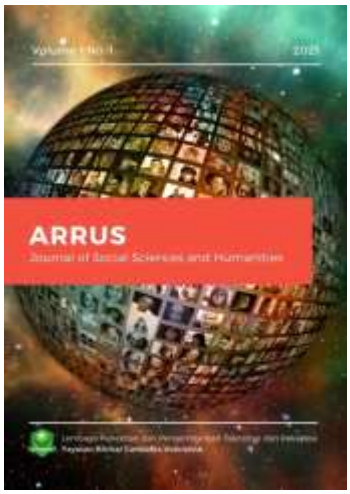
https://doi.org/10.35877/soshum3623

OPEN ACCESS

ISSN: 2776-7930 (Print) / 2807-3010 (Online)




RESEARCH ARTICLE / REVIEW ARTICLE

# Essential Electronic Marketing Skills Needed By Rural Farmers In Agrarian Communities For Alleviating Middlemen Profiteering

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**Abstract:** This study identified the essential e-marketing skills needed by farmers to reduce middlemen profiteering in agrarian communities. The study followed three research questions and tested three null hypotheses at the 0.05 level of significance. The industry approach functioned and supported the action group design. The population for the study was 107, comprising 55 lecturers, 31 instructors, and 21 mobile money operators. The researchers collected data using a structured questionnaire. Three experts validated the instrument and used the Cronbach alpha reliability method to assess the internal consistency of the questionnaire items. One hundred and seven copies of the instrument were administered, and 91 copies (85 percent) were returned. Weighted mean and standard deviation were used to answer the research questions, while analysis of variance (ANOVA) was used to test the null hypotheses at the 0.05 level of significance. The study found that the rural farmers needed essential skills in operating electronic devices, e-communication, and mobile phone skills were need. It was recommended that the identified essential electronic marketing skills be packaged and utilized to train rural farmers to improve their e-marketing strategy toward profit maximization.

**Keywords**: Farmers, Electronic marketing, Skills, Agrarian communities, Intermediaries

## 1. Introduction

The agricultural marketing procedure makes it easier for the majority of people and businesses in the study region to access farm products. Okeke, Adegbola, Katagum, and Samaila (2017) define agricultural marketing as the execution of commercial operations, including the movement of agricultural products from the site of initial agricultural production to the hands of final customers. Karani and Wanjohi (2017) define agricultural marketing as the commercial process that delivers farm products, such as crops or animals, to the end user. Therefore, agricultural marketing refers to the execution of all marketing initiatives that direct the movement of farm products from rural farmers to consumers. According to Okeke et al. (2017), farmers, particularly those in rural regions, participate in agricultural marketing at many phases, such as farmer-to-middleman, middleman-to-industry, and middleman-to-consumer.

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A farmer, as defined by Danladi (2014), is an individual whose primary job involves rearing livestock and/or cultivating farmland to produce crops, vegetables, and fruits. According to Okeke et al. (2017), rural farmers are individuals who cultivate crops, care for animals, and provide other services in urban areas while also packaging goods for urban populations through intermediaries. Middlemen frequently act as intermediaries between producers and consumers, facilitating the distribution, sale, and transportation of agricultural products to ensure efficient delivery to end users while overseeing logistics, price, and market demand. Middlemen in agricultural marketing are traders or groups of people who purchase farm produce directly from farmers at the farm gate and resell it to individuals or businesses on the open market in an effort to profit above the farm gate price. Karani and Wanjohi (2017) assert that the intermediaries at the industry gate benefit from farmers' ignorance of the true market prices for their goods in most rural communities.

