions and answer them appropriately.

* Required

Section One

* Q1. Do you know what Mobile Number Portability is?

- Yes
- No

* Q2. If your answer to Q1 was Yes, how exactly do you understand Mobile Number Portability? Answer in the space given below. If your answer was No, go to Section 4.

Section Two

Q3. Do you own an active Mobile number from any of the mobile network service providers in Ghana? If your answer is No, please move to Section 4.

- ○ Yes
- ○ No

Q4. Which the mobile Service Providers in Ghana do subscribe to?

- ☐ Vodafone
- ☐ Airtel
- ☐ Tigo
- ☐ MTN
- ☐ Expresso

Q5. What is the mode of your Mobile Connection ?

- ○ Prepaid
- ○ Postpaid

Q6. How would you describe your monthly spending on your Mobile Connection ? (Prepaid - Top Up/Recharge ,Postpaid - Bill)

- ☐ High
- ☐ Medium
- ☐ Low

Q7. How satisfied are you with your current Mobile Connection ? Rate your satisfaction on the scale given below.

	1	2	3	4	5	
Absolutely Satisfied	○	○	○	○	○	Absolutely Dissatisfied

Q8. Provide any comment you might find relevant to clarify the above answer.

Q9. If you rated your Mobile Connection 4 or 5 in Q5, what would be the reason for your dissatisfaction ?

- ☐ Poor Connectivity
- ☐ High Tariffs rate
- ☐ Frequent Call Drops
- ☐ Poor Network Coverage
- ☐ Bad Customer Service
- ☐ Unavailability of desired service packs
- ☐ Other:

Section Three

Q10. Since the implementation of Mobile Number Portability (NMP), have you change/switch your Mobile Connection to another ?

- Yes
- No

Q11. If your answer was No to Q10, do you intend to take advantage of the Mobile Number Portability (NMP), to switch to a different network?

- Yes, I will
- No, I will
- Maybe

Q12. And if you answered yes in Q10, what was your reason for switching?

- Just tried the NMP system
- Dissatisfied with my Network service provider
- Pressure from Family or Peer
- Other:

Q13. Would agree that the main reason why you have used or will use the NMP is because you maintain your original number no matter network you change to

Strongly Agree	Somewhat Agree	Neutral/Undecided	Somewhat Disagree	Strongly Disagree

Q14. What do you think are your benefits as a consumer from Mobile Number Portability? You can choose multiple options.

- Flexibility in terms of switching mobile networks
- Low tariffs
- More Value added services

- ☐ Improved Network/ Connectivity
- ☐ Other: ____

Q15. How important/useful do you think would Mobile Number Portability prove to be in the Ghanaian market scenario ?

	Extremely Important	Very Important	Somewhat Important	Not Very Important	Not At All Important
	○	○	○	○	○

Q16. Are you aware of the procedure to be followed for Mobile Number Portability while switching connections ?

- ○ Yes
- ○ No

Q17. Are you aware of any constraints restricting the usage or application of Mobile Number Portability ?

- ○ Yes
- ○ No

Q18. Rate your level of agreement with the following statements on the given grid.

	Strongly Agree	Somewhat Agree	Neutral/Undecided	Somewhat Disagree	Strongly Disagree
Mobile Number Portability is all hype because all the Service	○	○	○	○	○

	Strongly Agree	Somewhat Agree	Neutral/Undecided	Somewhat Disagree	Strongly Disagree
Providers offer virtually the same kind of services					
Mobile Number Portability may not prove to be so useful after all because there is not a strong preference for numbers among Ghanaian customers.					
Mobile Number Portability is not for the Ghanaian market because customers are loyal to the mobile network they have been using.					

Section Four

Q19. Age

- 15 - 25
- 25 - 35
- 35 - 45
- above 45

Q20. Sex

- ☐ Male
- ☐ Female