Contribution of Mobile Phone Services to Rural Livelihood Assets in Atiba Local Government of Oyo State, Nigeria
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Adebayo Oyefunke Olayemi[1] and Adeniyi Rhoda Titilayo[2*]

[1]Department of Agricultural Extension and Rural Development, Ladoke Akintola University of Technology, Ogbomoso, Oyo state; [2]Department of Agricultural Economics and Extension Ajayi Crowther University, Oyo, Oyo state

*Correspondence: [2]rt.adeniyi@gmail.com ; +234-8027640111; ORCID: 0000-0002-4454-7599; [1]ooadebayo@lautech.edu.ng; +234-8033712177; ORCID: 0009-0007 0489-0476

Abstract

This study examined the contributions of Mobile Phone services to rural livelihood assets in Atiba Local Government areas of Oyo State of Nigeria. Specifically, the study examined the mobile phone features and services used, the respondents' use of mobile phones for livelihood assets, constraints faced in using mobile phones for livelihood assets, and the relationship between selected socioeconomic characteristics and the use of mobile phones. A multi-stage sampling procedure was used to select 135 respondents using an interview schedule. Variables were analysed with percentage, Weighted Mean score, Chi-square, and Pearson Product Moment Correlation. The result showed the most utilized feature and service of mobile phones was the clock (WMS=3.65), while Poor network (WMS=2.38) constrained its utilisation for livelihood assets. Social capital (vital information sharing (WMS=3.58) was the highest livelihood asset domain for respondents' mobile phone usage. A significant relationship existed between respondents' age (r=-0.355), income (r=0.210), gender (59.41), Level of Education (149.79), ownership of mobile phone (85.84) and use of mobile phone for livelihood asset. The study concluded that the poor network hinders the use of mobile phones for livelihood assets. It recommended that mobile network providers should strategies the provision of unalloyed networks to promote rural livelihood assets.

Keywords: Livelihood assets, mobile phone services and mobile network providers

Introduction

Communication is crucial to fulfilling Sustainable Developmental Goals, especially when efficient and effective tools like Information and Communication Technologies are utilized (Ojutkangas et al., 2020; Rotondi et al., 2020, Ahmed & Ali, 2022). Information and Communication Technology (ICT) enables farmers to develop good farm management skills, communicate a smooth exchange of knowledge among agricultural stakeholders, and help the farmers make appropriate and timely decisions. It also enhances the effectiveness of agricultural extension systems (Khan et al., 2020; Rotondi et al., 2020; & Syed & Badar, 2020). Information exchange is a crucial factor for the development agenda. However, for a piece of developmental information to be received and disseminated, a conduit or channel like the mobile phone is needed. Mobile phones are generally known to be portable, and wireless with the feature of voice calls, streaming, cameras, alarm clocks, Calculator, data roaming, Short

Message Services (SMS), Multi-Media Messages (MMM), location-based services, and Game devices (Khan et al., 2020 & Kirvan, 2024).

Communication with mobile phones has greatly grown, it is now the most frequently used among ICT owners even in rural communities (Rotondi et al., 2020; Yekinni et al., 2020; Ahmed & Ali, 2022, and Adeniyi & Yekinni, 2022). Globally, it has been documented that 7.41 billion people (62.9 %) of the population are phone owners. Out of this number, 70% live in developing nations, while more than 90% of potential new phone subscriptions in the near future reside in developing countries (STATISTA, 2024). In Nigeria, the growth of Mobile phones can not be overemphasized as Nigeria's Teledensity equals 102.97% and 0.57% additional subscriptions to the Internet (Ugochukwu, 2024). The higher use of the Mobile phone might be because the device offers timely and resourceful information among their users even in rural communities. Interactive information dissemination via Mobile phones is gaining ground uninterruptedly by time, and space, can enable interactive communication flow unrestricted by space and time and its positive influence for better productivity and enhanced access to goods and services. Mobile phone accessibility amplifies markets, health, and wellness, abridges businesses, connects with other devices, substitutes for physical transport, prevents social crime, aids mobile payments, improves governance, and creates new socioeconomic opportunities, among many other benefits (Rotondi et al., 2020 & Kirvan, 2024). Hence, Mobile phones can strengthen the swiftness and ease the means of information communication among people (Khan et al., 2020 & Syed & Badar, 2020).
The use of mobile phones has greatly infiltrated each sector of the economy as found in education, business, health, marketing, financial sector, and also in the agricultural sector to bring about sustainable development (ITU, 2024).

