

# Performance and Efforts Regarding Usage of Mobile Phones among Farmers for Agriculture knowledge

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## Abstract

Nowadays everyone is using mobile phone for connect with each other's and get information about different issues and updates around the world. However, mobile phones have also played an important role in the development of agriculture and make it easy for farmers to communicate with buyers and sellers to sell their goods in reasonable price. The study was conducted in Sindh province of Pakistan where ten districts were selected and 1500 farmers randomly were selected for interview. While 150 farmers were selected from these ten districts according to the list provided by Agriculture Department Government of Sindh and Sindh Irrigation & Drainage Authority (SIDA). Study showed that most of the farmers possessed their own mobile phone and more than half around 64% of the respondents directly call the buyers and negotiated to sell their goods. Moreover, 44.9% of the respondents neither agree nor disagree regarding mobile phone expanding their market information and 40.3% of the respondents take efforts and understand that mobile phones has improved their skills to communicate with buyers in market. However, due to lack of infrastructure still farmers are facing many problems in their working areas and have no proper information about pesticide use and weather updates in their agriculture areas. Government and non-governmental organizations should improve their skills and knowledge about agriculture product where farmers can increase their product in future.

**Keywords:** Performance efforts Mobile Phones and Agriculture knowledge

## 1. Introduction

The invention of the mobile phones have brought many changes in different communities now people share and communicate different information with each other. For instance, farmers do (SMS) buyers and get information of their goods. Mobile phones have influence and help the farmers in rural areas of African and South Asian countries. In Ghana farmers are able to send (SMS) and obtain information about maize, pineapple and tomatoes price from long distance of market (Arinloye et al., 2015). According to De Silva et al. (2009) the result showed that adapters and owners of mobile in different countries such as Bangladesh, Pakistan, India, Srilanka and Thailand are young users and it was showed that mobile phone have improved their social and economics conditions while same time mobile provided easy access to communicate with family and friends in emergency time. Diffusion of ICT in remote areas of under developed nations has played vital role in agriculture development. Nowadays it was showed that mobile phone is not so expensive in developing countries and every person can buy it even low income farmers have also mobile phone and farmers communicate market and getting good price from customers. The study showed that in developing countries such as Dominican Republic, Guyana and Swaziland rural areas around 60 percent of farmers have their own mobile phone and using for market information (Shimamoto et al., 2015).

The development and increasing in different information technology tools have brought changes in daily life of people especially nowadays farmers are getting advantage from it and by using mobile phone connected with market. It was showed that the farmers who use mobile phone are more aware about market and their produce price. Most of farmers sell their goods on time without waste time. The proper use of mobile has increased the economic conditions of farmers and has improved their living standard. Although in many places still it was showed lack of services but farmers are taking more efforts to connect with market and world. Mobile phone keeps up to date every time. ICT especially mobile phone play a role of game changer in agriculture development and brought a positive impact on smallholder farmers in developing countries. In different places of rural areas farmers directly communicate with customers and sell their produce and get good benefit from it.

Mobile phone connected links of farmers with buyers and now farmers helping each other to reduce the risk of wastage their goods and reached it on time (McNamara, 2009).

The information communication technologies applications have provided many chances to handle the problems and issues of rural communities and same time have enhanced the capacity of agriculture production and related information. Nowadays farmers are participating in different programs about use of technologies in agriculture knowledge and techniques for development of agriculture and their goods. Furthermore, farmers are focusing to use ICT for commercial purposes. Communication technology could empower the farmers and extension workers to spread the information about agriculture for farmers in remote areas of less developed nations. It is very important to empower the farmers and provided latest information about their agriculture produce timely where farmers can earn good money and reduce the poverty by using communication technology tools. It was showed that mobile phone has provided easy access and linkage to contact with buyers and local organizations as well as extension officers to get latest information about different prices of crops and pesticides. Moreover, now farmers can easily transfer the information about market and weather updates to their fellow farmers by using mobile phone at their working places (Krone et al., 2016). According, to Mbatia et al. (2013) the mobile phone and Internet can bring some revolutionary changes among farmers. While farmers can contact buyers through mobile phone and can get information of their product.

