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**Evaluation of Cell Phone Business in Nigeria:
A Paradox of Gains and Losses**

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ABSTRACT

Communication of information has been enhanced with the advent of Information and Communication Technology, mobile phone technology inclusive, which contribute to economic growth and development. This study assessed the profitability and hidden disincentives of cell phone business in Nigeria. 200 respondents were sampled in five randomly selected States. Data analysis included descriptive and gross margin techniques. In terms of gains, margin-cost ratio (MCR) of mobile phone business was 1.72 while in terms of losses, about 54% reduction in margin was experienced in using generator to provide power. It was suggested that improvement in public power supply must be relentlessly pursued.

Keywords: Information, communication, cell phone, ICT, agriculture

INTRODUCTION

According to Warren (2002) and Fong (2009), ICTs include technologies and methods for storing, managing and processing information (e.g., computers, digital and non-digital libraries) and for communicating information such as e-mail, radio and television, (mobile) cell phones and “the web.” The importance of information and communication in human activities cannot be overemphasized. Economists have long emphasized that information is critical for the efficient functioning of markets (Jensen, 2007). Accurate and speedy communication of information is important for negotiating prices, terms of payment, securing stocks of commodities and coordinating deliveries especially for any innovative entrepreneur. In many instances it is common to resort to traditional modes like oral and other established indigenous information mechanisms for obtaining information. However, with advancement in technology, many media have been

developed which make communication and information flow faster and easier; leading to the advent of what is known as Information and Communication Technology (ICT).

Iziguzo (2010) opined that economic development across all sectors of a nation's economy can be accelerated by improvements in the ICT infrastructure of the country. This is because ICTs not only contribute to the development of commercial activities, education, health and governance but are also key enablers of broad-based social and economic development as well as sustainable human development in a more general sense (Iziguzo, 2010). In actual fact, in modern day Nigeria, daily activities such as shopping, entertainment, banking, manufacturing, official duties both in public and private organizations, education, medical care, governance and transportation (particularly air flights as well as road traffic reports) have become increasingly dependent on information and communications networks (Baez, Kechiche, & Boguszewska, 2010; Elegbeleye, 2005; Gold, Shaibu, & Yusuf, 2012).

RELATED STUDY

The benefits of ICT include cheaper and higher quality of communication; easier access to information and wider market reach; reduction of corruption and red-tape in terms of making available necessary information and data e.g. census figures, available on the internet courtesy of ICT, can help validate polls result thereby preventing (election) rigging (or manipulations characteristics of such exercise in most developing countries (Agwu, Uche-Mba, & Akinnagbe, 2008; Kamel, Rateb and El-Tawil, 2009; Kuppusamy & Shanmugam, 2007). Furthermore, ICT can foster closer collaboration among domestic and global economic agents thereby improving productivity, competitiveness and citizen engagement (Agwu, et al, 2008; Kamel et al, 2009; Kuppusamy & Shanmugam, 2007).

Kamel et al. (2009) asserted that ICT has become an invaluable platform for economic growth with significant changes in different economic activities such as increments in the gross domestic product (GDP) by 7.8%, 8.0%, 8.3% and 8.4% in the US, UK, Singapore and Australia respectively. Apart from increment in investment from 20% in 2001 to about 120% in 2009 and provision of about 3.08million direct and indirect employment (Baez et al., 2010); ICTs' (particularly mobile communication technology) contribution to the Nigerian GDP increased from 0.06% in 1999 to 3.6% in 2009 and 8.2% in 2010 (Awoleye, Okogun, Ojuloje, Atoyebi, & Ojo, 2012; US Embassy in Nigeria, Economic Section, 2011). In specific terms, the use of cell phones has been shown to contribute immensely to improved livelihood of actors in the national economies such as farmers and micro-entrepreneurs (Boadi, Boateng, Hinson, & Opoku, 2007; Foss & Couclelis, 2008; Gold et al., 2012; Roldan & Wong, 2008; Sanusi, Aigbeakaen, & Ndagi, 2007). The introduction of global system of mobile communication (GSM) and cell phones has made information/communication easier for many Nigerian households (Aigbeakaen, Sanusi, & Ndagi, 2007a, 2007b). The role of telecommunication in the economy and advantages derived by consumers of GSM services led to a tremendous expansion of this

sector of the telecom industry in Nigeria. Hence, the sector has become a major area of interest for many stakeholders whether in industry, education or agriculture. Aigbeakaen et al. (2007a, 2007b) revealed that (urban and rural) traders and farmers in south-west Nigeria regarded power as a major constraint to the use of cell phones. To eliminate this constraint, Aigbeakaen et al. (2007a, 2007b) as well as Akwaja and Akintaro (2011) emphasized that the provision of basic infrastructure particularly electricity need be given proper attention by the private and public stakeholders concerned. However, given the alternative source of electricity provided by fossil fuel powered engines and the ingenuity of Nigerians; it is not unexpected that commercial cell phone business (i.e. phone battery charging with generators and call centres) will come into existence to render service to people who cannot afford such services (privately).