The interconnectivity between ICT tools like mobile phones, poverty, and livelihood assets shows that information has been a critical determinant for development purposes including agriculture and rural development. This offers mobile security for agricultural enterprises (Ojutkangas et al., 2020). This is a result of the mobile phone's ability to be accessible by a large audience with little technical know-how and literacy. Mobile phones allow voice communication and are affordable when compared to the cost of moving from one point to another in disseminating developmental information. Akin to this, is the ability of mobile phones to enhance the GDP in developing nations, create jobs, and increase revenue through phone boots, phone charging, sales of recharge cards, and farm advisory services to farmers through extension personnel among others (Ojutkangas et al., 2020 & Rotondi et al., 2020).

Generally, the agricultural extensionist in many nations is saddled with the responsibilities of giving advisory services to farmers on their different farming engagements using interpersonal communication methods like arranging meetings with the farmers, visiting farmers on the farm, and mass demonstrations; currently, the proportion of extension officers to farmers is not enough to disseminate the needed information of the agrarian communities, hence mobile phone based on its different features can stand in the gap of the interpersonal dissemination system of information to farmers (Khan et al., 2020; Syed & Badar, 2020 & Ahmed & Ali, 2022). With this development, the emergent drift of the use of ICTs by extension officers to disseminate information to farmers has been adopted among nations like Nigeria to develop rural livelihood assets. Rural livelihood assets encompass different domains of activities for

diverse livelihood options which include Natural assets (biodiversity, land, environmental resources water, and wildlife); Social assets (group membership, networks relationships among societal organisations); Human assets (Knowledge acquisitions, the skills, knowledge, livelihood activities, sound mind and sound health among others); Physical assets (good road, safe energy source, good housing facilities, safe water, and access to sustainable infrastructure in the environment) and Financial asset (ability to safe money for future use, supplies of credit, regular payments of money, or retirement fund) (Azumah, Muchwa & Charles, 2023; Mukwedeya & Mudharab, 2023; Yusuf, 2019 & Ahmad, Kalthum, Roslina and Anuar, 2018).

However, there are lots of limitations, constraints, and some negative effects of mobile phones on the status of rural livelihood assets, these include the initial cost of a mobile phone, overuse, social etiquette, battery life, network issues, technical know-how, security, poor electricity supply and the amount spent on the purchase of airtime which have resulted in a higher budget for family expenditure of the family and thereby reduces the household welfare (Syed & Badar, 2020; Yekinni et al., 2020; Akinyemi, 2021 & Kirvan, 2024). Despite the above, there are many ways in which mobile phones can contribute to people's livelihood assets and reduce the poverty level even in rural communities (Khan et al., 2020). There seems to be a gap in the literature about specific areas of livelihood assets mobile phones can contribute to. Hence, this study assessed the contributions of mobile phones to rural livelihood assets. Specifically, the study examined the mobile phone features and services used, the respondents' use of mobile phones for livelihood assets, the constraints faced in using mobile phones to fulfill the livelihood assets, and the relationship between selected socioeconomic variables and the use of mobile phones in livelihood assets.

Methodology
The study was conducted in Atiba Local Government area of Oyo State located in southwest, Nigeria in latitude 4^0N and Longitude 8^{0E}. The main agricultural livelihood activities in the area include the production, marketing, and processing of food crops like Cassava, yam, cocoa, palm oil, maize, and vegetables; and the rearing of some livestock like cattle, sheep, goats, and pigs. The population of this study was rural households. A multistage sampling procedure was used in selecting 135 respondents for the study. The first stage involved randomly selecting three (3) out of the 10 wards in the LGA. The selected wards were Agunpopo I ward, Oke Aafin II ward, and Asipa III ward. The second stage involved a random selection of three villages/settlements from each of the selected wards, the selected villages were (Agunpopo I ward (Idi Agbon, Okansa, and Sakuta); Oke Aafin II ward (Aloba, Olugbile, and Sarumi); and Asipa III ward (Alubata, Ayetoro-Elesun, and Igbo-Ologun). The third stage involved a random selection of 15 rural household heads from each of the nine (9) villages giving a total of 135 respondents for the study. An interview schedule was used to obtain relevant information on respondents' socioeconomic characteristics, features and services of the mobile phone used, constraints to the use of mobile phones, and use of mobile phones for livelihood assets.

