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Essential Knowledge and Skills Required by Rural Farmers in Making Cell Phones Effective for Boosting Agricultural Production in Enugu State, Nigeria

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Abstract

The study determined the essential theoretical knowledge and skills required by rural farmers in making cell phones effective for boosting agricultural production in Enugu State. Five research questions guided the study while five null hypotheses were formulated and tested at 0.05 level of significance. The study adopted descriptive survey design. The population for the study was 87comprising 52 lecturers in tertiary institutions and 12 cell phone technicians and 23 extension agents. The sample size for the study was 87 made up of 52 lecturers in institutions, extension agents and 12 literate cell phone technicians in major towns in Enugu State. Purposive sampling technique was employed to select 12 literate cell phone technicians 23 extension agents while all the lecturers were studied. The instrument for data collection was structured questionnaire and three experts validated the instrument while Cronbach alpha reliability method was used to determine the internal consistency of the items and a coefficient of 0.88 was obtained. Mean was used to answer the five research questions while analysis of variance was used to test all the null hypotheses at 0.05 level of significance. The study found out 99 items; 32 knowledge and skills to obtain agricultural information, 19 agricultural information, 16 operational skills, 19 maintenance skills and 14 precautionary measures were required by rural farmers for using all kinds of cell phones. There was no significant difference in the mean responses of respondents on the essential theoretical knowledge and skills required by rural farmers for using all kinds of cell phones for boosting agricultural production. Based on these findings, recommended include that all the essential knowledge and skills determined in this study should be utilized to organize workshop for rural farmers. It was also recommended that trainers should adopt appropriate procedures for effective training of rural farmers using the determined knowledge and skills.

Keywords: Rural farmers, Cell phone, Essential skills, Agricultural production, Theoretical knowledge

INTRODUCTION

Food security is one of the major problems facing developing countries most especially Nigeria. This according to Bolarinwa, & Oyeyinka (2011) was traceable to insufficient investment in agricultural research and modern technology, inadequate extension services and weak linkages between researchers, extension and farmers. Pinstrup-Anderson, Randya-Lorch and Rosegraut (2001) indicated that lack of productive resources such as farm inputs, improved crop varieties and relevant technology such as cell phones for communication and dissemination of agricultural information contribute to hunger problem in developing countries.

Effective communication and information therefore can be achieved through various mobile communication technologies such as cell phones. Cell phone is the most commonly possessed and operated mobile communication technologies by individuals in Nigerian environment (Bakare, 2014). Others which are highly restricted to professionals include: walki talki and mobile tapes. Cell phone is an electronic gadget that helps in selling and buying of goods and services (Sheen, 2009), it can be also used for communication among rural farmers and extension agents about new technologies, new methods of farming, epidemics, diseases and pests and other things that could boost agricultural production. Although rural farmers for instance, need to acquire some essential knowledge and skills before they can effectively make use of cell phones for agricultural production.

Agriculture is the foundation of developing economy of a nation through production of plants and animals for man's consumption. It is known as the occupation, business, or science of cultivating the land, producing crops and raising livestock. International Labour Organisation (ILO) (2010) made it cleared that agriculture is the cultivation of animals, plants and fungi for food, fiber, biofuel, medicinal plants and other products used to sustain and enhance human life. In agriculture, farmers most especially perform different types of activities to produce foods, cash and material resources to maintain life. Some of the activities performed by rural farmers in Enugu State for example include: bush clearing, farm cultivation, rearing of animals, processing of agricultural products locally, harvesting, storage of farm produces and marketing. According to Ben (2014), agriculture includes farming in all its branches and among other things including cultivation and tillage of the soil, dairying, the production, cultivation, growing, and harvesting of any agricultural or horticultural commodities, the raising of livestock or poultry, and any practices performed by a farmer on a farm as an incident to or in conjunction with some farming operations. Ulrich, Mueller, Gerardo and Aanen (2005) stated that to practice agriculture means to use natural resources to produce

commodities which maintain life, including food, fiber, forest products, horticultural crops, and their related services.