Findings by Asogwa and Okwoche (2012) in their study in Benue State revealed that rural farmers do not participate in the marketing of agricultural products beyond harvesting, sorting, clearing, and processing them into other products. The authors further stated that farmers store the products and later present them to middlemen at the farm gate. In Enugu State, rural farmers harvest, sort, and market farm products like fruits, vegetables, cereals, tubers, pigs, and poultry, among the rest, directly to the middlemen. These middlemen sell the acquired or purchased products from the farmers to the consumers and industries electronically through the process of e-marketing. The middlemen profit from this method at the expense of the farmers who struggled to produce the products. Thus, Onu, Bakare, Ifeanyieze, Nwankwo, Fredrick, Ekenta, and Ezebuiro (2018) found that rural farmers in Nigeria required essential skills in e-communication for the marketing of farm products. Similarly, findings by Agu (2013); Furuholt and Matotay (2011); and the United Kingdom Government Publication (2018) revealed that traders and rural farmers needed essential skills in using technologies for e-marketing in order to buy, sell, and make payments for goods and services.

Electronic marketing, or e-marketing, involves the use of internet-based strategies and tactics to deliver products and services to target consumers (Ahmed, 2014). Similarly, Taherdoost and Jalaliyoon (2014) define e-marketing as the application of marketing concepts and strategies through electronic media, particularly the Internet. In the context of this study, e-marketing refers to the process by which rural farmers utilise electronic devices, such as cell phones, to sell their produce to individual or business customers for profit. Furthermore, Hassan (2013) highlights that e-marketing can strengthen social relationships among rural farmers, enable direct communication with customers regarding their products at competitive prices, expand market opportunities, save time and energy, and ultimately increase their incomes.

E-marketing is an essential modern-day strategy that can help individuals like rural farmer entrepreneurs in the marketing of their farm products (Tewari, 2017). The author continued by stating that farmers require an e-marketing strategy to reach customers where they spend most of their time, enabling them to make purchases. E-marketing is economical and time-efficient. In the end, it boosts marketers' earnings and optimizes their brands by improving their clientele, marketing reach, lead generation, and conversions. Daily News (2011) reports that Tanzania's tobacco industry launched an e-marketing initiative, enabling tobacco growers to make business decisions from their phones, and fishermen to contact or text fish buyers using their phones. Also, the M-Farm application in Kenya enables farmers to receive higher prices at market as a result.

According to Trendov, Varas, and Zeng (2019); Baumuller (2015); and Agomou (2005), information and communication technologies (ICT) like computers and cell phones can help rural residents learn how to conduct business and provide services to their clients. Rural farmers, despite their hard work on the farms, face financial disadvantages due to their inability to adopt e-marketing. Studies have shown that most rural farmers are unable to send SMS or use mobile phones for marketing (Ogbeide & Ele, 2015; Furuholt & Matotay, 2011).

https://doi.org/10.35877/soshum3623

ISSN: 2776-7930 (Print) / 2807-3010 (Online)

Middlemen take advantage of the ignorance and poor skills of rural farmers, exploiting their weak bargaining power due to illiteracy and their inability to access and use the digital environment (Lightfoot and Scheuermeier 2007; Thapa & Pokhrel 2007). To these farmers, a phone is for answering calls only. Karani and Wanjohi (2017) claim that because rural farmers have limited access to ICT devices like mobile phones, middlemen are more likely to visit their homes and farms to make transactions.

However, the European Parliament (2015) and Ki-moon (2012) noted that the majority of rural communities in developing nations still face a significant digital gap compared to those in developed countries. The Economist (2010) noted that some rural farmers have the financial means to purchase mobile phones for limited voice calls, but they are unable to send SMS for business purposes. Furuholt and Matotay (2011) added that Tanzanian rural farmers' lack of proficiency with the electronic communication channels required for e-marketing has resulted in a lack of opportunities. Consequently, the activities of middlemen have resulted in a poor general level of development for rural farmers. Rural farmers' low educational levels hinder their ability to embrace and utilize technology, such as mobile phones (Kirui, Okello, & Nyikal 2010, Donner 2009, and the European Parliament 2015).

Due to low earnings from their labour investments in agricultural production, many rural farmers continue to live in substandard shelters, suffer from various illnesses, struggle to meet their children's educational needs, and occasionally avoid paying taxes. Their children migrate to cities for better jobs instead of helping them. The lack of social amenities such as roads, electricity, and water, among others, prevents the development of rural areas and deters investors from investing in these communities. Similarly, Karani and Wanjohi (2017) assert that social amenities are crucial for rural farmers. Rural farmers struggle to afford basic utilities such as electricity and water due to financial constraints. The feeder roads suffer due to their intended use by middlemen, who take advantage of them during rural and farm market days.