Respondents' features and services of the mobile phone used were captured with 16 possible features and services using the response options of 'always' (3) 'occasionally' (2) 'Rarely' (1) 'Never' (0). The weighted mean score was calculated and was used to assign positions to the mobile phone features and services in descending order. To

ascertain the constraints to the use of mobile phones, a list of 9 possible constraints to the use of mobile phones was given and responses were measured on a three-point scale of 'Very Severe' (3), 'Severe' (2), 'Mild' (1), and 'Not a Constraint' (0). The weighted mean score was used to rank each of the constraints in descending order. Respondents' five possible livelihood assets domains where mobile phones were used were captured, These include Social assets (SA), Human assets (HA), Natural assets (NA), Financial assets (FA), and Physical Assets (PA). These domains were measured with the response options of 'Greatly improved' (3), 'Improved' (2), 'No change' (1), and 'Worsened' (0). The respondents' livelihood asset domains of Social capital (SA), Human assets (HA), Natural assets (NA), Financial assets (FA), and Physical assets (PA) were captured with seven, four, three, four, and two livelihood activities respectively. Thereafter, the weighted mean scores of each item were computed and were used to rank the activities of each domain in descending order. Variables on the features and services of mobile phones, use of mobile phones for livelihood assets, and constraints to the use of mobile phones for livelihood assets were analysed and presented using Percentages, Weighted mean score standard deviation, variables on the relationship between selected socioeconomic variables and the use of mobile phones were analysed using Pearson Product Moment Correlation (PPMC) at 0.05 level of significance.

Result and Discussion
Mobile phone features and services used
The result in Table 1 shows that the most deployed features and services for respondents' mobile Phones were clock (WMS=3.65), torchlight (WMS=3.50), phone call (WMS=3.15), and Radio (WMS=2.38). This suggests that the respondents' mobile phone was used for various purposes as the features and services dictated. However, the most deployed feature of mobile phones by the respondents might be an indication of how often respondents work with and count on checking time for the fulfilment of their livelihood assets; also, it connotes how perfectly their mobile phone has been substituted for the use of wrist watch and wall clock. The 2nd position of torchlight also suggests the level of the consistency of available electricity power supply at night, while the expected service to be rendered by the use of mobile phone became 3rd. The result is in line with the finding of Adeniyi and Yekinni (2023) in which the rural dwellers described their mobile phone as a three-in-one tool (searchlight, phoning, and Radio) but in contrast with the most used mobile phone for a clock. The fourth position of Radio indicates that respondents do obtain information that could be helpful to their livelihood via the radio feature on their mobile phone. This corroborates the findings of Yekinni et al., (2020) in which radio was among the most utilized information sources for livelihood fulfilment. The Instagram that came last might be an indication that it has not been contributing substantially to their livelihood assets as other features and services are available and used on their mobile phone.

Table 1: Mobile phone features and services used

Features and services	WMS
Clock	3.65
Torchlight	3.50
Phone calls	3.15
Radio	3.08

Features and services	WMS
Flashing	2.92
Short message services	2.77
Calculator	2.74
Camera	2.70
Internet browsing	2.69
Multimedia message	2.67
Whatsaap	2.52
Alarm	2.39
Facebook	2.18
Voice recorder	1.99
Instagram	1.06

Use of Mobile Phones for Rural Livelihood Assets.
Social Capital

Table 2 shows the most social capital item associated with mobile phone usage was the sharing of vital information (WMS=3.58) which was closely followed by connecting with friends and family (WMS=3.56), with the least being posting on social media platforms (WMS=2.53). This suggests that mobile phone features and services were relevant to respondents' social well-being but with less use of mobile phones on social media.

The result in Table 2 further indicates that the most prominent use of phones for human capital development was for learning new skills via YouTube (WMS=2.58) with seeking medical consultation (WMS=2.54) while the lowest use of mobile phones for human capital was online education (WMS=2.45). This suggests that respondents' interest in getting psychomotor development information for enhanced livelihood via their mobile phones was higher than seeking knowledge; though, learning new skills could financially empower them via livelihood diversification. This is in tandem with the assertion of Azumah et al., (2023) that the capabilities of individuals are pivots for the advancement of human capital and sustainable livelihoods. Also, Ojutkangas et al., (2020); Rotondi et al. (2020), Mukwedeyaa and Mudharab, (2023), affirm the efficacy of ICT tools like mobile phones to channel adequate and timely health information to the end users as it allows direct communication with medical practitioners.