The major agricultural products according to McTavish, Decker, Schnabel, Taylor and Hillis, (2013) can be broadly grouped into foods, fibers, fuels and raw materials. Specific foods include: cereals, vegetables, fruits, oils, meats and spices. Fibers include: cotton, wool, hemp, silk and flax while raw materials are lumber and bamboo. Other useful materials are also produced by plants, such as resins, dyes, drugs, perfumes, biofuels and ornamental products such as flowers and nursery plants. . It involves the making of foods and other valuable raw materials from crop plants and animals. Farmers apply different types of inputs to boost their agricultural production. Agriculture is one of the main components of the sustainability of human civilization. With today's advanced technology, the production of agriculture is slowly shifting its focus to creating goods that are safe for society and the environment. Appropriate technology such as cell phone is required to improve agricultural production. Agricultural production is increasingly becoming global issues that every stakeholder is interested in. A farmer is somebody who owns or operates a farm. The persons who work for farmers are called farm hands**.** The farm hands work hand in hand with farmer to execute agricultural operations. Olaitan (2005) defined rural farmer as a person who grows crops and rears animals for the benefit of mankind. In Enugu State of Nigeria, rural farmers for example involve themselves in different types of farming practice such as crop farming, livestock, mixed farming, fishery, piggery and snailery. Majority of rural farmers in the study area are illiterates who do not have knowledge or skills to operate cell phones to boost agricultural production or for simple communication. A rural farmer in this study is a local community based person who has no knowledge and skills in using cell phone for boosting agricultural production.

Some farming procedures, inputs, methods and technologies are required by rural farmers to boost agricultural production in their localities. Some of the technologies may include: tractors, ridgers, ploughers, fertilizers, herbicides, including cell phones for effective communication with extension agents and colleagues on new events or technologies. Different cell phones can be used to disseminate agricultural information. These cell phones are manufactured by different companies with their trademarks or brands. They have a number of features in common, but manufacturers also try to differentiate their own products by implementing additional features to make them more attractive to customers. All these features make cell phones more complex to operate by people most especially rural farmers. Rural farmers therefore require some essential knowledge and skills for effective use of cell phones in agriculture.

Knowledge and skills plus attitudes are acquired as a result of effective training. Knowledge is the information, understanding and skills that one gains through education or experience. Knowledge and skills are necessary for executing given tasks. Every human endeavour requires adequate skills and knowledge to perform a task. Knowledge is the psychological result of perception, learning and reasoning. It is an understanding about something or perception of thing as a result of training or education or it can refer to a theoretical or practical understanding of a subject (Darwin, 2003). Dekel (2006) stated that knowledge acquisition involves complex cognitive processes such as perception, communication, and reasoning. John (2017) added that knowledge is the fact or condition of knowing something with familiarity gained through experience or association. Knowledge is a familiarity, awareness, or understanding of someone or something, such as facts, information, descriptions, or skills, which is acquired through experience or education by perceiving, discovering, or learning (Paul, 2007). Rural farmers require knowledge to make use of cell phones to communicate with colleagues, extension agents and researchers and to market their products. They require adequate knowledge to operate cell phones to enhance agricultural production. For example, a rural farmer requires knowledge to effectively use a cell phone for addition or subtraction of numbers or for calculation of monies after selling their agricultural products.

A set of skills is required for effective use of cell phones by rural farmers. Skill is the capacity to perform a given job to standard, usually gained through training or experience. Maxine (1997) defined skill as a present observable competence to perform a learned behavior regarding the relationship between mental activity and bodily movements. Onuka (2008) defined skill as a well established habit of performing tasks in a manner acceptable by workers in the profession. The skill requires to do something well is usually acquired through repetitive training (Nwachukwu, Bakare and JIka, 2009). Skill according to Ryu (2017) is an ability and capacity acquired through deliberate, systematic, and sustained effort to smoothly and adaptively carryout complex activities or job functions involving ideas, things, and/or people. Skills are required to operate relevant technologies such as cell phones for improving agricultural production and these can be acquired as a result of training. There is need to inform rural farmers about appropriate variety of seeds, fertilizers, pesticides and a range of other agricultural inputs that could enhance agricultural production. Farmers should be updated about knowledge and information regarding land preparation, inter- mixture of cropping, water management, harvesting and so many farm related activities (Abdul & Md, 2013). This information could be transferred by using information communication technology such as cell phone, radio and television to farmers (Zakar & Zakar, 2009). Furthermore, rural farmers need to use mobile phone to access market information (Ashraf et al.; 2005, de Silva, 2008). All these are possible when farmers acquire skills for operating cell phones

Researches have shown that rural farmers lack cell phone skills to boost agricultural production. In spite of the benefits of cell phones, experience has shown that most farmers in Nigeria are yet to maximize the potentials of cell phones. Studies have shown that some of the rural farmers are reluctant in adopting this flexible technology (Olagunju, 2008; Olaitan, Asogwa, & Abu, 2011; Bakare, 2016). The inability of rural farmers to utilize cell phones for their farm activities has been attributed to poor cell phone orientation and training; hence, perceived poor cell phone skills possessed by majority of the rural farmers in communities in Nigeria and Africa

constitute a major barrier to successful agricultural production. Essential knowledge and skills in this study therefore are special sets of abilities a rural farmer must acquire for effective use of cell phones for boosting agricultural production.

