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EFFECT OF INFORMATION AND COMMUNICATION TECHNOLOGY ON THE ATTAINMENT OF MILLENNIUM DEVELOPMENT GOALS (MDGS) IN NIGERIA, (A CASE STUDY OF PAMPAIDA MILLENNIUM VILLAGE, KADUNA STATE, NIGERIA.

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ABSTRACT
The study examines the effects of information and communication technology (ICT) on the attainment of the Millennium Development Goals (MDGs) in Nigeria from 2006 to 20015 with specific focus on effects of mobile phone, Internet, Computer and Radio on MDGs. Four research questions and four hypotheses were tested at 5% level of significance. The design for this study was a survey design while the population was made up of Five Thousand Six Hundred and Sixty-Six (5,666) people living in Pampaida Millennium Village. The sample size was Three Hundred and Seventy-Four (374). The sampling technique used is convenient sampling. The method of data collection used was questionnaire for primary data. Method of data analysis were percentages, linear regression and analysis of variance. The data analysis revealed that the ICT factors that have meaningful impact on MDGs were Mobile phones, Internet and Radio. Mobile phones were the widely use ICTs within the study area followed by Radio and Internet respectively. Computer usage within the village was quite low; this calls for integration of computer education in adult and non-formal system of education, which is the major source of education within the community.

Keywords: effects, information and communication, Millennium Development Goals

INTRODUCTION

Organizations of all types are currently utilizing Information and Communication Technology (ICT) around the globe, not only for cutting costs and improving efficiency, but also for providing better customer services. Modern information and communication technologies (ICTs) are a source for the development of wealth and power when they are directed for the well-being of humanity (Ahsanullah, 2002). As the World experiences rapid evolutional changes in global communication network, Information Technology has slowly and steadily crept into the fabrics of business, private, public organizations as well as industries in Nigeria and its environment. Information and Communication Technology (ICT) offers enormous opportunities such as storing, processing, retrieving, disseminating and sharing of information. The impact of information technology cannot be underestimated and should be used extensively by organizations if they are to achieve high efficiency. The adoption of ICT has shown to improve performance since ICT is known as a tool that improves business competitiveness (Sheppard & Hooton, 2006); (Yin, 2009).

Nigeria has a population of over 150 million people living in 774 Local Government Areas in the 36 States and the Federal Capital Territory (FCT). The Country is embracing new technologies with an explosion in the use of mobile phones, providing communication previously undreamt of. In the first year of its introduction about a million people have mobile phones, but Internet use was lagging behind with only an estimated 20,000 to 30,000 Nigerians connected to the Internet (Olukoya, 2002). One reason for this may be that about 80 million Nigerians are rural dwellers who are excluded from participating in the emerging information economy. Accascina (2000) identifies how ICTs directly and indirectly affect poverty alleviation, notably in relation to rural development and food security. Examples include the delivery of market or employment information, or the creation of well-paid jobs that eventually "trickle down" to poor communities. According to Okeh (2002), the quality of life of rural dwellers can be highly improved by effective provision of relevant information to rural communities.

It is believed that the integrated, community-led, rural development approach properly tailored to local conditions marks a key strategy for achieving the MDGs. The eight

endorsed MDG goals were (1) Eradication of extreme poverty and hunger, (2) achieve universal primary education, (3) promote gender equality and empower women, (4) reduce child mortality, (5) improve maternal health, (6) combat HIV/AIDS, malaria and other diseases, (7) ensure environmental sustainability and (8) develop a global partnership for development. These goals were developed with measurable targets and clear deadlines for improving the lives of the World's poorest people. For the goal number 8, the target here is to utilize new ICT and mobile phone platforms to facilitate real-time program improvements in education, health care, agriculture and human capacity development by the year 2015. This invariably means accelerated development cutting across technological advancements, through infrastructural improvements within the PMV.

Achieving the MDGs in Nigeria requires integrated rural development as one core component of an overall economic development strategy. Rural development itself requires community-based investments that empower local leadership in priority sectors including agriculture, health, education, water, transport infrastructure, energy services, business development, environment and the ICTs. To achieve the MDGs, each rural community in rural Nigeria will need functioning clinics, schools, safe water points and sanitation, agricultural upgrading, roads, power and ICTs. (Accascina, 2000).