The result in Table 2 further depicts that the most natural capital that engaged the respondents' mobile phone usage was sourcing for information on domestic water and access to agricultural land (WMS=3.08). This suggests that domestic water use and agricultural land are of the same importance to the respondents' well-being as water is an essential basic amenity and land is a useful resource to back up the respondents' livelihood as they dwell in agrarian communities; hence take the issue of land so important. This is in tandem with Ojutkangas et al, (2020) and Ahmed & Ali, (2022) assertions that Mobile phones could assist in smart water management and access information on available land.

On the usage of mobile phones to fulfill financial capital, the result in Table 2 shows that sending and receiving money ranked 1st (WMS=3.38) followed by online business transactions (buying and selling of goods) (WMS=2.73), while a reduction in an overall cost of transportation being the least (WMS=2.38). This implies that mobile phone use was relevant to respondents' financial assets. Hence, financial assets have been identified as the backbone of the livelihood assets for its sustainability (Yussuf, 2019), while mobile phones have been identified to contribute to poverty alleviation among

rural dwellers (Yekinni et al., 2020). Respondents' usage of mobile phones to accomplish the physical capital domain as revealed in Table 2 shows that mobile phones have been of great importance to the respondents in patronizing some of the human-made products (WMS=2.48) and have aided transportation accessibility (WMS=2.38). This is in line with the study of Khan et al, (2020) and Rotondi et al., (2020) that information given via ICT is timely, cheap, and time-saving.

It is worth noting that the most prominent domain of respondents' use of mobile phones for livelihood asset fulfilment is the social capital domain; mostly on information sharing This indicates that mobile phones are a beneficial tool to achieve the social capital of the respondents' livelihood assets as they promote social inclusion (Ojutkangas et al., 2020).

Table 2: Utilisation of mobile phones for rural livelihood assets

Livelihood Domains	WMS
Social Assets domain	
Vital information is easily shared	3.58
Contact with family and friends	3.56
Helps in case of emergencies (Unforeseen events)	3.50
Ease the stress of the arrangement of social functions	3.03
Helps in sending broadcasting messages	2.78
Helps in records keeping for later use (voice notes, documents, and pictures)	2.58
Helps to boost business by posting on social media platforms like Instagram	2.53
Human Assets domain	
Access to YouTube to learn new skills	2.58
Use to seek medical consultation	2.54
Use to request transportation (booking)	2.52
Access to online educational practices	2.45
Natural Capital domain	
Helps to know about the availability of safe domestic water	3.08
Easy access to information on agricultural lands	3.08
Improvement of business activities	3.03
Financial Assets domain	
Helps in sending and receiving money	3.38
Help to make an online business transaction (e-commerce: Buying and selling)	2.73
Promote job opportunities through point of sales (POS)	2.63
Reduce transportation expenses	2.38
Physical Capital domain	
Aids in the patronization of human-made products	2.48
Facilitates transportation accessibility	2.38

Constraints to the use of mobile phones

The result in Table 3 shows that poor network facilities (WMS=2.19) ranked first followed by the high price of mobile phones (WMS=2.13), with the least being distraction brought about by mobile phone use (WMS=1.57). This suggests that the use of mobile phones was constrained by some factors among the respondents. The poor network has been a major constraint to the utilization of mobile phones for livelihood asset development as affirmed by Yekinni et al., (2020) and Syed and Badar, (2020). However, the constraint of the high cost of mobile phone purchase might result

from the respondents' economic situation; while the epileptic supply of electricity (WMS=2.11.) and inadequate access to Mobile phone engineers for repair (WMS=1.88) has been an occurrence in rural communities due to the level of infrastructural development and insufficient numbers of the technician. These challenges may discourage the use of mobile phones in rural communities or lead to a high cost of maintenance.

Furthermore, the challenge of being exposed to social vices through mobile phones was the 3rd to the last encountered. The reason for this challenge not being a prominent one among the respondents might be that they had been adequately equipped with knowledge of not falling victim to cybercrime activities. Also, it might be that they were fully armed by the awareness created by the media on such crimes, especially through the different programmes which are been undertaken on Radio. Information via Radio has been identified to be the most accessible to rural dwellers (Adeniyi and Yekinni, 2023). These findings are in tandem with the study report of Syed & Badar, 2020; Abdullahi, Oladele, & Akinyemi, 2021; & Kirvan, 2024 who identified poor network, poor electricity supply, high cost of mobile phones, and poor technical know-how as barriers to effective and efficient use of mobile phones in rural communities of developing nations. The result in Table 3 further shows that distraction through mobile phones (WMS=1.57) was the least constraint encountered in the use of mobile phones by the respondents. The result implies that the respondents were focused on the purpose of using their mobile phone at a given period and this has been a less constraint to them.