### *1.1 Unified Theory of Acceptance and Use of Technology UTAUT*

The Unified Theory of Acceptance and Use of Technology (UTAUT) have given four main variables such as performance expectancy, efforts expectancy, social influence and facilitating conditions. It was showed that this theory consisted on eight different major theories such as Theory of Planned Behavior (TPB) The Theory of Reasoned Action (TRA) The Innovation Diffusion Theory (IDT) Technology Acceptance Model (TAM) Motivation Model (MM) Social Cognitive theory (SCT) and the combine TAM and TPB and model of PC Utilization MPTU. The UTAUT theory mostly was focusing on the use, adoption, influence and relationships of different technologies for development such as mobile phone<sup>8</sup>. However, many scholars also used this model to predict the behavior intension of use to guess the intension about use of this technology (Venkatesh et al., 2003).

### *1.2 Performance Expectancy*

Performance expectancy is defined as the degree in which individuals believe that adopting the technology will help them to achieve good result in their working performance. However, UTAUT, performance expectancy is constructed if the farmers perceive the mobile phone, could improve their agriculture product by communicating with expert. According to Compeau and Haggin (1999) the social cognitive theory observed that effect of mobile phone and other tools of communication about performance and self- efficiency result indicated the influence of the concern of computer usage. It was showed that the most important connection between self-efficacy and consequence have chance of supporting performance results to hold effects on assume and use of the persons.

### *1.3 Efforts Expectancy*

Efforts expectancy is the degree easiness or attempt to near with the use of the mobile phone and significantly assume ICT tools use during the early times but becomes non-significant over periods of prolonged and continued usage Sharma, (2012). In Africa mobile phones were familiarized among farmers for their services to connect each other. However, this practice was positive for communities' use of mobile phones provided a positive impact on socio-economic circumstances of farmers. Especially farmers choose to talk with their household and colleagues by using mobile phone and it was easy to connect with market to sell their product in good price

### *1.4 Social Influence*

Social influence described as a close separately thinks and others consider that a one person should use mobile phone Mahaliyanaarachchi, (2003). It was showed that social influence is an important antecedent in the context of information booths and mobile phones among farmers and other agriculture community that empowers them to use cabins communication kiosk and mobile phones. Though, E-Government experts have taken the struggles of social influence to promote the adoption and proper in information centers at rural part of their farming places.

### *1.5 Facilitating Condition*

Facilitating condition is similar to observe behavioral and reflection on the outcome of a worker's awareness, capability, and their resources. Facilitating conditions were predictable to adopt authentic practice of information and communication technology on society somewhat than behavioral intention. Facilitating conditions without age balance expressively to determined accessible approach and adoption by researchers. The result indicated that more than half 51% of the farmers were agreeing with the ability of facilitating conditions for their easy

access of usage (Dulle & Minishi-Majanja, 2011). Furthermore, age, experience and gender were conceptualized to adequate effort expectancy implication on investigators' behavioral intention of open access. Such mediators expand the efforts expectancy of persons in upcoming usage of open access. These four constructs are direct determinants of usage intention and behavior.

## 2. Material and Method

The study used quantitative approach for this study. Out of 29 district of Sindh Pakistan total ten districts such Thatta, Badin, Sijawal, TandoAllahyar, Benzairabad, Jamshoro, Khairpur, Larkana and Ghotki were selected for data collection. Total 1500 respondents were selected for this study and 150 were randomly selected from each district on the basis of the list provided by Agriculture Department Government of Sindh and Sindh Irrigation & Drainage Authority (SIDA). The researcher also communicated with agriculture extension officers and obtained help from them. Three enumerators were hired for data collection and the data was analysed by using the Statistical Package for Social Sciences (SPSS) computer software (version 21). The study was described by using the descriptive like frequency, percentage.

## 3. Result and Discussions

### 3.1 Demographic Profile

According to the result of Table 1 total 100% of the respondents were male in this study while there were no any female participated and given any respond of questions in their working places. It was showed that women were avoiding to inform about any questions with unknown person. The respondents were also investigated about their monthly income the result revealed that more than half 50.3% of the respondents monthly income was lower than ten thousand less than one hundred dollar \$ USD while 30.3% of the respondents income was eleven to fifteen thousand per month around 150 \$ USD. Only 4.6% of the respondents income was more than twenty thousand rupees around 200 \$ USD were income per month with the Mean value of M- 1.74, SD, 875.