The government recognises the shortcomings in rural communities and farmers' incapacity to utilise innovation, leading to the appointment of extension agents with the responsibility of instructing farmers on innovations and other technologies that impact and promote agricultural products. Okeke, Nwalieji, and Uzuegbuna (2015), citing Olaitan and Omomia, stated that it's the duty of extension agents to teach rural farmers about innovations for improving their standard of living. The study's extension agents indicated that they are unable to empower farmers in the area of e-marketing due to a lack of available essential skill packages. Research by Okeke, Nwalieji, and Uzuegbuna (2015) and Ajani and Agwu (2012) revealed that many Nigerian extension workers lack the operational skills necessary to handle ICT devices. Therefore, we carry out this study to identify the essential skills farmers need for electronic marketing, aiming to significantly reduce the impact of middlemen's sharp practices at the farm gate level.

With the help of industry-approved practices, this study aims to identify the essential e-marketing skills that rural farmers need to operate ICT devices. The research and publications focus on educating rural farmers. Trendov et al. (2019), Agu (2013), Allison (2011), and the Food and Agricultural Organisation (1999) have demonstrated that the successful use of technology by rural farmers requires a minimum level of literacy and numeracy, as well as assistance from family members or associates for the successful operation of technologies such as mobile phones for farm produce sales. Extension agents, other national stakeholders, and rural farmers should receive training and increased awareness about the use of ICT in agriculture (Ajani & Agwu, 2012). According to Mahajan and Peterson's (1985) technology-based transaction model, farmers can market their produce through electronic devices like mobile phones. The study's findings will greatly benefit rural farmers by enabling them to communicate, sell, and receive payments electronically in partnership with the Post Office in their communities, thereby positively impacting customers. This will enhance agricultural product distribution, which the government mandates for food security. Additionally, it will

https://doi.org/10.35877/soshum3623

ISSN: 2776-7930 (Print) / 2807-3010 (Online)

boost government revenue, which is why every online purchase already draws a small value-added tax in Nigeria.

Therefore, the general purpose of this study is to identify the essential e-marketing skills that can enable rural farmers to sell farm products directly to potential consumers across Enugu State and beyond. Specifically, the study sought to determine essential knowledge and skills for operating mobile phones for e-marketing, essential electronic communication (e-communication) skills for marketing of farm products, and essential mobile phone skills for selling farm products.

## 2. Research Method and Materials

Three research questions guided the study. The study adopted an action group design. The industry model's functionality supported the use of the action group design in the study. According to Kumar (2011) and Cohen, Mannion, and Marrison (2011), an action group design is a cooperative or participatory study in which the participants or shareholders jointly identify the issues in order to assess, make decisions, and improve in accordance with the accepted practices of their respective industries. Small groups of e-marketing experts, including lecturers and instructors in computer education, lecturers and instructors in business education, and mobile money operators, participated in the study, making this design appropriate. Industry specialists use their phones, mobile devices, and electronic communication skills to sell agricultural products. Thus, Olaitan, Asogwa, and Abu (2012) define the industry's function as a model that can instruct skilled workers in a specific industry or occupation. This model is pertinent to this study because it provides a means of identifying the fundamental knowledge and abilities needed to operate a mobile phone, communicate electronically, and sell agricultural products through the actions of industry professionals. Professionals from authorised electronic business enterprise operators, connected to commercial banks, business schools, and computer education programs, make up the study's industry sector.

The illiterate agricultural farmers in Enugu State, Nigeria, were the main focus of the study. 55 lecturers and 31 instructors from the fields of business education and computer education at the University of Nigeria, Nsukka, Enugu State University of Science and Technology, Enugu, Nigeria, and Federal College of Education Eha-Amufu, Enugu State, comprised the study's 107 participants. Commercial banks in key locations throughout Enugu State approved 21 mobile money operators. The purposeful sampling technique selected a sample of 21 mobile money operators based on the following criteria. The operators must have three to five years of business and professional experience, as well as a minimum of a B.Sc. or Higher National Diploma in Computer Science and Management Education.