Table 3 Constraints to the use of mobile phones

Constraints	WMS
Poor network facilities	2.19
High cost of purchase on mobile phone	2.13
Inadequate access to electricity supply to power the battery of mobile phones	2.11
Inadequate access to Mobile phone engineer for repair	1.88
Difficulty in assessing suitable and relevant information on mobile phone	1.86
Lack of technical know-how in operating a mobile phone	1.79
Exposure to social vices	1.75
High call rates(airtime) limit their use of mobile phone	1.59
Distraction caused by handling of phone	1.57

Source: Field survey, 2023

Relationship between respondents' selected socioeconomic Characteristics and use of the mobile phone for livelihood asset.
The result in Table 4 shows that there was a significant relationship between respondents' age (r=-0.355), income (r=0.210), gender (χ2=59.41), marital status (χ2=127.15), Level of Education (χ2=149.79), ownership of mobile phone (χ2=85.84), mobile phone feature (χ2=80.55) and use of mobile phone for livelihood asset. The significance of age in the use of mobile phones in fulfilling their livelihood assets implies that respondents in their active age tend to contribute more to rural livelihood assets due to empowerment from information sought using various features of their mobile phones (Mukwedeyaa & Mudharab, 2023). The result in Table 4 further shows that the respondents' level of education informs the use of their mobile phones for livelihood assets; as respondents with higher education levels utilise mobile phones

for their livelihood than those with low education. This was in line with the assertion of Azumah, Muchwa & Charles, (2023) that knowledge promotes livelihood assets for higher productivity. Furthermore, the significance of income to mobile phone utilization for livelihood assets implies that higher-income respondents tend to use their mobile phones to fulfil their livelihood assets than those with lower incomes. This is due to the routine maintenance fee (recharging airtime and data subscription among others) for making the features of the mobile phones active and efficient.

The result in Table 4 shows that gender is significant to the use of mobile phones for livelihood assets as males tend to use their mobile phones more than females, which might be due to their home commitments. This is in line with the assertion of Rotondi et al., (2020) that lower gender inequalities affect the use of Mobile phones. However, the significance of marital status to mobile phone use for livelihood assets could be a result of higher family responsibilities carried out by the married concerning their livelihood assets. In addition, the results further show the significance of mobile phone ownership to livelihood assets as those who own the mobile phone have a higher contribution of mobile phone usage to their livelihood assets. This is expected as those who own mobile phones can make decisions that can enhance their livelihood (ITU, 2024). The significance of the mobile phone features indicated a direct relationship between respondents' mobile phone features and their livelihood assets. The features on the respondents' mobile phones will determine the use for fulfilling the livelihood assets. Summarily, the result of this study is in tandem with the outcome of Mukwedeyaa & Mudharab's (2023) study in which the factors associated with livelihood assets were gender, age, access to the internet, and level of education.

Table 4: Relationship between selected Variables and mobile phone use for livelihood assets

Variable	r- value
Age	-0.355*
Monthly income	0.210*
Variables	**χ2 –value**
Gender	59.41*
Marital status	127.15*
Level of education	149.79*
Mobile phone ownership	85.84*
Mobile phone feature index	80.55*

Sources: Field Survey, 2023   *P≤0.05

Conclusions and Recommendations

The features and services of respondents' mobile phones were mostly used for time awareness, illumination, and direct calls. Hence, Mobile phone utilization has helped the respondents' livelihood assets by enhancing the respondents' capability to gather vital social and safe water information, learn new skills (YouTube), embark on financial transactions, and create a market for homemade products. The study further concludes that older respondents use fewer mobile phones for their livelihood assets and vice versa; while being rich, married, gender, and literacy level have a direct relationship with the mobile phones used for livelihood assets. However, Poor networks plus the downturn of power supply with the high cost of mobile phones limit

the efficiency and effective use of mobile phones to fulfill the respondent's livelihood assets. The study recommends that various agricultural information that could be assessed by the respondents' mobile phones should be made readily available by developmental agents to boost rural livelihood assets. Also, Mobile phone companies should sustain the features and services that glued the respondents to mobile phone usage for enhanced livelihood assets. Furthermore, Mobile phone network providers should endeavour to provide reliable and sustainable broadband penetration in rural communities for continuous use of the mobile phone to fulfill the livelihood assets.

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