Data from Table 1 respondents were also asked about their work where more than half of the respondents were farmers 17% were doing government and farming while only 16.5% of the respondents were doing their farming & own business the Mean value was 1.50, SD, .761. However, the farming experience were also inquired from respondents where result indicated that 35.6% of the respondents experience were from six to ten years while 26.9% of the respondents experience were eleven to fifteen years 14.2% of the respondents experience were sixteen to twenty years 13.6% of the respondents experience were less than five years and only 9.7% of the respondents experience were more than twenty years. It was showed that mostly more than 50 years old farmers were very few working in agriculture.

### 3.2 Mobile Phone for Agriculture Information

Table 2 gives the information about possession and usage of mobile phones among the surveyed farming community of various districts of Sindh, Pakistan. The results indicated that 97.3% of the respondents possessed their own mobile phones to use for various purposes at their working places. According to in Uttarakhand, India around 85% of the farmers have their own mobile phones while another study conducted in Punjab India indicated that around 98% of the respondents possessed their own mobile phones. Accordingly, in this study majority of the farmers living in remote areas have their own mobile phone to get all related information regarding their farming, pest control, weather forecasts and proper marketing channels so that they not only get higher yield of their crops but also to sell those at comparable prices in the available markets. Only 2.7% of the respondents in the study did not possess mobile phones and mainly depend on their fellow farmers for all the related information regarding production and marketing of their agricultural produce. The study was conducted in Srilanka showed that around 64% of the respondent directly calls the market and get the information of different prices and easily bargain with wholesale market and brokers (Mahaliyanaarachchi, 2003).

Moreover, the respondents were also inquired about the usage of mobile phones for agriculture information and the result showed that 64.5% of the respondents directly called their buyers to get the information about prices of different crops price; thus, negotiated prices to sell their products at good prices. Another 13.6% of the respondents communicate with their buyers through text messages (SMS). It was interesting to observe during the interviews that the respondents who were more educated use multimedia services (MMS) to send pictures of their crops to their buyers; hence, negotiate well to sell their products at good price. Remaining 27.1% of the respondents never call their buyers to negotiate prices of their products. The results also indicated that 8.5% of the respondents only gave miss calls to their buyers because sometimes they have no credit in their mobiles. In response of miscall of farmers, their buyers call back them to negotiate about the prices of their crops. A study conducted in North Senatorial zone of Nigeria state of Kaduna regarding marketing information of different

crops using mobile phones indicated that 65.2% of the respondents use mobile phone for agriculture and marketing information. The study also showed that instead of depending on other sources of information, farmers mostly prefer to use mobile phone to get related information for their agriculture and marketing information at their work places. Results of another study conducted by (Shaukat et al., 2014).

In Pakistan it showed that farmers understand that advancement and usage of the mobile phones can increase their productivity and revenue by enabling them an easy market access and bargaining approach with buyers. Several other studies conducted in different developing countries also showed the potential use of mobile phone for agriculture knowledge and marketing information. Accordingly, now farmers have more positive attitude towards the used mobile not only to get higher yield by getting updates production information but also they get good price of their produce by approaching diversified marketing channels available (Frempong et al., 2007, Galperin, 2007, Goodman, 2005, Jagun, 2007, Kameswari, 2001, Molony, Thomas, 2006).

Table 2 highlighted the results regarding the use of mobile phones by the respondents to touch the market. The result showed that 42.8% of the respondents communicated with shopkeepers and other stakeholder to get information regarding different crops cultivated by them such as wheat and cotton. Another 32.9% of the respondents sometimes call shopkeepers to obtain information about the cultivation and marketing of various vegetables, rice and other crops. Furthermore, it was indicated that 24.3% of the farmers did not make any call to markets and mostly depend on the fellow farmers and their landlords for the updated information regarding the cultivation and prices of crops.