The researchers used a structured questionnaire they created based on the study's literature review as the data-gathering tool. In accordance with Jones and Scott (2013), the questionnaire items featured four-point response options: extremely needed, averagely needed, slightly needed, and not needed. The researchers distributed the questionnaire to twenty respondents—eight computer and business education lecturers from the College of Education Ikon in Ebonyi State, six instructors from the Department of Business and Computer Education at Ebonyi State University in Abakaliki, and six mobile money operators from Abakaliki Metropolis in Ebonyi State, Nigeria—and used the Cronbach Alpha method to assess the items' internal consistency. The overall reliability coefficient obtained from the data analysis was 0.83. The acceptable coefficients for excellent reliability (0.90 and above), high reliability (0.70-0.90), moderate reliability (0.50-0.70), and low reliability (0.50 and below) were listed by Hinton, Brownlow, Mcmurray, and Cozens (2004). Three assistants helped the researchers by administering the questionnaire and collecting the completed copies from the respondents. A weighted mean analysis was used to answer the study question based on the actual limit of the 107 copies of the questionnaire that were distributed. Highly needed: 3.50–4.00; averagely needed: 2.50–3.50; slightly needed: 1.50–2.40; and not needed: 0.1–1.40. The standard deviation showed how respondents' opinions

https://doi.org/10.35877/soshum3623

ISSN: 2776-7930 (Print) / 2807-3010 (Online)

differed from the mean. Using SPSS version 22, the null hypothesis that there is no significant difference was tested using Analysis of Variance (ANOVA) at the $P \leq 0.05$ level of significance. Any item that has a $P > 0.05$ value is accepted, while any item that has a $P \leq 0.05$ level of significance is discarded.

## 3. Results and Discussion

### *3.1.* Results.

*The data for answering the research questions and testing of hypotheses are presented in Table1- 3.*

Research Question 1: What fundamental mobile phone abilities are required of rural farmers in order to promote their agricultural products online?

Ho: There are no notable differences between lecturers, instructors, and mobile money operators' comments about the fundamental mobile phone abilities required by rural farmers for the e-marketing of agricultural products?

**Table 1**. Analysis of Variance (ANOVA), standard deviation, and mean ratings for the three groups of respondents on the fundamental mobile phone skills required for agricultural product e-marketing by rural farmers.(N=97).