The Pampaida Millennium Village (PMV) has a population of about 5,666 people (NPC,2006). At the inception of the Project in 2005, levels of basic infrastructure in Pampaida Millennium Village mirrored conditions found in other rural areas of the continent. Since there were no electricity grid, all households and public institutions do not have electricity grid connections. ICTs facilities and ICT based communication of any kind were not possible at that time, communication is only possible through human couriers. All cooking in homes were performed with biomass fuel using traditional three-stone fires. The entire Pampaida Village communities were cut off from the rest of the World due to lack of accessible road, especially during the wet season which made travel time much longer. Similarly, there were no any viable healthcare system and the only primary school in the entire community is in a deplorable state with only one teacher for the entire school. (Sanchez, 2009)

After almost a decade into the implementation of the Pampaida Millennium Village Project (PMVP) for the attainment of the MDGs, the situation has virtually changed over time. A tremendous infrastructural development has taken place. Amongst are a few to mention; there is now paved 10km road linking Pampaida to the district headquarters of Saulawa, telecommunication base station is now in place within the community courtesy of Ericsson partnership with the PMVP that facilitated the use of mobile phones for the first time within the village. The people of Pampaida can now communicate with ease within their community and with the outside world. The community is now connected to the National electricity grid provided by the Kaduna State Government with partnership with PMVP. The PMVP worked over time to integrate ICT technologies into all sectors of its activities by providing ICT facilities in key institutions like clinics, community viewing centers and schools. It also encourages acquisition of mobile phones among individuals by providing free charging points through solar panels operated battery chargers. These interventions were all geared towards achieving the MDGs in the Pampaida Millennium Village. To this end, the use of ICTs adoption in Pampaida Millennium Village was investigated with the view to determine its impacts on the attainment of the MDGs in the study area.

MATERIALS AND METHOD

The following research questions were formulated to guide the study

1. What are the most widely used ICTs within the study area?
2. What is the achievement brought out by ICT adoption within the study area?
3. What are the constraints associated with the use of ICTs within the study area?

Similarly, the following hypothesis were formulated to guide the study.

1. H_0 There is no significant relationship between use of mobile phones and MDGs.
   H_1 There is significant relationship between the use of mobile phones and MDGs.
2. H_0 There is no significant relationship between the use of computers and MDGs
   H_1 There is significant relationship between the use of computers and MDGs
3. H_0 There is no significant relationship between the use of internet and MDGs
   H_1 There is significant relationship between the use of internet and MDGs
4. H_0 There is no significant relationship between the use of radio and MDGs
   H_1 There is significant relationship between the use of radio and MDGs

Scope of the Study

The scope of this study was mainly focused on the effects of Information and Communication Technology (Mobile Phone Technology, Computer, Internet & Radios) on MDGs within the Pampaida Millennium Village. The study mainly was concerned with the implementation of these ICT components

in the Pampaida Millennium Village Project from 2005 to 20015.

Sampling Technique and Sampling Size

The Population of Pampaida Millennium Village of Five Thousand Six Hundred and Sixty-Six (5,666) was used. These comprises of male and female, having different occupation, educational status and cutting across different age brackets.

The sample size used for the research was obtained by using the Taro Yamane Technique to determine the sample size for this study. This is illustrated below:

$$n = \frac{N}{1+N(e)^2} \quad \ldots\ldots\ldots\ldots\ldots\ldots (1)$$

Where n = Sample size, N = Population Size and e = acceptable sampling error

95% confidence Level and P= 0.5 assumed.

Total Population = 5,666

Acceptable sampling error e = 5% = 0.05

Data Collection Instruments and Analysis

The survey instrument consists of a five-point Likert-type scale, ranging from Strongly Disagree (SD) to Strongly Agree (SA). Sections of the instrument were adopted from Seyal and Rahmal (2003). The questionnaires were retrieved in same manner in which they were administered. The analysis of data was based on the information gathered from the returned questionnaires. The information was processed using descriptive and inferential statistics using Statistical Package for Social Sciences (SPSS,2017).

RESULTS

The total numbers of questionnaires administered were Three Hundred and Seventy-Four (374). Three Hundred and Sixty-Three were completed and returned while Eleven (11) were not returned and so the analysis was based on 363 completed questionnaires.