The results regarding the communication of respondents with agriculture or pesticides officers using mobile phones to get information about use of certified seed or pesticides showed that 39.8% of the respondents did not make any call to the concerned officers. The lack of education among respondent farmers was identified as main reason for their lack of communication with agriculture and pesticides officers as they felt it difficult to communicate properly with the officers. Moreover, 35.7% of the respondents sometimes call agriculture officers and asked them regarding the use of pesticides on their crop against various pests and diseases. However, 24.5% of the respondents frequently called both officers for agriculture and pesticides to get all relevant information for the production and protection of their crops

Results regarding the use of mobile phones by respondents to get weather information showed that majority (74.4%) of the respondents did not call meteorological department to get related weather information. However, it was very interesting to know that majority of the respondents depend on Radio and Television to get knowledge about the weather forecasts in their areas. Among respondents, 7.9% farmers frequently and directly contact with meteorological officers to obtained weather data of their areas to plan their various farming and pesticide application programs, whereas, remaining 17.7% of the respondents sometimes use mobile phones to get such information from the officers concerned. In remote areas of developing nations such as Pakistan, the uses of communication technology tools are very limited. There are many challenges and problems including illiteracy, poverty, lack of resources, infrastructure, problem of connectivity and electricity in their working areas that restrict the use of mobile and other technology tools in agriculture.

Therefore, mostly farmers in remote areas depend on their fellow farmers to obtain information about weather, market and pesticides. According to due to illiteracy very few farmers can read newspaper, whereas, only a few have access to radios. Moreover, if farmers possessed the mobile phones, they were unable to contact agriculture or pesticides officers to get related information because they were not familiar about the usage of mobile phones. In this point of view, farmers were mostly dependent on other sources of information about market and use of pesticides.

The respondents were also inquired about the frequent use of mobile phone at their working place. The results showed that 43.5% of the respondents frequently called their family and friends to remain in touch with them while still busy with their assignments. Another 42.7% of the respondents called their family members to bring meal or miscellaneous input at their working place. The remaining 13.9% of the respondents did not call any of their family member or friend during while staying at their working place.

Different studies have shown very significant and positive role of information and communication technologies in developing countries among different communities of the society. Especially, the use of mobile phones by farmers has enhance their access to information about weather and marketing in their working areas. Previously, it was not possible for farmers to directly call buyers and sell their goods even in their near market. It has been estimated that use of mobile phones has empowered the residents of less developing areas to increase their linkages among diversified farming and marketing communities so that they can exchange information regarding their goods, farming and markets.

## Performance Expectancy

Data from table 3 gives the results regarding the respondents who were asked different questions of performance expectancy of mobile phone for getting information about agriculture and market. The results showed that 84% of the respondents were agreed that mobile phone has been found very useful in their daily life as it has bring many useful advantages to their life. However, 2.1% of the respondents understood that mobile phone has not brought enough changes in their lives. Moreover, 2.7% were neither agree nor disagree regarding the benefits of the mobile phone, however, 10.5% of the respondents were strongly agree and said that mobile phone is very important in their daily activities. The remaining only 0.7% of the respondents were strongly disagree about the usefulness of mobile phone as they didn't consider more important in their daily life (M- mean value 1.42 SD= 1.00).

Result from Table 3 also showed that 69.3% of the respondents were agreed that mobile phone keeps them in touch with their family and friend, while 3.5% of the respondents disagreed that mobile phone keep them in touch with their family and friends while still at their working areas. Moreover, 5.3% of the respondents were neither agreed nor disagreed that mobile phone helped them an easy access to contact in touch with family and friends. Among respondents, 22.1% strongly agreed with the usefulness of mobile to contact with their family and friends, however, remaining 1.6% respondents showed strong disagreement. Mean value of M-1.83 SD= 1.12.

The respondent's response regarding the usefulness of mobile phone to access their buyers indicate that 31% of them were agreed that by using mobile phones they can easily reach their buyers to sell their produce at good prices. Another 9.8% of the respondents showed very strong agreement that mobile phones has bring ease in their communication with their buyers while staying at their working places. However, 39.3% respondents showed their disagreement that use of mobile phones has bridged the gap between them and their buyers because most of them did not possess the contacts of their buyers and mostly rely on their landlords or fellow farmers to get such information. Another 2.6% respondents were strongly disagree that mobile phones helped them to easily access their buyers, whereas, remaining 8.3% showed neither agreement not disagreement with the question. The mean value was M-1.75 SD= 1.12.