Areas of agriculture where cell phones can be used include: harvesting of crops, processing of agricultural produces and marketing of agricultural outputs. Rural farmers also require some knowledge and skills for maintaining their phones. Some of these skills are operational and maintenance skills and precautionary measures for operating cell phones. Operational skill is the ability of a rural farmer to make use of cell phone to call or receive agricultural information (Bakare, 2017). Maintenance skills are tactics required by farmers for managing their cell phones. Maintenance skills expected of farmers for managing their phones is servicing. In managing their cell phones, it is required to perform some preventive activities such as general cleaning of cell phone using soft dry cloth and melthylated spirit, installation of antivirus software, brushing of inner parts of phones among others. Farmers need to display some precautionary measures while maintaining or using their cell phone for agricultural purposes. Kernerman (2013) therefore defined precaution as an action taken in advance to protect against possible danger, failure, or injury. Precautionary measures in this study therefore are unique steps or actions taken to avoid damage or failure of cell phone when maintaining or using it for communication purpose.

STATEMENT OF THE PROBLEM

The rural farmers are facing many problems, obstacles and challenge in the use of ICT tools such as mobile phones. The lack of knowledge and skills in using cell phones are also a big problem among rural farmers, the level of ICT usage among rural farmers is low due to lack of knowledge and skills (Abdul and Md, 2013). The illiteracy is also a cause of using cell phones among farmers because they could not contact with related officers and department and get agricultural information such as market price, weather or pesticides. Even farmers are not knowledgeable about in using mobile phones to contact their family and friends due to illiteracy (Samuel et al., 2005; Musa, 2008).

The present Government of Nigeria is therefore aimed at distributing cell phones to rural farmers for communication with themselves and extension agents on: problems in agriculture, innovations in agriculture and making channels in agriculture among others. Most of these farmers are semi or stacked illiterate who are new to independent use of cell phones, that is some can receive information, call out, text messages while some cannot count numbers. Most of these farmers are not trained locally and in their local languages as alternative to English. To make this effective, farmers need training through their cooperative society or extension agents at the leisure time of farmers to enable them appreciate effective technology. But before then there is need for a programme to be utilized by trainers which will consists the essential knowledge and skills required by these farmers to enable them appreciate the effects of cell phone technology in agricultural production.

Rural farmers and extension agents in Enugu State are favoured to exchange agricultural information through the use cell phones to enhance their agricultural production. This is because there are several mask of services provider erected along the road linking one town to another, different types of phones also available to rural farmers and extension agents at avoidable prices, telephone kiosks are made accessible to purchase phone parts and call cards, centre are in many rural areas to make Global Mobile System (GSM) a means of bridging the gap between researcher, extension agents and farmers in Nigeria (Bolarinwa, & Oyeyinka, 2011). Apart from government making phones available to rural farmers, the cost of maintenance of phones is considerably avoidable. The call cards are made at different prices that rural farmers can afford. Based on these reasons, there is need to determine essential knowledge and skills required by farmers in making cell phones effective for boosting agricultural production. In conducting this research, the following objectives were set to determine the:

1. Essential knowledge and skills required by rural farmers in using cell phones to obtain agricultural information
2. Essential agricultural information required by rural farmers to boost agricultural production using cell phones
3. Operational skills required by rural farmers for using cell phones
4. Maintenance skills required by farmers in managing cell phones
5. Precautionary measures required by rural farmers in using and managing all kinds of cell phones

RESEARCH QUESTIONS

The following research questions guided the study:

1. What are the essential knowledge and skills required by rural farmers in using cell phones to obtain agricultural information?
2. What are the essential agricultural information required by rural farmers to boost agricultural production using cell phones?
3. What are the operational skills required by rural farmers for using cell phones?
4. What are the maintenance skills required by rural farmers in managing cell phones?
5. What are the precautionary measures required by rural farmers in using and managing all kinds of cell phones?

HYPOTHESES

The following hypotheses were tested at 0.05 level of significance:

$H0_1$: There is no significant difference in the mean responses of the respondents on the essential

knowledge and skills required by rural farmers in using cell phones to obtain agricultural information

$H0_2$: There is no significant difference in the mean responses of the respondents on the essential agricultural information required by rural farmers to boost agricultural production using cell phones

$H0_3$: There is no significant difference in the mean responses of the respondents on the operational skills required by rural farmers for using cell phones

$H0_4$: There is no significant difference in the mean responses of the respondents on the maintenance skills required by rural farmers in managing cell phones

$H0_5$: There is no significant difference in the mean responses of the respondents on the precautionary measures required by rural farmers in using and managing all kinds of cell phones

METHOD

Design of the Study

This study employed descriptive research design. Adeyemo (2006) defined survey design as a way of establishing opinion on an issue of the day, attitude towards more basic issues and facts about the people being involved. Descriptive research design according to Kothari and Garg (2014) is appropriate for those studies which are concerned with describing the characteristics of a particular individual, or of a group. Descriptive research design was considered appropriate for the study since it elicited information from respondents on the essential knowledge and skills required by rural farmers in making cell phones effective in boosting agricultural production in Enugu State.