| S/n | Ai-Item Statement | $\bar{X}$ | SD | TSS | MSS | Pval | E2 | Remarks | |
|---|---|---|---|---|---|---|---|---|---|
| | **A-Numeracy** | | | | | | | **X** | **Ho** |
| 1 | Know and count the following numbers: 1 2 3 4 4 5 6 7 8 9 10 90 | 2.85 | 1.17 | 31.22 | 0.68 | 0.09 | 0.94 | AR | NS |
| 2 | Know how to identify even numbers like 2 4 6 8 10 12 14 16 18... One hundred | 3.52 | 0.65 | 20.11 | 0.77 | 0.25 | 0.96 | HR | NS |
| 3 | Write numbers in notebooks and on the chalkboard. From 0 to 9 | 3.23 | 1.03 | 40.70 | 0.60 | 0.41 | 0.99 | AR | NS |
| 4 | Recognize the position of Zero (0) to mean noting or none | 3.50 | 1.10 | 38.12 | 0.58 | 0.27 | 0.98 | HR | NS |
| 5 | Assign numbers to local currency or cash, such as #100 = 1 and 2 zeros, and understand that the position of zero (0) denotes nothing. | 3.69 | 0.54 | 29.01 | 0.61 | 0.18 | 0.98 | HR | NS |
| 6 | Simple currency denominations can be added and subtracted. | 3.15 | 0.89 | 22.96 | 0.77 | 0.35 | 0.97 | AR | NS |
| 7 | To identify and decipher fundamental arithmetic symbols, including +, -, ×, ÷, and = | 3.51 | 0.77 | 34.50 | 0.62 | 0.29 | 0.98 | HR | NS |
| | **Aii -Language** | | | | | | | | |
| 8 | Read alphabets from A – Z | 3.93 | 0.97 | 25.01 | 0.80 | 0.6 | 0.97 | HR | NS |
| 9 | read English words in alphabets such as: go, boy, no and yes | 3.33 | 0.79 | 27.52 | 0.29 | 0.17 | 0.99 | AR | NS |
| 10 | Reading more complex words such as work, come, trade and business | 3.50 | 0.68 | 26.79 | 0.33 | 0.27 | 0.99 | HR | NS |
| 11 | Recognized simple sentences in English like: I am going, I am coming, I will sale, I will buy and I agree | 3.20 | 0.69 | 44.15 | 0.29 | 0.31 | 0.99 | AR | NS |
| 12 | To recognized simple grammar like: noun, pronouns, adjectives and verb | 3.95 | 1.23 | 41.02 | 0.58 | 0.37 | 0.99 | HR | NS |
| 13 | Recognize the objectives of comparison like good, better and best | 3.34 | 0.69 | 21.93 | 0.80 | 0.40 | 0.96 | AR | NS |
| 14 | To read and write simple and short sentences in English like: I am coming, I will sale, I will not buy, He is a boy, She is a girl | 3.12 | 1.13 | 32.51 | 0.78 | 0.50 | 0.99 | AR | NS |
| 15 | Write and recognize correct simple sentences in English | 3.36 | 1.07 | 26.41 | 0.81 | 0.40 | 0.97 | AR | NS |
| 16 | Study carefully the manual accompanies the Cell Phone | 3.40 | 0.76 | 24.09 | 0.79 | 0.33 | 0.88 | AR | NS |
| 17 | Fix the SIM card firmly | 3.09 | 1.01 | 61.92 | 0.99 | 0.72 | 0.98 | AR | NS |

https://doi.org/10.35877/soshum3623

ISSN: 2776-7930 (Print) / 2807-3010 (Online)

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 18 | Study the Cell Phone Keyboard and other units | 3.17 | 1.09 | 54.61 | 0.70 | 0.64 | 0.98 | AR | NS |
| 19 | Charging the Phone by connecting the cable to the source of power | 3.10 | 1.50 | 48.09 | 0.61 | 0.63 | 0.99 | AR | NS |
| 20 | Disconnect when the battery is charged through the battery indicator | 2.89 | 1.02 | 33.42 | 0.99 | 0.30 | 0.97 | AR | NS |
| 21 | Load appropriate Voucher Card (airtime) | 3.34 | 0.91 | 24.64 | 0.11 | 0.45 | 0.99 | AR | NS |
| 22 | Start with general keyboarding and work through things 1–21 on your phone in preparation for e-marketing. | 3.21 | 0.56 | 21.09 | 0.62 | 0.25 | 0.97 | AR | NS |

**Key:** HR = Highly Needed; Average Needed; Slightly Needed; Not Needed; X = Mean; SD = Standard Deviation; S stands for significance, NS for no significant difference, MSS for mean sum of squares, TSS for total sum of squares, and E2 for correlation ratio.

Items 1–22 had mean values between 2.85 and 3.69, which is higher than the actual limit of 1.50. The respondents deemed the twenty-two elements crucial for rural farmers' e-marketing of agricultural products. The 22 items' standard deviations were less than 1.96 (95 percent confidence limit) and varied from 0.54 to 1.50. The 22 items' P-values were larger than 0.05 and varied from P-0.09 to 0.72. This suggests that the mean ratings of lecturers, instructors, and mobile money operators on the 22 items pertaining to the fundamental mobile phone abilities required by rural farmers for the e-marketing of agricultural products do not differ significantly. The twenty-two items' e2 (correlation ratio) varied between 0.88 and 0.99. This suggests that the three groups of respondents' mean ratings on the twenty-two items have a strong association with one another. This clarifies even more why the data analysis is so highly reliable.