Results regarding the use of mobile phones by farmers to contact agriculture officer showed that 39.3% of the respondents showed disagreement that mobile phone has given them benefit and easy access to communicate with agriculture officers concerned and get related information about their crops. Another 6.5% respondents were also disagreed with the usefulness of mobile phones to contact with agriculture officers. However, it was indicated that 35.9% of the respondents were either agree or strongly agree and satisfied that mobile phone has given them an easy access to contact with agriculture officers. Mostly the farmers contact with agriculture officers to discuss variable problems of their crops including selection of seeds, pesticides and spray timings. The remaining 28.4% of the respondents were neither agree nor disagree regarding the use of mobile phones to contact with agriculture. Mean value of M-2.27 SD= 1.14.

In response of the performance expectancy measure of use mobile phones to expand their market networks, majority of the respondents (44.9%) were neither agreed nor disagreed about usefulness of mobile phones to expand their market networks. However, results showed that 22.4% and 4.9% respondents, respectively were either agreed or strongly agreed that mobile phones has helped them to develop marketing information regarding their crops and other related agriculture matters. However, 22.3% of the respondents were disagree and another 5.4 showed strong disagreement with the question that mobile phone has provided them an opportunity to expand their marketing networks. The mean value of M- 2.46 SD= 1.14.

The respondents were also inquired about their increased productivity due to the use of mobile phones. Results obtained showed that 27.3% respondents were agreed and another 6.9% even strongly agreed that mobile phone has increased their agriculture productivity as it has helped them to broaden their about the new agriculture production technologies. Now, they can easily access agriculture officer, pesticide dealers and marketing channels to get updated information regarding their various agriculture input requirements and sell their produce at good prices. However, 16.9% and 5.5% respondents were either disagree or strongly disagree that use of mobile phones has helped them to resolve their agriculture problems to increase their productivity. Moreover, a large majority of the respondents (43.4%) were still not sure that mobile phones has bring any positive change in their agriculture productivity. The mean value of M- 2.46 SD= 1.12.

The respondents were also asked that has mobile phone usage increased their agriculture information. The results revealed that 38.3% of the respondents were agreed that mobile phone has improved their agriculture information such as increased knowledge about seeds, pesticides and production technologies. Another 5.9%

respondents even strongly suggested that the positive output of the usage of mobile phones in their increase productivity of agriculture. However, 19.8% respondents were either disagree or strongly disagree that mobile phones have bring any positive change in their knowledge of agriculture. Moreover, a majority of respondents (35.65%) were neither agree nor disagree regarding improved agriculture information by using mobile phones. The mean value was (M- 2.27 SD= 1.20).

### **Efforts Expectancy**

Everyone try to take more efforts to learn new things in the world. Considering the same, respondents were inquired about the efforts they have taken to use and take advantages from the use of mobile phones. Accordingly, the majority of the respondents (77.8%) agreed that they found use of mobile phone very easy to communicate with each other. Another, 10.1% of the respondents also strongly agreed about the ease of use of the mobile phone. However, 7.7% of the respondents found the use of mobile phones difficult and most of these respondents were illiterate farmers living in the remote study areas. Furthermore, 2.4% of the respondents were neither agreed nor disagreed and the remaining 2% were strongly disagreed regarding easy use of mobile phone. The mean value of M-1.51 SD= 1.06 (refer table 4).

Table 4 indicated that despite the ease of operation of mobile phones, 33.7% of the respondents disagree that they cannot easily communicate with agriculture officers using mobile phone. Another 5.3% respondents also showed their strong disagreement with the efforts they took to use their mobile phones to communicate with agriculture officers. The reasons identified during the interviews were that mostly the respondent did not depend upon agriculture officers for the related information. Instead, they showed their trust in their fellow farmers, landlords and pesticides dealers to get their desired information. However, 31.9% of the respondents were agrees that by using mobile phones it is easy for them to contact with agriculture officers to get information about different variety of crops, pesticides and seeds. Another 11.7% also showed their strong commitment and were agreed to use mobile phones to get all related information from the agriculture officers using their mobile phones. The remaining 17.3% of the respondents were neither agreed nor disagrees regarding the easy communication with agriculture officers using mobile phones. The mean value was (M- 2.25 SD= 1.17).