Area and Population for the Study

The study was conducted in the three agricultural zones in Enugu State and the Population for Study was 87 comprising 29 Lecturers of Electrical/Electronic Engineering/Technology in IMT, Enugu State University of Science and Technology and University of Nigeria, Nsukka, 23 Agricultural Education Lecturers in ESUT and UNN, 12 Literate Cell Phone Technicians in Strategic Locations in Enugu State and 23 Extension Agents using cell phones in Enugu State.

Sample and Sampling Technique

The sample size for the study was 87 made up of lecturers, literate technicians and extension agents. All the lecturers were involved in the study while purposive sampling technique was employed to select 23 literate cell phone technicians and 23 extension agents who make use of cell phones for effective communication.

Instrument for data collection

A structured questionnaire having 99 items developed from the literature reviewed for the study was used for data collection. The questionnaire was divided into two main part I and II. Part I was used to obtain personal information from respondents, Part II contained five sections A-E, each section was based on the corresponding specific purposes of the study. Each item in the instrument was assigned a five response scale of Strongly Agree or Required (SA or SR)-5, Agree or Required (A or R)-4, Undecided (U)-3, Disagree or Not Required (D or NR)-2, and Strongly Disagree or Not Required (SD or SNR)-1point. According to Lozano et al (2008), an instrument can be considered good for validity and reliability if it has between four (4) and seven (7) alternative responses. However, fewer options are acceptable depending on the purpose and scope of the study (Bendig 1954; Mattell and Jacoby 1971; Jones and Scott 2013). The respondents were therefore asked to rank the response options to an item based on the level at which each item is required.

Validation of the instrument

The instrument was subjected to face and intrinsic validations. For face validation, the experts were selected from the Department of Industrial Technical Education and Department of Agricultural Education, Faculty of Vocational and Technical Education, University of Nigeria, Nsukka. The title of the study, specific purposes, research questions and null hypotheses formulated were attached to each copy of the questionnaire given to the experts. The experts were asked to read the items under each research question and make useful corrections in order to improve the standard of the questionnaire. The experts were also requested to add any relevant item to the questionnaire. After one week, one of the researchers went round to collect the copies of the questionnaire given to the experts and effected the corrections accordingly. Ninety nine items were retained out of 121 items presented to experts in form of questionnaire.

The intrinsic validity was obtained through the use of the test statistics. This statistics was derived from' Rulon's formula, that intrinsic validity is an index of reliability (Guilford, 2000). The intrinsic validity coefficients obtained for each section of the instrument were as follows: Section A, 0.82; Section B, 0.83; section C 0.80; section D 0.78; section E, 0.83. These values indicated a high level at which the items on the questionnaire measure what they should measure.

Reliability of the instrument

In other to establish the internal consistency of the questionnaire items, Cronbach Alpha test of internal consistency was conducted on each section in the part 2 of the questionnaire. The researchers administered 20 copies of the structured questionnaire on electrical/electronic lecturers, agricultural education, cell phone technicians and extension agents in Anambra State. The reason for administering the copies of the questionnaire on other set of respondents outside the study area was to obtain real reliability coefficient values

for each sections of the questionnaire (Roberts, 2012). Statistical Packages for Social Sciences (SPSS) 22 versions was found useful for data analysis. The result of the Cronbach alpha revealed the following: Essential knowledge and skills required by rural farmers in using cell phones to obtain agricultural information (& = 0.72, n=20), essential agricultural information required by rural farmers to boost agricultural production using cell phones (&= 0.78, n= 20), operational skills required by rural farmers for using cell phones (&= 0.79, n= 20), maintenance skills required by farmers in managing cell phones (&= 0.82, n= 20) and precautionary measures required by rural farmers in using and managing all kinds of cell phones (&= 0.82, n=20), while overall reliability index yielded &= 0.88, n= 20. According to guidelines by Sekaran (2003), a coefficient of .60 is considered to be poor, 0.70 is acceptable, while over 0.80 is good. Olelewe and Agomuo (2016) also stated that the closer the Cronbach's alpha is to 1, the higher the internal consistency.