Studies particularly at the micro-level have always concentrated on the visible benefits (Agwu et al., 2008; Awoloye et al., 2012; Bakare & Gold, 2011; Boadi et al., 2007; Gold et al., 2012; Sanusi et al., 2007; Tella, Amaghionyeodiwe, & Adesoye, 2007), challenges and disadvantages (Airahuobhor, 2012; Amali, Bello, & Hassan, 2012; Elegbeleye, 2005; Fadeyibi, 2006) of ICT especially mobile communication technology. However, rarely investigated issues include the disincentive associated with the use of the technology in the economy such as displacement of labour and comparative accruable margin as well as masked benefits e.g. higher contribution to GDP by ICT than manufacturing, banking and solid minerals sectors (US Embassy in Nigeria, Economic Section, 2011). Therefore, this study assessed the profitability and hidden disincentives of cell phone business in Nigeria.

METHODOLOGY

Sampling Technique

The study employed multi-stage sampling technique. Four zones were randomly selected from the six geo-political zones of Nigeria in the first stage. The second stage involved the random selection of (at least) one state each in the selected zones. The states were Abia (south-east) and Cross River (south), Kogi and Niger (north-central) and Oyo (south-west) as the study area giving a total of five states. In the third stage, two local government areas (LGAs) were randomly sampled from the selected States while a random sampling of two locations in the selected LGAs characterized the fourth stage. The fifth stage was typified by systematic sampling of (in each selected location) ten respondents making a total of 200 respondents.

Data Collection

The respondents were interviewed using structured questionnaire and focus group discussion (FGD). From the 200 respondents, 180 response sets (questionnaires) were eventually used while the remaining (20) were rejected because of inadequate

information as well as serious inconsistencies (a response rate of 90%). Information sourced with the questionnaire include: socio-economic characteristics e.g. age, educational and marital status; use of power from the national grid and (power) consumption bills; generator use in terms of type, cost and year of acquisition, power rating; as well as the perception of operators on the profitability of the business and degree of importance of the business to the populace.

Analytical Tools

Data were analyzed with the use of descriptive and budgetary techniques as well as student-t statistic.

Descriptive Statistics. This involved the use of frequency tables, percentages and mean.

Budgetary Technique. This involved the computation of gross margin, net margin and rate of return on investment (RORI) termed margin-cost-ratio.

$$GM=R-T_v \text{ (i)}$$

where:

- GM=gross margin
- R=revenue
- T_v=total variable cost

$$NM=R-T_c \text{ (ii)}$$

where:

- NM=net margin
- R=as previously defined
- T_c=total cost

$$RORI(MCR) = \left(\frac{NM}{T_c}\right)100$$

where:

- RORI (MCR)=rate of return on investment (margin-cost-ratio)
- NM=as defined previously
- T_c=as previously defined

Student-t statistic. This was used to test the differences between the revenues and business margins realized from different enterprises of the cell phone business.

$$t = \frac{\bar{X}_i - \bar{X}_j}{\sqrt{\frac{s_i}{n_i} + \frac{s_j}{n_j}}} \text{ (iii)}$$

where:

- \bar{X}_i, \bar{X}_j = mean business margins realized from different enterprises of the cell phone business.

- X_i =mean monthly income from i^{th} (cell phone business) enterprise
- X_j =mean monthly income from j^{th} (cell phone business) enterprise
- S_i =sample variance of income from i^{th} (cell phone business) enterprise
- S_j =sample variance of income from j^{th} (cell phone business) enterprise
- n_i =number of operators of i^{th} (cell phone business) enterprise
- n_j =number of operators of j^{th} (cell phone business) enterprise

SPSS was the software employed to achieve the data analysis.

RESULTS AND DISCUSSION

This section presents the results and interpretations of the analysis of the study i.e. the distribution of respondents according to socio-demographic characteristics and business activities.

Respondents’ Socio-demographic Distribution

Table 1 shows that males (with a proportion of 67.22%) dominated the mobile phone business in the study area. Also, most of the respondents were single (64.44%) with an average age of 25.9 years (Table 1). Majority (98.33%) of respondents had formal education with 60% having up to tertiary education (Table 1). These findings are indicators of a likely bias of a virile and young population in the study area for activities in service (marketing) sector particularly GSM business related activities rather than activities in production (real) sector particularly agriculture.

