

## Use of mobile phone for accessing agricultural information by vegetable farmers in AL-Qassim district /Babylon province, Iraq

Bassim Haleem Kshash a

Hayat Kadhum Oda b

a College of Agriculture, Al-Qasim Green University, Babylon, Iraq

ORCID ID : <https://orcid.org/0000-0002-2553-2762>

b College of Food Science, Al-Qasim Green University, Babylon- Iraq

E-mail: [hay1963@fosci.uoqasim.edu.iq](mailto:hay1963@fosci.uoqasim.edu.iq)

Submit correspondence to: Bassim Haleem Kshash, at College of Agriculture, Al-Qasim Green University, Babylon, Iraq. E-mail: [bassim@agre.uoqasim.edu.iq](mailto:bassim@agre.uoqasim.edu.iq)

### Abstract

Vegetable farmers continually needs to get information about production practices. Mobile phone improving small farmers' access to information, inputs, market, finance, and training. The study was conducted in Al-Qassim district, Babylon Province, Iraq; to determine the usage of mobile phones among vegetable farmers. About half of the vegetable growers had a medium usage level of mobile phone for accessing agricultural information. Most of responded used their mobile for making and receiving calls. And make use of mobile phone weekly. There is a need to develop an agricultural mobile application in the Iraqi telecommunication sector to empower farmers access to agricultural information.

Keywords: dissemination ; e - extension; ICT; production technologies; smallholder farmers

### Introduction

Access, efficiency, and affordability of agricultural information continue to be a major impediment to raising agricultural productivity among smallholders in developing countries (MANAGE, 2019). To bring substantial development in the agricultural sector, access to timely, reliable, and relevant agricultural information is critical (Kaske *et al.*, 2018). Information and communications technologies are playing an increasingly important role in keeping farmers and rural entrepreneurs informed about agricultural innovations, weather conditions, input availability( FAO, 2017). In the agriculture and food sector, the spread of mobile technologies, remote-sensing services, and distributed computing are already improving smallholders' access to information, inputs, market, finance, and training( FAO, 2019).

Many studies have indicated that there is an increasing interest by farmers to use the mobile phone to access agricultural information in various regions of the world; Aldosari *et al.*, 2017; Asa and Uwem. 2017; Asif *et al.*,2017; Haruna and Baba, 21017; Nicholase , 2017; Sekabira and Qaim, 2017; Ashraf *et al.*, 2018 ; Misaki *et al.*, 2018; Musungwini, 2018; Nzie *et al.*, 2018; Pandey and Kumari, 2018; Pandey *et al.*, 2018; Sikundla *et al.*, 2018; Kansiiimea *et al.*, 2018; Anadozie *et al.*, 2019; Khan *et al.*, 2019; Ramli *et al.*, 2019; Ghosh *et al.*, 2020; Karim *et al.*, 2020; Naqvi *et al.*, 2020; Quandt *et al.*, 2020; Rahman *et al.*, 2020; Salam and Khan, 2020; Krell *et al.*, 2021. Studies showed that mobile phones can useful smallholder farmers by improving farm productivity, profitability, and farmers market access, enhancement of farmers ability to communicate with research institutions, extension agents, and their peers, speed up the supply of inputs through e-

vouchers and real-time tracking of inventory, and easy access to updated information.

In Iraq, mobile phone service started in 2004, today's the mobile lines number is currently more than 39 million (CSO, 2020),

Despite the importance of mobile usage among farmers, there are very few studies that dealt with mobile usage for accessing agricultural information in Iraq in general and in the research area in particular. Therefore, there is a need to know about farmers' usage of mobile phones to access agricultural information. What type of information they seek, which sources they contact through mobile, what are their extent uses of mobile. The study was undertaken to determine the usage of mobile phones among vegetable farmers and to determine the differences in farmers' mobile users based on some of their socio-economic characteristics

### Materials and methods

The study was carried out in AL-Qassim District in Babylon Province, located in south-central Iraq, between 32.7° and 33.8° N and 43.42° and 45.50° E. Babylon Province is located in the Middle of Euphrates provinces, a fourth vegetable producing province (CSO, 2021). The population for this study consisted of 513 vegetable growers of the AL-Qassim district. Of these ten were chosen for testing the questionnaire's reliability, and from the 503 remaining, 180 (about 36%) were randomly selected to respond to the questionnaire from 1-20 May 2021.