Method of data collection

Data collection was carried out by the researchers. They administered the copies of the questionnaire on lecturers, cell phone technicians and extension agents at various locations. The lead researcher coordinated the activities of the researchers during the data collection. After two weeks, researchers went round and collected the copies of the administered copies of the questionnaire from the respondents for further actions. However, out of 87 copies of the questionnaire administered, only 82 copies were duly completed and returned, representing 94.25 percent return rate upon which data analysis was based. This is an acceptable response rate according to a study by Baruch (1999) who recommended a standard of 60+/-20% for surveys in managerial and behavioural sciences. The researchers employed SPSS version 22 to manage and analyse the data

Method of data analysis

Mean was employed for answering research questions while null hypotheses were tested using analysis of variance, Any item with the mean value of 3.50 or above was considered as required or agreed, while any item with the mean value less than 3.50 was considered as not required or disagree. The null hypothesis of no significant difference was accepted for any item whose P- value was greater than 0.05, but rejected for any item whose P-value was less than 0.05.

RESULTS

The results for the study were obtained from the research questions answered and hypotheses tested through data collected and analyzed. The data for answering research questions and testing hypotheses were presented in Tables 1-5

Tables I: Mean Responses of the Respondents on the Essential knowledge and skills required by Rural Farmers in using Cell Phones to obtain Agricultural Information

S/N	Essential knowledge and Skills	Mean	SD	Sig.	Remark, Ho
A	**The following are the essential knowledge and skills required by farmers when contacts are stored on a phone:**				
1	Locate power switch on the cell phone	3.95	0.71	0.53	**Required, NS**
2	Power on the cell phone	4.20	0.90	0.34	**Required, NS**
3	Scroll to locate phone book on the cell phone	3.85	0.81	0.56	**Required, NS**
4	Scroll down or up to select the numbers or name to be dialed	3.80	0.90	0.33	**Required, NS**
5	Key in first alphabets of the name of the person to be called	3.78	0.83	0.24	**Required, NS**
6	Identify the number or names of the intended receiver	3.82	0.86	0.16	**Required, NS**
7	Highlight the names or numbers to be called from the phone book	3.58	0.85	0.53	**Required, NS**
8	Locate call sending button on the phone	3.50	0.89	0.41	**Required, NS**
9	Press the call sending button to dial the number or name of the receiver	3.63	0.81	0.56	**Required, NS**
10	Place the phone by the head side	3.80	0.81	0.34	**Required, NS**
11	Let the mouth piece be very close to the mouth	3.78	7.00	0.26	**Required, NS**
12	Let the speaker near the ear of the caller	3.82	0.93	0.31	**Required, NS**

S/N	Essential knowledge and Skills	Mean	SD	Sig.	Remark, Ho
13	Recognize when the call is picked by the receiver	3.56	0.81	0.34	**Required, NS**
14	Talk with the receiver in a moderate voice	3.79	0.84	0.21	**Required, NS**
15	Locate the ending call button on the keypad	3.73	0.88	0.25	**Required, NS**
16	Confirm whether the conversation has ended	3.67	0.71	0.12	**Required, NS**
17	Press the ending call button to end the conversation with the receiver	3.61	0.80	0.32	**Required, NS**
18	Bring down the phone from the head side	3.55	0.70	0.11	**Required, NS**
B	**The following are the essential knowledge and skills required by farmers when contacts are not stored on phone:**				
19	Remove the security code used to secure the phone	3.62	0.83	0.23	**Required, NS**
20	Key in the phone numbers to be dialed correctly	3.77	0.78	0.13	**Required, NS**
21	Press sending key to dial the numbers	3.60	0.83	0.21	**Required, NS**
22	Wait until the phone is connected	3.81	0.84	0.34	**Required, NS**
23	Talk to the receiver in moderate and polite manner when the phone is picked	3.62	0.78	0.41	**Required, NS**
24	End the conversation with ending key	3.62	0.82	0.12	**Required, NS**
C	**The following are the essential knowledge and skills required by farmers for sending text messages on a cell phone:**				**Required, NS**
25	Select number or name from phone contact	3.62	0.79	0.43	**Required, NS**
26	Click on /select messaging box	3.68	0.83	0.54	**Required, NS**
27	Write messages in preferred languages	3.56	0.78	0.23	**Required, NS**
28	Select preferred SIM if phone accommodates double SIMs	3.55	0.83	0.43	**Required, NS**
29	Send the messages to the receiver(s)	3.62	0.76	0.34	**Required, NS**
D	**The following are the essential knowledge and skills required by farmers for checking credit balance:**				**Required, NS**
30	Use keypad to press appropriate codes on the phone	3.50	0.83	0.43	**Required, NS**
31	Confirm the code before sending	3.65	0.79	0.13	**Required, NS**
32	Send the code(s) and wait for result	3.78	0.81	0.34	**Required, NS**