The results in Table 4 also revealed that 40.3% of the respondents were agreed and another 11.7% were strongly agreed that mobile phone has improved their skills and information about getting the latest price of crops from market by using their mobile phones. Moreover, 23.7% of the respondents were neither agree nor disagree about the usefulness of mobile phones to enhance their market information. However, 24.2% of the respondents were either disagree or strongly agreed that mobile phones have played any important role in improving their market information the mean value of (M- 2.20 SD= 1.21).

### **Social Influence**

Table 5 showed the results when the respondents were asked did people influence on your behaviour that you should use mobile phone for agriculture information. The result indicated that more than half of the respondents (68.4%) agreed that people have influence on their behaviour to use mobile phones to get various agriculture related information such as selection of varieties, certified seeds, appropriate pesticides, timing of pesticide application and marketing of their produce. Another 10.1% respondents were also strongly agreed with the mentioned above idea of social influence for the use of mobile phones to acquire agriculture information. However, 11.5% and 1.7% respondents were showed their disagreement and strong disagreement about any social influence they face for the future use of mobile phones to get agriculture information. The remaining 8.3% respondents were agreed or disagreed about the use of mobile phones to acquire agriculture information in future. The mean value of M- 1.65 SD= 1.09.

Moreover, similar results were obtained for the influence of friends on the respondents to use mobile phones not only to keep in touch with the family and friends, but also get all required information of their farming and marketing through using mobile phones while staying at their working place. Accordingly, majority of the respondents 81.4% were either agree or strongly agree about the influence of their friends to use mobile phones. Only 10.7% respondents showed their disagreement that they have any influence of their friends about the use of mobile phones. The remaining 6.9% of the respondents were neither agree nor disagree about mobile phone use the mean value of (M- 1.70 SD= 1.15).

Data from Table 5 also showed that family members of the majority of the respondents have great influence on their decision to use mobile phones while staying at their working place. Accordingly, 86.3% of the respondents were agreed or strongly agreed about the influence of their family members about the use of mobile phones. Mostly family members to remain in touch with the respondents while working in their fields, whereas, they also encourage them to get all related information about their farming and marketing problems using mobile phones.

Only 4.1% and 2.7% respondents were either disagreed or strongly disagreed, respectively that have any family influence to use mobile phones for the agriculture and marketing information. The remaining 7% of the respondents were neither agreed nor disagreed, as they could not decide about the family pressure to use mobile phone at their working places. The mean value of  $M=1.84$   $SD=1.30$ .

### **Facilitating Condition**

It was revealed from the results in table 6 that most of the respondents possessed sufficient income resources to purchase mobile phones for them. Accordingly, 82.3% and 9.5% were agreed and strongly agreed that they earn enough earnings to buy mobile phones to facilitate them to contact not only with their family and friends but they can also get the related information from agriculture, metrological and marketing channels for their farming activities. Only 6.9% showed their disagreement that they did not have enough income sources to purchase mobile phones, while the remaining 1.3% of the respondents was neither agree nor disagree. The mean value was ( $M=1.45$   $SD=1.05$ ).

Data from table 6 indicated that the respondents were also asked about whether they have knowledge for the proper use of mobile phones or not. The result showed that 71.9% of the respondents were agreed and said that their mobile sets are easy to use and they can their desired benefits from them. Another 14.1% of the respondents were strongly agreed that they have enough knowledge for the proper use of mobile phones. However, 7.2% and 2.9% of the respondents were either disagree or strongly disagree that they did not know properly about the use of mobile phone and most of those respondents were illiterate farmers who mostly depend on their landlords or fellow farmers for the use of mobile phones or gathering of farming information. The remaining 3.9% of the respondents were neither agree nor disagree regarding know how for the proper use of mobile phone. The mean value was ( $M=1.69$   $SD=1.22$ ).

Moreover, respondents were asked that do you take any help from your friends if you feel any difficulty in the use of mobile phones. The results showed that 70.4% of the respondents confirmed that they ask their friends to solve any kind of problem they face in the use of mobile phones. Another 15.5% were even strongly agreed the question as they have firm belief in their friends that they will solve any kind of problem they faced either in the use of mobile phones or to get the desired information using mobile phones. Moreover, 5.9% of the respondents were neither agree nor disagree about friend's help to solve the issues of their mobile phones. The remaining respondents were either disagreed or strongly agreed that their friends could help them to resolve all such problems of mobile phones as most of them respondents and their friends were illiterate. Accordingly, they respondents found their friends incapable to help them to resolve mobile phone problems. The mean value of  $M=1.74$   $SD=1.24$  (refer table 6).