Table 1: Questionnaire distributed and returned

Number of questionnaires distributed		Percentage (%)
Number Returned	363	96.8
Number not returned	11	3.2
Total	374	100

Source: Field work survey (2015)

Distribution of Respondents

Table 2: Distribution of respondents by gender

Variable	Frequency	Percent (%)
Male	261	71.9
Female	102	28.1
Total	363	100.0

Source: field work survey (2015)

Table 2 shows that 71.9% of the respondents were male while 28.1% were female. This shows that the study respondents were primarily male.

Table 3: Distribution of respondents by age

Age (Years)	Frequency	Percentage (%)
20-30	144	39.7
31-40	116	32.0
41-50	35	9.6
51-60	68	18.7
Total	363	100.0

Source: field work survey (2015)

Table 3 shows that the respondents between the ages of 20-30 and 31-40 constitute about 39.7% and 32.0% respectively, while the respondents between the ages of 41-50 and 51-60 were 9.6% and 18.7% respectively. This indicates that the majority of the

work presented in this study is being carried out by people who are relatively young and alert enough to be able to use ICTs facilities within the study area.

Table 4: Distribution of respondents by Educational status

Highest Qualification	Frequency	Percent (%)
Diploma/NCE	54	14.9
Secondary Level	58	16.0
Primary	84	23.1
Adult & Non formal Education	156	43.0
No formal or informal education	11	3.0
Total	363	100.0

Source: field work survey (2015)

Table 4 shows 43% of the respondents have gone through adult and non-formal system of education, 23.1% are primary school certificate holders while 14.9% and 16.0% are diploma/NCE and secondary certificate holders respectively. This shows that less than one-fifth of the respondents are Diploma/NCE or secondary school certificate holders, with a little above one-fifth having primary school certificate. Similarly, almost all the respondents have passed through the one form of system of education. This indicate a high literacy level among the respondents.

Table 5: Distribution of respondents by occupation

Occupation	Frequency	Percentage (%)
Farming	184	50.7
Petty Trader & Farming	83	22.9
Health Worker	30	8.3
Teacher	31	8.5
Student	28	7.7
Others	7	1.9
Total	363	100.0

Source: field work survey (2015)

Table 5 shows that, 50.7 % of the respondents were farmers, 22.9% of the respondents were engaged in trading and 8.3% are Health workers, while 8.5% and 7.7% are teachers and students respectively. This shows majority of the respondents are employed and have a source of income.

Distribution of ICT usage within Pampaida Millennium Village

Table 6: Mobile phones enabled us to communicate and share information within and outside our community effectively.

Variable	Frequency	Percent (%)
Agreed	166	45.7
Strongly Agreed	197	54.3
Total	363	100.0

Source: field work survey (2015)

Table 6 shows 99.8% of the respondents agreed that mobile phones enabled them to communicate and share information within and outside their community effectively. This shows that all the respondents use mobile phones in one form or the other in their daily lives.

Table 7: Mobile phones enable us to achieve our daily business activities effectively

Variable	Frequency	Percentage (%)
Agreed	216	59.5
Strongly Agreed	147	40.5
Total	363	100.0

Source: field work survey (2015)

Table 7 shows 59.5% of respondents agreed that mobile phones enabled them to achieve their daily business activities effectively and 40.5% strongly agreed that mobile phones enable them to achieve their daily business activities effectively. This also indicates that their businesses have received a tremendous boost with the use of mobile phones.

Table 8: Mobile phones enable the marketing of agricultural produce effectively.

Variable	Frequency	Percentage (%)
Disagreed	3	0.8
Neutral	5	1.4
Agreed	174	47.9
Strongly Agreed	181	49.9
Total	363	100.0

Source: field work survey (2015)

Table 8 shows 97.8% of respondents agreed that mobile phones enabled them to market their agricultural produce effectively while 1.4% were neutral, and 0.8% disagreed. This means that majority of the respondents rely on mobile phones to market their produce to various markets in and around their community. This can translate to a better pricing of their produce and improved income too.