Data in Table 1 reveal that 32 items had their mean values ranged from 3.50 to 3.95 and this shows that the mean value of each item was above the cut-off point of 3.50, indicating that 32 essential knowledge and skills were required by rural farmers for using cell phones to obtain agricultural information. The Table also showed that the standard deviations of the items were within the range of 0.70 to 0.90; this indicated that the respondents were not far from the mean and one another in their responses. The table 1 also indicated that all the items had their P-values greater than 0.05. This indicated that there was no significant difference in the mean responses of the respondents on the essential knowledge and skills required by rural farmers for using cell phones to obtain agricultural information. Therefore, the null hypothesis of no significant difference was upheld for all the 32 essential knowledge and skills

Tables II: Mean Responses of the Respondents on the Essential Agricultural Information required by Rural Farmers to boost Agricultural Production using Cell Phones

S/N	Essential Agricultural information	Mean	SD	Sig.	Remark, Ho
	The rural farmers in Enugu State required information about:				
1	New farm methods/practices	3.95	0.71	0.53	**Required, NS**
2	New outbreaks, epidemics, diseases and pests	3.76	0.79	0.34	**Required, NS**
3	Recent technologies and agricultural inputs to improve agricultural production	3.85	0.81	0.56	**Required, NS**
4	Proper ways of using new farm implement and other latest technologies in agriculture	3.80	0.90	0.33	**Required, NS**
5	Market prices	3.78	0.83	0.24	**Required, NS**
6	Environmental conditions	3.82	0.86	0.16	**Required, NS**
7	When to plant some special /improved crops	3.58	0.85	0.53	**Required, NS**
8	Government policies on agriculture	3.50	0.89	0.41	**Required, NS**
9	Where to get improved varieties of crops	3.63	0.81	0.56	**Required, NS**
10	How to apply certain chemicals or inputs in the farmland	3.80	0.81	0.34	**Required, NS**
11	Breakthroughs in agriculture	3.78	7.00	0.26	**Required, NS**
12	Market for commodities	3.82	0.93	0.31	**Required, NS**
13	Values of crops and commodities in markets	3.56	0.81	0.34	**Required, NS**
14	Weather and climate conditions	3.79	0.84	0.21	**Required, NS**
15	Storage methods farm produces	3.73	0.88	0.25	**Required, NS**
16	Processing methods suitable for a particular product	3.67	0.71	0.12	**Required, NS**
17	Range of agricultural inputs that could enhance agricultural production	3.61	0.80	0.32	**Required, NS**
18	Knowledge and information regarding land preparation, inter-mixture of cropping, water management and harvesting	3.55	0.70	0.11	**Required, NS**
19	Appropriate variety of seeds, fertilizers and pesticides	3.66	0.82	0.42	**Required, NS**

Data in Table 2 reveal that 19 items had their mean values ranged from 3.51 to 3.95 and this shows that the mean value of each item was above the cut-off point of 3.50, indicating that 19 agricultural information were required by rural farmers for boosting agricultural production. The Table also showed that the standard deviations of the items were within the range of 0.70 to 0.90; this indicated that the respondents were not far from the mean and one another in their responses. The table 2 also indicated that all the items had their P-values greater than 0.05. This indicated that there was no significant difference in the mean responses of the respondents on the agricultural information required by rural farmers for boosting agricultural production. Therefore, the null hypothesis of no significant difference was upheld for all the 19 agricultural information

Tables III: Mean Responses of the Respondents on the Operational Skills required by Farmers for Using Cell Phones

S/N	Operational Skills	Mean	S.D.	Sig.	Remark, Ho
1	Pick the phone with comfortable hand	3.93	0.77	0.53	**Required, NS**
2	Handle the phone carefully with one hand	3.60	0.80	0.34	**Required, NS**
3	Locate the power button	3.81	0.80	0.56	**Required, NS**
4	Press the power button to on the phone	3.80	0.90	0.33	**Required, NS**
5	Press appropriate number or symbol to unlock the phone	3.77	0.83	0.24	**Required, NS**
6	Select name/number to be dialed	3.80	0.86	0.16	**Required, NS**
7	Dial the number by pressing send button	3.58	0.85	0.53	**Required, NS**
8	Make conversation when call is picked	3.51	0.89	0.41	**Required, NS**
9	End the conversation by pressing the end key	3.63	0.78	0.56	**Required, NS**
10	Press receiving button to pick calls	3.78	0.88	0.09	**Required, NS**
11	Select number from the phone book	3.86	0.80	0.34	**Required, NS**
12	Compose agricultural messages	3.78	0.84	0.26	**Required, NS**
13	Send the agricultural messages or information to colleagues or extension agents	3.82	0.79	0.31	**Required, NS**
14	Press inbox icon to unveil agricultural messages or information	3.56	0.82	0.34	**Required, NS**
15	Load credit on the phone	3.77	0.84	0.21	**Required, NS**
16	Recharge the battery of the phone when runs down	3.75	0.87	0.25	**Required, NS**