Research Question 2: What are the fundamental e-communication abilities that rural farmers require in order to effectively promote their agricultural products online?

Ho: The mean evaluations of lecturers, instructors, and mobile money operators about the fundamental e-communication abilities required by rural farmers for online farm product marketing do not differ much.

**Table 2**. The mean scores, standard deviation, and Analysis of Variance (ANOVA) for the three respondent groups regarding the critical e-communication abilities required for rural farmers to promote their agricultural goods online.(N=97)

| S/n | Item Statement | X̄ | SD | TSS | MSS | Pval | E2 | Remarks | |
|---|---|---|---|---|---|---|---|---|---|
| | **The following are Mobile Phone SMS Skills** | | | | | | | X | Ho |
| 1 | Obtain the functioning mobile phone with manual | 3.62 | 0.54 | 26.70 | 0.69 | 0.40 | 0.97 | AR | NS |
| 2 | Ensure that the necessary accessories where applicable | 3.61 | 0.33 | 31.20 | 0.71 | 0.28 | 0.98 | HR | NS |
| 3 | Registered the mobile device with the network operator of choice, such as MTN, Glo, Airtel, Etisalat, and so forth | 3.32 | 0.76 | 46.33 | 0.64 | 0.46 | 0.99 | AR | NS |
| 4 | Connect to the source of power through the cable when required | 3.48 | 0.34 | 22.16 | 0.91 | 0.32 | 0.96 | AR | NS |
| 5 | Locate the phone's power switch. | 3.44 | 0.71 | 30.70 | 0.85 | 0.29 | 0.97 | AR | NS |
| 6 | Power on / off the mobile phone | 3.17 | 0.70 | 27.21 | 0.60 | 0.60 | 0.98 | AR | NS |
| 7 | Select number or name from phone contact | 3.34 | 0.74 | 20.91 | 0.89 | 0.38 | 0.96 | AR | NS |
| 8 | Click on / select messaging box | 3.60 | 0.50 | 40.33 | 0.61 | 0.21 | 0.98 | HR | NS |
| 9 | Write messages in preferred language to the farm customers | 3.39 | 0.80 | 32.44 | 0.83 | 0.34 | 0.97 | AR | NS |
| 10 | Select prefer SIM incase if the phone is double SIMs | 3.67 | 0.50 | 27.56 | 0.33 | 0.26 | 0.99 | HR | NS |
| 11 | Click enter button to convey the typed messages to farm customers | 3.50 | 0.70 | 21.04 | 0.93 | 0.40 | 0.96 | HR | NS |

https://doi.org/10.35877/soshum3623

ISSN: 2776-7930 (Print) / 2807-3010 (Online)

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 12 | Reply order from the customers through SMS | 3.64 | 0.72 | 32.19 | 0.60 | 0.11 | 0.98 | HR | NS |

**Key:** HR = Highly Needed; Average Needed; Slightly Needed; Not Needed; X = Mean; SD = Standard Deviation; S stands for significance, NS for no significant difference, MSS for mean sum of squares, TSS for total sum of squares, and E2 for correlation ratio.

The respondents rated the twelve items as crucial e-communication abilities required by rural farmers for the e-marketing of agricultural products, as evidenced by the mean values of items 1–12, which varied from 3.17 to 3.67 and were over the real limit of 1.50. The 24 items' standard deviations were smaller than 1.96 (95 percent confidence limit) and varied from 0.33 to 0.80. This suggests that respondents' answers and opinions were similar. The 12 items had P-values that were larger than 0.05 and ranged from P-0.11 to 0.60. This indicates that there is no significant difference in the mean ratings of lecturers, instructors, and mobile money operators on the twelve items, which represent the fundamental e-communication abilities needed by rural farmers for e-marketing of agricultural products. The twelve items' e2 (correlation ratio) varied between 0.96 and 0.99. This suggests that the three groups of respondents' mean ratings on the twenty-two items have a strong association with one another. This clarifies even more why the data analysis is so highly reliable.