The respondent's response regarding whether they can easily contact with agriculture officer to get the relevant information revealed a mix response. According to results, 25.9% and 5.9% respondents were either agree or strongly agreed that they can easily contact with agriculture officers using their mobile phones to get all relevant information of their farming needs. Most of these farmers were educated who want to get latest information from all corners to get better yield and higher profit margin.

However, 29.5% and 9.7% respondents were either disagreed or strongly agreed that it was not easy for them to contact with agriculture officer because most of the respondents did not have contact of agriculture officers to communicate. While the remaining 28.8% of the respondents were neither agree nor disagree about contact with agriculture. The mean value of  $M=2.44$   $SD=1.20$ .

The study results showed that 49.1% of the respondents were agreed that at their working places, mobile phone services are better as they did not face any problem of signal disturbances provided by the cellular companies. Another 9% respondents also showed their strong agreement about the good mobile phones services at their working places. However, 22.7% respondents were not satisfied with the mobile phones services provided as they were living in remote rural areas of the study areas. The remaining 19.2% of the respondents were neither agree nor disagree about the mobile services in their working place.

When respondents were asked about the facilities provided by the government for the sale and purchase of mobile phones in their working areas, most of the respondents (63.9%) were either disagreed or disagreed about such facilities. However, only 21% respondents were agreed or strongly agreed about the government facilities in their areas to sale and purchase mobile phones in their vicinities. The remaining 15.5% were neither agreed nor disagreed about the government facilities provided in their areas for the sale and purchase of mobile phones as they mostly depend on their landlords or fellow farmers for such activities.

#### 4. Conclusion

It was showed that most of the farmers were their own mobile phones and majority of the farmers were also communicate with buyers in market. However, still it indicated that farmers were unaware about most contact numbers such as extension officer contact numbers and weather department number. The result indicated that the performance regarding market access was expanded but still need to take more efforts for development the agriculture product and get good price from market. Only some farmers are getting benefit from mobile phones and rest of farmers is only communicating with family and friends. Lack of facilities are also big problem in their working areas sometime mobile phones network not work properly and farmers cannot directly call market to get information and price of their produce.

#### Recommendation

Efforts should be taken to enhance the literacy among the farming community of Sindh, Pakistan. Seminars and workshops should be organized by the government or non-governmental organizations to create awareness among the farmers about the proper use of mobile phones and other information technology tools in their farming. Infrastructure facilities especially the services of the mobile phone companies in the remote areas of the province to facilitate farmers to use mobile phones to access all their required information It should be ensured that agriculture and pesticide officers should regularly visit to the farmers fields to advise them about various issues related to their farming and marketing of their products. This study provides the recommendations that policy makers and government officials encourage the farmers about use of communication technology tools as well as mobile phone for agriculture and marketing information and touch with officers for enhance their agriculture production.

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Table 1. Demographic Profile

Variables	Frequency	Percentage	Mean	Std
Gender				
Male	1500	1.00		
Female	0	0.0		
Monthly income				
< 10 thousand Rupees	755	50.3	1.74	.875
11-15 thousand	455	30.3		
16-20 thousand	221	14.7		
More than 20 thousand	69	4.6		
Occupation				
Farming	998	66.5	1.50	.761
Govt job & Farming	255	17.0		
Farming & Own business	247	16.5		
Farming Experience				
< 5 years	204	13.6	1.50	.761
6 -10 years	534	35.6		
11-15 years	403	26.9		
16-20 years	213	14.2		
> 20 years	146	9.7		

Table 2. Mobile phone for agriculture information

Variable	Frequency	Percentage
Do you have your own mobile phone		
Yes	1459	97.3
No	41	2.7
How you communicate with buyers		
Direct call	967	64.5
SMS	204	
MMS	11	.7
Miscall	128	8.5