Table 9: Mobile phones enable access health, educational & agricultural services effectively

Variable	Frequency	Percent
Neutral	6	1.7
Agreed	169	46.6
Strongly Agreed	188	51.8
Total	363	100.0

Source: field work survey (2015)

Table 9 shows 98.4% of respondents agreed that mobile phones enable them to access health, educational and agricultural services effectively while 1.7% of the respondents were neutral.

Table 10: Mobiles phones facilitate the conduct of developmental projects within the community

Variable	Frequency	Percent
Disagreed	6	1.7
Neutral	4	1.1
Agreed	208	57.3
Strongly Agreed	145	39.9
Total	363	100.0

Source: field work survey (2015)

Table 10 shows 97.2% of respondents agreed that mobile phones enabled them to facilitate and conduct development projects within their community, 1.7% of the respondents disagreed while 1.1% of the respondents were neutral. This suggest that mobile phones were used in the mobilization of the communities to participate in communal development activities.

Table 11: Computers enable the communication & sharing of information within & outside their community effectively

Variable	Frequency	Percentage (%)
Neutral	61	16.8

Agreed	242	66.7
Strongly Agreed	60	16.5
Total	363	100.0

Source: field work survey (2015)

Table 11 shows 66.7% of respondents agreed that computers enable them to communicate & share information within & outside their community effectively, while 16.5% strongly agreed and 16.8% were neutral. The result shows that computers have played a key role in the dissemination of information and sharing of knowledge across the community. This invariably indicate that computer literacy and usage is on the increase within the community.

Table 12: Computers enable the access to learn about health, educational & agricultural services effectively.

Variable	Frequency	Percentage (%)
Neutral	102	28.1
Agreed	176	48.5
Strongly Agreed	85	23.4
Total	363	100.0

Source: field work survey (2015)

Table 12 shows 48.5% of respondents agreed that computers enabled them access to learn about health, educational & agricultural services effectively. 23.4% strongly agreed and 28.1% are neutral.

Table 13: Internet enables communication & sharing of information within & outside their community effectively.

Variable	Frequency	Percentage (%)
Neutral	96	26.4
Agreed	147	40.5
Strongly Agreed	120	33.1
Total	363	100.0

Source: field work survey (2015)

Table 13 shows 40.5% of respondents agreed that internet enable them to communicate and share information within & outside their community effectively, while 33.1% strongly agreed and 26.4% were neutral.

Table 14: Internet enables the access to learn about health, educational & agricultural services effectively.

Variable	Frequency	Percentage (%)
Disagreed	7	1.9
Neutral	62	17.1
Agreed	184	50.7
Strongly Agreed	110	30.3
Total	363	100.0

Source: field work survey (2015)

Table 14 shows 50.7% of respondents agreed that computers enable the access to learn about health, educational & agricultural services effectively, 30.3% strongly agreed, 17.1% are neutral and 1.9% disagreed.

Table 15: Radio allows the flow of news & current affairs effectively

Variable	Frequency	Percentage (%)
Neutral	5	1.4
Agreed	169	46.6
Strongly Agreed	189	52.1
Total	363	100.0

Source: field work survey (2015)

Table 15 shows 52.1% of respondents strongly agreed that radio allows the flow of news and current affairs effectively, 46.6% agreed, 1.45% of the respondents were neutral.

Table 16: Radio allows learning & sharing of information within communities effectively

Variable	Frequency	Percentage (%)
Neutral	6	1.7
Agreed	130	35.8
Strongly Agreed	227	62.5
Total	363	100.0

Source: field work survey (2015)

Table 16 shows 62.5% of respondents strongly agreed that radio allows the learning and sharing of information within the community effectively, 35.8% of the respondents agreed, while 1.7% of the respondents were neutral.

Table 17: Radio enables knowledge about agricultural markets and new innovations of production.

Variable	Frequency	Percentage (%)
Disagreed	2	0.6
Neutral	2	0.6
Agreed	91	25.1
Strongly Agreed	268	73.8
Total	363	100.0

Source: field work survey (2015)

Table 17 shows 73.8% of respondents strongly agreed that radio enables knowledge about agricultural markets and new innovations of production, 25.1% of the respondents agreed, while 0.6% of the respondents were neutral and another 0.6% of the respondents disagreed.