Data in Table 3 revealed that 16 items had their mean values ranged from 3.51 to 3.93 and this shows that the mean value of each item was above the cut-off point of 3.50, indicating that 16 operational skills were required by rural farmers for using cell phones. Similarly, the standard deviation of contents of the training programme ranged from 0.77 to 0.90 indicating that the respondents were close to one another in their opinion. The Table 3 also indicated that all the items had their P-values greater than 0.05. This indicated that there was no significant difference in the mean responses of the respondents on the operational skills required by rural farmers for using cell phones. Therefore, the null hypothesis of no significant difference was upheld for all the 16 operational skills.

Tables IV: Mean Responses of the Respondents on the Maintenance Skills required by Rural Farmers for Managing Cell Phones

S/N	Maintenance Skills	Mean	SD	Sig.	Remark, Ho
1	Select appropriate materials for maintaining cell phones	3.59	0.79	0.11	**Required, NS**
2	Clean the ear piece of a phone with soft dry materials	3.61	0.82	0.26	**Required, NS**
3	Clean mouthpiece of phone with soft brush	3.54	0.85	0.09	**Required, NS**
4	Clean the screen of the cell phone with appropriate materials	3.67	0.89	0.36	**Required, NS**
5	De-assemble cell phone when falls into water or other liquids	3.52	0.79	0.23	**Required, NS**
6	Remove the battery from the phone completely	3.80	0.75	0.16	**Required, NS**
7	Dry clean the phone by approved means	3.78	0.80	0.22	**Required, NS**
8	Clean the cell phone with keypad problem using dry duster and brush	3.80	0.72	0.53	**Required, NS**
9	Clean the ports of the cell phone with SIM card and SIM card port problems	3.56	0.83	0.41	**Required, NS**
10	Dry clean the cell phone with screen problem	3.78	0.78	0.26	**Required, NS**
11	Clear ringing problem in a phone	3.85	0.82	0.32	**Required, NS**
12	Clear network problem in a cell phone	3.81	0.76	0.34	**Required, NS**
13	Adjust cell phone with hand free mode problem	3.78	0.83	0.36	**Required, NS**
14	Adjust cell phone restarting when memory card is inserted	3.74	0.85	0.31	**Required, NS**
15	Adjust the volume of a phone when is not loud enough	3.82	0.89	0.32	**Required, NS**
16	Set a cell phone hanging when snapping/video recording	3.71	0.81	0.20	**Required, NS**
17	Service cell phone hanging due to overloading of application software	3.58	0.76	0.15	**Required, NS**
18	Change dead battery of a cell phone	3.65	0.83	0.11	**Required, NS**
19	Heat the cell phones with vibration problem	3.72	0.86	0.22	**Required, NS**

Data in Table 4 reveal that 19 items had their mean values ranged from 3.52 to 3.85 and this shows that the mean value of each item was above the cut-off point of 3.50, indicating that 19 maintenance skills were required by rural farmers in managing their cell phones. The Table also showed that the standard deviations of the items were within the range of 0.75 to 0.89; this indicated that the respondents were not far from the mean and one another in their responses. The Table 2 also indicated that all the items had their P-values greater than 0.05. This indicated that there was no significant difference in the mean responses of the respondents on the maintenance skills required by rural farmers in managing cell phones. Therefore, the null hypothesis of no significant difference was upheld for all the 19 maintenance skills

Tables V: Mean Responses of the Respondents on the Precautionary Measures Required by Rural Farmers for using and Managing Cell Phones