Research Question 3: What are the key mobile phone competencies required of rural farmers for successful farm product e-marketing?

Ho: Regarding the fundamental mobile phone abilities required by rural farmers for the online marketing of agricultural products, there is no discernible difference in the mean evaluations of lecturers, instructors, and mobile money operators.

**Table 3**. The mean scores, standard deviation, and Analysis of Variance (ANOVA) for the three respondent groups regarding the critical mobile phone competencies required for rural farmers to market agricultural goods.(N=97).

| S/no | Mobile Phone Skills Items statement | $\bar{X}$ | SD | TSS | MSS | Pval | $E^2$ | Remarks | |
|---|---|---|---|---|---|---|---|---|---|
| 1 | Procure sound mobile phone with necessary accessories | 3.78 | 0.60 | 36.41 | 0.29 | 0.32 | 0.99 | HR | NS |
| 2 | Assembly the necessary accessories to the phone where applicable | 3.25 | 0.79 | 41.50 | 0.32 | 0.47 | 0.99 | AR | NS |
| 3 | Charge the mobile phone when necessary | 3.49 | 0.69 | 23.00 | 0.89 | 0.36 | 0.96 | AR | NS |
| 4 | Switch on / off the mobile phone | 3.58 | 0.90 | 19.89 | 0.82 | 0.16 | 0.96 | HR | NS |
| 5 | Obtain and Load the appropriate air time | 3.65 | 0.80 | 34.61 | 0.54 | 0.40 | 0.98 | HR | NS |
| 6 | Obtain customers' mobile phone numbers | 3.74 | 0.69 | 24.82 | 0.69 | 0.20 | 0.97 | HR | NS |
| 7 | Register in group at Media Houses e. g Cooperative Society for cost effectiveness | 3.99 | 1.00 | 52.01 | 0.72 | 0.19 | 0.99 | HR | NS |
| 8 | Advertise farm produce in relevant Media with correct Phone numbers | 3.49 | 0.92 | 46.19 | 0.53 | 0.60 | 0.99 | AR | NS |
| 9 | Answer the customers' calls from the media adverts | 3.78 | 0.58 | 21.14 | 0.59 | 0.24 | 0.97 | HR | NS |
| 10 | Save the contacts with the name of callers through the Radio/TV | 3.58 | 0.70 | 27.50 | 1.63 | 0.20 | 0.94 | HR | NS |
| 11 | Call the customers on available farm products | 3.64 | 0.74 | 22.60 | 0.90 | 0.19 | 0.96 | HR | NS |
| 12 | Send SMS to the customers on available farm products | 3.48 | 0.85 | 20.89 | 0.70 | 0.51 | 0.97 | AR | NS |
| 13 | Register with Post Office for delivering and e-payment | 3.24 | 0.72 | 34.68 | 0.49 | 0.58 | 0.99 | AR | NS |
| 14 | Delivering farm product to the customers through their mobile phone contacts | 3.77 | 0.49 | 29.32 | 0.64 | 0.12 | 0.99 | HR | NS |

**Key:** HR = Highly Needed; Average Needed; Slightly Needed; Not Needed; X = Mean; SD = Standard Deviation; S stands for significance, NS for no significant difference, MSS for mean sum of squares, TSS for total sum of squares, and E2 for correlation ratio.

Items 1–14 in Table 3 have mean values ranging from 3.25 to 3.99, which is higher than the actual limit of 1.50. The respondents deemed the fourteen elements crucial for rural farmers'

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ISSN: 2776-7930 (Print) / 2807-3010 (Online)

e-marketing of agricultural goods. The 14 items' standard deviations were smaller than 1.96 (95 percent confidence limit) and varied from 0.49 to 1.00. This suggests that the mean responses were relatively close to each other's responses or to the mean. The fourteen items had P-values that were larger than 0.05 and ranged from P-0.16 to 0.58. This suggests that the mean evaluations of lecturers, instructors, and mobile money operators on the fourteen items pertaining to the fundamental mobile phone skills required by rural farmers for online farm product marketing do not differ significantly. The fourteen items' e2 (correlation ratio) varied between 0.96 and 0.99. This suggests that the three groups of respondents' mean ratings on the fourteen items have a strong association with one another. This clarifies even more why the data analysis is so highly reliable.