Table 18: Radio allows learning about health, educational & agricultural services more effectively

Variable	Frequency	Percentage (%)
Neutral	11	3.0
Agreed	124	34.2
Strongly Agreed	228	62.8
Total	363	100.0

Source: field work survey (2015)

Table 18 shows 62.8% of respondents strongly agreed that radio allows learning about health, educational and agricultural services more effectively, 34.2% of the respondents agreed, while 3.0% of the respondents were neutral.

Table 19: Millennium Development Goals targets are achievable through the use of ICT in Pampaida Millennium Village.

Variable	Frequency	Percent
Neutral	4	1.1
Agreed	116	32.0
Strongly Agreed	243	66.9
Total	363	100.0

Source: field work survey (2015)

Table 19 shows 66.9% of respondents strongly agreed that the Millennium Development Goals targets were achieved through the use of ICTs in Pampaida Millennium Village. 32.0% of the respondents agreed, while 1.1% of the respondents were neutral.

Table 20: Correlation

Correlations

		Mobile Phones	Computer	Internet	Radio	MDG
Mobile Phones	Pearson Correlation	1	.136**	.061	.283**	.228**
	Sig. (2-tailed)		.009	.250	.000	.000
	N	363	363	363	363	363
Computer	Pearson Correlation	.136**	1	.552**	-.168**	-.069
	Sig. (2-tailed)	.009		.000	.001	.189
	N	363	363	363	363	363
Internet	Pearson Correlation	.061	.552**	1	.027	-.198**
	Sig. (2-tailed)	.250	.000		.605	.000
	N	363	363	363	363	363
Radio	Pearson Correlation	.283**	-.168**	.027	1	.369**
	Sig. (2-tailed)	.000	.001	.605		.000
	N	363	363	363	363	363
MDG	Pearson Correlation	.228**	-.069	-.198**	.369**	1
	Sig. (2-tailed)	.000	.189	.000	.000	
	N	363	363	363	363	363

**. Correlation is significant at the 0.01 level (2-tailed).

Table 20 shows that there is significant relationship between mobile phones, internet, radio and MDGs in Pampaida Millennium Village. Therefore, we reject the null hypothesis and accept the alternate hypothesis.

Similarly, Table 20 also shows that there is no significant relationship between computer and MDGs in Pampaida Millennium Village. Therefore, we accept the null hypothesis and reject the alternate hypothesis.

Table 21: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.459[a]	.210	.201	.445	.210	23.830	4	358	.000

a. Predictors: (Constant), Radio, Internet, Mobile Phones, Computer

The model summary show that 45.9% of the independent variables (Mobile phones, Computer etc) contributed to the dependent variable (MDGs). This study used sample that is why the R Square is reported. The result from the R Square indicated that 21.0% explained the variance in their outcome (DV) is predicted by the IVs (factors). The Adjusted R Square could have been used if the total population was considered.

SUMMARY OF FINDINGS

The results show that there is significant correlation or relationship amongst the factors researched (mobile phones, internet, computers and radio), and within the purview of prediction. The results revealed that the factors have approximately 46% as contributory factors to MDGs in Pampaida Millennium Village. As such, about 54% factors are left to be researched.

DISCUSSION OF FINDINGS

From the findings it is obvious MGDs, to an extent depend on the factors discussed and investigated in this study for its success. Mobile phones, Internet and Radio according to this study have significant ability to have an impact on the attainments of MDGs in Pampaida and by extension in Nigeria as a whole.

CONCLUSION

The study reveals that the majority of the respondents were farmers and traders with various forms of education at various levels. It also shows that they have realized the potential inherent in the application of ICT in their daily activities. The study also reveals that the application of ICTs transcends gender, occupation and educational status within the study area. ICT's importance in fast tracking development at the rural areas cannot be overemphasized. This is indicated by its wide acceptability by most of the residents. However, the results may have also indicated that large portions of the

population were not computer literate and this affects its accessibility and usage within the community. Similarly, the results also revealed the key role played by ICT in the attainment of the MDGs as indicated by the high correlation between Mobile phones, Internet, Radio and MDGs. The MDG-related target for ICT is to reduce by half the number of people without access to modern communication services by 2015 (World Bank 2005). The focus here is using ICT to strengthen existing service systems.

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