Characteristics	Frequency	Percentage
Gender		
Male	121	67.22
Female	59	32.78
Total	180	100.00
Age	25.9	-
Marital Status		
Single	116	64.44
Married	64	35.56
Total	180	100.00
Educational Status		
None	3	1.67
Primary school	19	10.56
Secondary school	50	27.78
Tertiary education	108	60.00
Total	180	100.00
Year	12	-

Source: Field survey (December 2009 to February 2010).

Table 1: Distribution of Respondents by Characteristics Vocations

Table 2 reveals that a few proportion (29.44%) of the respondents were involved in agriculture as a means of livelihood with only 11.11% having agriculture as a major means of livelihood. This implies that majority of the respondents were not involved in the (real) agricultural sector of the Nigerian economy despite the agrarian nature of the nation's economy.

Occupation	Frequency	Percentage
Farming	53	29.44
Non-farm	127	70.56
Total	180	100.00
Major (Farming)	20	11.11
Minor (Non-farm)	160	88.89
Total	180	100.00
Farm Income [₦(US\$)]	4,961.89 (32.01)	-
Non-farm Income [₦(US\$)]	22,270.37 (143.68)	-

Source: Field survey (December 2009 to February 2010).

Table 2: Distribution of Respondents by Occupation.

Distribution of Respondents According to GSM Business Activities

According to the distribution presented in Table 3 (next page), many of the respondents were involved in commercial cell phone battery charging (86.11%) and recharge card sale (85.16%) than other types of GSM related businesses. The respondents had about 3 years experience in GSM business, operates in six days of the week with about 10hours per day, pay ₦756.40 (US\$4.88)/month on power consumption from public facility and spent ₦509.99 (US\$3.28)/month in fuelling generator for electricity (Table 3—next page). This implies that respondents are relatively young in GSM business and engage in GSM business activity mostly required by the populace. Also, respondents incurred more on fuelling generator for electricity compared with public power source.

Distribution of Respondents by Power Source

Table 4 (next page) reveals that although a larger proportion (about 61%) of respondents depended on both PHCN and generator; there seems to be a heavy reliance on generator for electricity supply than public power source since about 32% depended on generator (private) only while about 2% depend on PHCN (public) only as source for electricity supply. However, despite the high reliance on generator, Table 3 (next page) had already shown that the use of generator seemed to be costlier than the public power supply system.

Variable	Frequency	Percentage
Cell phone charging		
Engaged	155	86.11
Not engaged	25	13.88
Total	180	100.00
Recharge card sale		
Engaged	132	85.16
Not engaged	48	14.84
Total	180	100.00
Phone calls		
Engaged	93	51.67
Not engaged	87	48.33
Total	180	100.00
Cell phone accessories sale		
Engaged	68	37.78
Not engaged	112	62.22
Total	180	100.00
Miscellaneous services		
Engaged	61	33.89
Not engaged	119	66.11
Total	180	100.00
Business Experience	2.8	-
Days of operation	6	-
Hours/day	10.25	-
Phones charged per day	30	-
Charges per phone	₦ 33.03	US\$.21
Fuel Cost	9,855.77	63.59
PHCN Bill	756.40	4.88

Source: Field survey (December 2009 to February 2010).

Table 3: Distribution of Respondents by Phone Business Variables.

Source	Frequency	Percentage
PHCN	4	2.22
Generator	57	31.66
Both	109	60.56
None	10	5.56
Total	180	100.00

Source: Field survey (December 2009 to February 2010).

Table 4: Distribution of Respondents by Power Source.

GSM Business Revenue Profile

From Table 5 it can be observed that a higher and significant proportion (64.92%) of revenue accruable to GSM business is attributable to commercial cell phone battery charging ($p < 0.05$). The remaining proportion (35.08%) accrued from other services such as cell phone repair as well as sales of recharge cards and cell phones' accessories. This explains why cell phone battery charging was the commonest GSM business enterprise in the study area.

Cost and Returns	Value(₦)	Value(US\$)	Percentage
Revenue (Charging)	28,814.16	185.90	64.92
Revenue (GSM Services)	15,571.66	100.46	35.08
Total Revenue	44,385.73	286.36	100.00
t-value (Revenue)	2.546**		0.016
Capital Cost	25,511.86	164.59	65.36
Variable Cost	13,522.01	87.24	34.64
Total Cost	39,033.87	251.83	100.00
Gross Margin	30,863.72	199.12	-
Net Margin	5,351.86	34.53	-

**Sig. at 5%

Table 5: Revenue Profile of GSM Business.