S/N	Precautionary measures	Mean	SD	Sig.	Remark, Ho
A	***Precautionary measures in using Cell phone***	3.77	0.78	0.10	**Required, NS**
1	Confirm the credit pin before sending it to avoid blockage of SIM	3.81	0.84	0.33	**Required, NS**
2	Always look at the critically names or numbers before dialing	3.59	0.82	0.22	**Required, NS**
3	Always end phone calls to avoid wastages of credits	3.50	0.72		
4	Take cell phone away from water or foods	3.79	0.80	0.30	**Required, NS**
5	Charge the battery of a cell phone at moderate	3.73	0.83	0.24	**Required, NS**
6	Use recommended battery charger for a cell phone	3.82	0.86	0.16	**Required, NS**
7	Put a cell phone in a nylon bag while on farm land to prevent rain or water entering the phone	3.65	0.72	0.53	**Required, NS**
8	Operate a cell phone with clean hands	3.78	0.93	0.13	**Required, NS**
B	***Precautionary measures in maintaining Cell phones***				**Required, NS**
9	Apply the right pry tools and screwdrivers when changing the faceplates or other components of the phone	3.60	0.88	0.34	**Required, NS**
10	Clean cell phone with correct solvent like alcohol	3.57	0.77	0.23	**Required, NS**
11	Use soft dry materials to clean cell phone	3.71	0.78	0.32	**Required, NS**
12	Remove the battery of the phone before servicing	3.50	0.89	0.41	**Required, NS**
13	Use extreme care when disassembling cell phone for any reason	3.63	0.81	0.55	**Required, NS**
14	Use recommended brush for cleaning cell phones	3.59	0.79	0.29	**Required, NS**

Data in Table 5 reveal that 14 items had their mean values ranged from 3.50 to 3.82 and this shows that the mean value of each item was above the cut-off point of 3.50, indicating that 14 precautionary measures were required by rural farmers for using all kinds of cell phones. The Table also showed that the standard deviations of the items were within the range of 0.78 to 0.93; this indicated that the respondents were not far from the mean and one another in their responses. Table 5 also indicated that all the items had their P-values greater than 0.05. This indicated that there was no significant difference in the mean responses of the respondents on the precautionary measures required by rural farmers for using all kinds of cell phones. Therefore, the null hypothesis of no significant difference was upheld for all the 14 precautionary measures.

DISCUSSION OF FINDINGS

The findings of this study in Table 1-5 reveal that 65 essential knowledge and skills (32 knowledge and skills to obtain information, 10 essential agricultural information, 12 operational skills and knowledge, 19 maintenance skills and

14 precautionary measures) are required by rural farmers in making cell phones effective in boosting agricultural production in Enugu State. These findings agreed with the opinions of Abdul & Md (2013) that farmers need to be updated about knowledge and information regarding land preparation, inter- mixture of cropping, water management, harvesting and so many farm related activities. The agricultural information according to Zakar & Zakar (2009) could be transferred by using information communication technology such as cell phones. The findings also in line with the finding of Adirika and Alike (2008) that technologies such as cell phones, computers, Ipads among others are yet to be fully utilized for businesses. Furthermore, the findings of the study were in consonance with the submission of de-Silva (2008) that rural farmers need to use mobile phones to access market information. There is need to inform rural farmers about appropriate variety of seeds, fertilizers, pesticides and a range of other agricultural inputs that could enhance agricultural production. The findings of the study also agreed with the results of Olaitan, Asogwa and Abu (2011) that secondary school graduates required competencies in maintenance, servicing and repairing of electronic machines for agribusiness occupations to minimize wastage.

The findings of this study agreed with the findings of Nwachukwu, Bakare and Jika (2010) in a study on effective laboratory safety practice skills required by electrical and electronics students for effective functioning in the laboratory of technical colleges in Ekiti State, where 10 safety practice skills were required to use electrical hand tools, 25 safety practice skills in operating electrical and electronic power tools and machines and 10 safety practice skills for working in electrical/electronic workshop. The findings of this study also agreed with the findings of Bakare (2017) who conducted a study on the management skills (32 operational skills, 19 maintenance skills and 14 precautionary measures) required by farmers in making cell phones effective in boosting agricultural production in Ekiti State.

CONCLUSION

Cell phone is an electronic gadget found useful in most of the activities performed by human beings. It is found useful in transportation, education, health, security, agriculture among others. Government has made tremendous efforts to boost agricultural production and one of the efforts is that government distributed cell phones to rural farmers for communication with extension agents, colleagues, government officials and others about new technologies, methods that could be used for agricultural production. This effort of government therefore failed due to lack of knowledge and skills of farmers to make use of cell phones for agricultural production and this necessitated the study. Some knowledge and skills, operational skills, maintenance skills and precautionary measures were identified to train the rural farmers for making use of cell phones in boosting agricultural production

POLICY RECOMMENDATIONS

The following recommendations were made based on the findings of the study:

1. All the knowledge and skills identified in the study should be utilized to organize workshop for rural farmers
2. The trainers should adopt appropriate procedures for effective training of farmers using identified knowledge and skills
3. The facilities meant to organize intensive training for rural farmers should be provided by government and other relevant bodies

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