Never call	406	27.1
Do you use mobile phone to get information about the price of crops from market?		
Yes	642	42.8
No	364	24.3
Some times	494	32.9
Do you call Agriculture officer to obtain information about use of pesticides in crops		
Yes	367	24.5
No	597	39.8
Some times	536	35.7
Have you ever been call meteorological department to get latest information of weather		
Yes	118	7.9
No	1116	74.4
Some times	266	17.7
Do you use your mobile phone frequently at your working place?		
Yes	652	43.5
No	208	13.9
Some times	640	42.7

Table 3. Performance Expectancy

Variable	Agree	Disagree	Neither agree nor disagree	Strongly agree	Strongly disagree	Mean	Std
I find mobile phone very useful in my daily life	(84%) 1260	(2.1%) 31	(2.7%) 41	(10.5%) 158	(.7) 10	1.42	1.00
Mobile phone keeps me in touch with my family and friends	(69.3%) 1040	(3.5%) 53	(5.3%) 52	(22.1%) 331	(1.6%) 24	1.83	1.31
Mobile phones make me easy to communicate with buyers	(60.7%) 910	(18.6%) 279	(8.3%) 125	(9.8%) 147	(2.6%) 39	1.75	1.12
Mobile phones make me easy to contact with agriculture officer	(31%) 465	(39.3%) 439	(28.4%) 426	(4.9%) 73	(6.5%) 97	2.27	1.14
Mobile phone has expanded my marketing network	(22.4%) 336	(22.3%) 335	(44.9%) 674	(4.9%) 74	(5.4%) 81	2.49	1.05
Mobile phone increased my agriculture productivity	27.3% 410	(16.9%) 254	(43.4%) 649	(6.9%) 104	(5.5%) 83	2.46	1.12
Mobile phone has improved my agriculture information	38.8% 582	13.3% 199	35.6% 543	6.5% 97	5.9% 88	2.27	1.20

Table 4. Efforts expectancy

Variable	Agree	Disagree	Neither agree nor disagree	Strongly agree	Strongly disagree	Mean	Std
Mobile phone is easy to use	77.8% 1167	7.7% 116	2.4% 36	10.1% 151	2% 30	1.51	1.06
I can easily communicate with agriculture officer by mobile phone	31.9% 479	33.7% 506	17.3% 260	11.7% 176	5.3% 79	2.25	1.17
Mobile phone has improved my skills to obtain market information	40.3% 605	19.7% 295	23.7% 356	11.7% 176	4.5% 68	2.20	1.21

Table 5. Social Influence

Variable	Agree	Disagree	Neither agree nor disagree	Strongly agree	Strongly disagree	Mean	Std
People who influence my behaviour think that I should use mobile phone for agriculture information	68.4% 1026	11.5% 172	8.3% 125	10.1% 152	1.7% 25	1.65	1.09

The people who are close to me think that I should use mobile phone	68.1%	10.1%	6.9%	13.3%	1.6%	1.70	1.15
	1021	152	103	200	24		
My family encourage me to use mobile phone at working place to touch with them	68%	4.1%	7%	18.3%	2.7%	1.84	1.30
	1020	61	105	274	40		

Table 6. Facilitating condition

Variable	Agree	Disagree	Neither agree nor disagree	Strongly agree	Strongly disagree	Mean	Std
I have resources to buy mobile phone	82.3%	4.7%	1.3%	9.5%	2.2%	1.45	1.05
	1235	70	20	142	33		
I have knowledge about how to use mobile phone properly	71.9%	7.2%	3.9%	14.1%	2.9%	1.69	1.22
	1078	78	58	112	44		
I can get help from my friends when feel difficulty to use mobile phone	70.4%	5.7%	5.9%	15.5%	2.6%	1.74	1.24
	1056	85	88	232	39		
I can easily contact with agriculture officer to get information about agricultures issues and problems	(25.9%)	29.7%	28.8%	5.9%	9.7%	2.44	1.20
	389	446	432	88	145		
In my working place mobile service is better	49.1	15.7%	19.2%	9.0%	7.0%	2.09	1.29
	737	235	288	135	105		
Do Government provide facilities to sale purchase mobile in your area	15.5%	22.6	15.2%	5.5%	41.3%	3.35	1.56
	232	339	228	82	619		

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