### *3.2. Discussion*

According to Table 1's study results, rural farmers in Enugu State required 22 mobile phones with operating knowledge and abilities in order to eliminate middlemen's profiteering in the e-marketing of agricultural products. Agu (2013) conducted a study on the use of ICT in the agricultural sector for rural farmers, and found that to operate electronic devices, rural farmers needed a minimum level of basic education and assistance from their family members until they acquired the necessary reading and writing skills. The findings align with the findings of Trendov et al. (2019), Allison (2011), and the Food and Agricultural Organisation (1999), which suggested that basic literacy in numeracy, writing, and reading could serve as the initial step in training farmers.

The study's findings in Table 2 indicate that rural farmers in Enugu State require 12 fundamental e-communication abilities for agricultural product marketing, with the aim of reducing the profits of middlemen. The study's findings align with the United Kingdom Government Publication (2018), which outlined the essential digital skills framework for training adults in business for electronic communication in the UK. The publication stated that U.K. adults in business required training in areas such as creating groups on chat apps like Facebook, WhatsApp, and Messenger. Furthermore, the results corroborate a study by Onu, Bakare, Ifeanyieze, Nwankwo, Fredrick, Ekenta, and Ezebuiro (2018) on the knowledge and abilities rural farmers need to make cell phones effective for increasing agricultural production in Enugu State, Nigeria. The study found that farmers in business required essential mobile phone skills for effective communication in e-business.

The study's findings in Table 3 indicate that to reduce middlemen's profiteering in Enugu State, rural farmers need to acquire 14 fundamental mobile phone skills for e-marketing farm products. This aligns with Agu's (2013) assertion that rural farmers require training and assistance to effectively utilise machines and technologies, like mobile phones, to sell their farm products. Furthermore, Furuholt and Matotay (2011) found that farmers primarily use their mobile phones for the following purposes: contacting market centers, agents, players, and dealers to inquire about prices; selling crops via mobile phones; planning storage and scheduling warehouses; gathering data and placing orders for preservative chemicals; contacting distant families and relatives (for decisions and money transfers); and making payments. Rural farmers in Enugu State could also use their phones for these purposes.

The study's findings on the hypotheses examined revealed no discernible difference in the mean evaluations of lecturers, instructors, and mobile money operators regarding the knowledge and abilities of rural farmers in Enugu State, Nigeria, and the necessity of e-marketing, e-communication, and mobile phone operation. The results suggested that the disparities in the respondents' professional careers did not significantly influence their replies, as demonstrated by the stark differences in responses across the three groups. This is not in support of Babalulu, Abdulkadir, and Amusa (2018), who carried out a study on the financial strategies for enhancing agricultural production efforts' of rural farmers for food security in Enugu State, Nigeria. The authors found out that the differences in the professional careers were posed by the discrepancies in the opinions of the three groups of the respondents in

https://doi.org/10.35877/soshum3623

ISSN: 2776-7930 (Print) / 2807-3010 (Online)

the hypotheses tested. The e2 (correlation ratio) of all the items for the study ranged from 0.81 to 0.99, indicating a very high reliability of the findings.

## 4. Conclusion

In conclusion, the majority of rural farmers in Nigeria's agrarian villages in Enugu State lack the literacy required to market their agricultural goods using technological devices for maximum profit. Consequently, we conducted this study to identify the fundamental e-marketing competencies farmers need to sell their produce directly to consumers via electronic means, thereby avoiding the exploitative tactics of middlemen. The study identified twenty-two critical mobile phone abilities, twelve communication skills, and fourteen mobile phone sales skills as necessary for rural farmers in Enugu State to promote their agricultural goods. The study's conclusions suggest training rural farmers in agrarian areas in the fundamentals of e-marketing, enabling them to effectively sell their agricultural products to consumers.

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