Economic Gains of Mobile Phone Business

Table 6 shows that even with the use of generators in recharging mobile phone batteries, respondents realized positive monthly margins and benefit ratio. Furthermore, the margin and benefit ratios that were acquired by respondents in other mobile phone based business (like phone calls, sales of recharge cards and phone accessories) were also attractive (Table 6). However, the benefit ratio for phone battery recharging business was significantly higher ($p < 0.01$) than that of other types of mobile phone service based businesses (Table 6). This explains why the majority of respondents include cell phone battery recharging as part of GSM and cell phone business (as reflected on Table 3).

Economic Loss of Mobile Phone Business

Table 6 reveals that if respondents were able to obtain regular supply from the national grid i.e. use of PHCN source only, the margin accruable to respondents was quite high (₦28,057.66 or US\$181.02). The reduction in margin if generator rather than PHCN only was used for powering cell phone recharging out-fit and powering other GSM services (as sole ventures) as well as the entire (diversified) business was 32.43%, 61.41% and 20.86% respectively (Table 6). The reduction in margin if generator and PHCN rather than PHCN only was used was 54.15%, 66.52% and 29.26% respectively (Table 6). However, the loss in margin that will be recorded with the use of PHCN and generator rather than generator alone will be 4.16%, 15.25% and 11.88% respectively (Table 6).

This may be responsible for the reliance solely on generator by an appreciable proportion of respondent (as shown on Table 3).

Business Margin	PHCN		Generator		Real		% Difference
	Nigerian naira (₦)	U. S. dollar (\$)	Nigerian naira (₦)	U. S. dollar (\$)	Nigerian naira (₦)	U. S. dollar (\$)	
Phone Charging							
Margin	28,057.66	181.02	18,958.29	122.31	18,201.89	117.43	-
PHCN/Gen.	-		-		-		32.43
PHCN/Real	-		-		-		54.15
Real/Gen.	-		-		-		4.16
Cost	756.40	4.88	9,855.77	63.59	10,612.18	68.47	-
B:C Ratio	37.09		1.92		1.72		-
GSM other services							
Margin	14,815.26	95.58	5,715.89	36.87	4,959.48	31.99	-
PHCN/Gen.	-		-		-		61.41
PHCN/Real	-		-		-		66.52
Real/Gen.	-		-		-		15.25
Cost	1,676.73	10.82	10,776.10	69.52	11,532.50	74.40	-
B:C Ratio	8.84		0.53		0.43		-
Total GSM Business							
Margin	43,629.32	281.48	34,529.95	222.77	30,863.72	199.12	-
PHCN/Gen.	-		-		-		20.86
PHCN/Real	-		-		-		29.26
Real/Gen.	-		-		-		11.88
Cost	1,676.73	10.82	10,776.10	69.52	11,532.50	74.40	-
B:C Ratio	26.02		3.20		2.68		-
Phone charging-other service (t-value)	3.801***		0.001		-		-

***Sig. at 1%

Table 6: Distribution of Respondents by Power Margin.

Furthermore, when compared with GSM business (with a t-statistic of 7.4735), an insignificant ($p < 0.05$) difference existed between the net margin accruable from GSM business (Table 5) and that from farming (Table 2).

CONCLUSION

The gain from mobile phone services based business was very attractive. However, the male domination of the mobile phone services business as well as the few number of respondents engaged in agriculture (that is largely peasant in nature in Nigeria) point to labor mobility away from the agricultural sector to cell phone business such as credit card

and cell phone accessory marketing (consumption based) sub-sector of the economy; a loss in economic terms.

However, since majority of the respondents are highly educated youths, stakeholders need to institute and execute programs and policies aimed at encouraging high participation of respondents in other sectors especially the production sector and particularly the agricultural sector to reduce the number of young people involved in economic activities in consumption based sectors i.e. mobile phone services business. Stakeholders, policy makers in particular, should:

- i. Work towards achieving increased and stable supply of (electricity) power from the national grid. This would make people charge their cell phone batteries themselves as at when necessary and convenient, thereby reducing the number relying on commercial chargers.
- ii. Integrate cell phone business operators (given their high level of education) into an ICT-driven agricultural service delivery system with strong support from government in terms of conducive economic environment to do business.

Limitations of the Study

The study is limited in not disaggregating the data in respect of various livelihood activities engaged in by respondents. Furthermore, the various constraints confronting the business were not modeled so as to determine the effect of such on costs and returns to the business. A hidden loss that was not assessed by the study is the cost of pollution caused by generator exhausts.

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