The used instrument was a two-part questionnaire, namely socio-economic characteristics and use of mobile. The socio-economic characteristics included age, education level, years of experience in vegetable cultivation, and duration use of mobile. The use part was a two-subpart, first listed out likely 7 sources of agricultural information viz; progressive farmers, internet sites, extension agents, input dealers, traders, agriculture officers and agricultural information center, use of these 7 sources were measured on a six-point continuum scale

as; daily (D), 2-3 times in a week (TW), weekly (W), fortnightly (F), monthly (M), and occasionally (O), they were respectively coded as 6, 5, 4, 3, 2 and 1 in the analysis. The second listed out likely 15 agricultural information that farmers seek about through mobile viz; information about yield marketing, information about irrigation water, diseases control methods, information on improved varieties and seed, hiring or borrowing equipment, transport information, buying production input, information about agricultural practices, insect-pest control methods, fertilizer and pesticide information, soil fertility management information, information on seed production, weeding methods, weather information, harvest and post-harvest technologies and hiring farm labor, which measured on a four-point continuum scale as: always (A), most of the time (M), sometimes (S), rarely (R), they were respectively coded as 4, 3, 2, and 1 in the analysis.

The content validity of the questionnaire was established by a panel of six experts in agricultural extension. A pilot study was conducted to establish the reliability of the instrument. Cronbach's alpha (a reliability coefficient of 0.91) was established, indicating the used instrument was reliable and valid.

About their usage level, each respondent had scores ranging from (7 to 42). Based on mean (M)  $\pm$  standard deviation (SD), according to their level of usage, respondents were assigned and categorized as follows: low (below M-SD), medium (M $\pm$ SD), and high (above M+SD).

Data were analyzed using frequency, percentage, mean (M), standard deviation (SD), weighted arithmetic mean (WM), and F test, by using SPSS version 22.

### Result and Discussion

#### Mobile usage

The usage score ranged from 7 to 42 with a mean of 27.5. The result observed that more than half of the respondents (52.2%) had a medium usage level, followed by high (36.7%) and low (11.1%) usage (Table 1). The average usage for all respondents was a

medium category. This means that majority of vegetable farmers (88.9%) had a medium to high usage of mobile to access agricultural information, which clearly shows that the respondents have sensed the benefits of mobile using in agricultural activities, which prompted them to this level of use.

Karim et al., 2020; found that the highest of farm women had moderate use of the mobile phone for information services in agricultural activities followed high and low usage respectively, while Asif et al., 2017 found that most respondents fell into low use of mobile phone category.

#### ***How is the use of mobile***

Regarding how vegetable farmers were using their mobile phones for accessing agricultural information, table 2 revealed that (95.3%, 27.2%) of the farmers responded used their mobile for making and receiving calls and messages respectively, while (48.3%) use mobile phones to access the internet. This implies that most farmers use their mobile for making and receiving calls, this is because voice calls allow for better understanding and clearer transmission of agricultural information. the reason may be attributed to the simplicity of the procedure to make a call (Atiso et al., 2021). Ramli et al., 2019; Rashid et al., 2019; Kaske et al., 2018; Adewale, 2017; Aldosari et al., 2017; revealed that the majority of respondents made and received phone calls for agricultural purposes.

The low percentage of text messaging usage is because SMS for agricultural purposes is not preferred. After all, texting is regarded as a poor way of expressing one's ideas fully (Deribe et al., 2018).

#### ***Sources of agricultural information and their frequency usage***

Respondents were asked to indicate how often they search for agricultural information from the sources and channels listed in table 3. Progressive farmers ranked first among agricultural information sources that (37.2%) of vegetable farmers contact by mobile,

followed by internet sites and extension agents with (24.4%, 12.2%) respectively.

progressive farmers represent today's farmers with youthful spirits, relatively good market access(Haryanto et al., 2021). progressive farmers" were the most credible personal locality sources of agriculture information to the vegetable growers in the study area.

Rimi et al., 2015 found that fellow farmers was the major source of agricultural information for the respondents, and it the most preferred means of communication than the other sources

The 3rd-ranked source of information in this study is the advices and education received from extension agents,

Regarding the frequency usage of farmers to these sources, table 3 illustrate that (30.6%) of respondents make use of mobile phone weekly (W), followed by ( 23.3%, 21.7%, 13.3%) with 2- 3 time in a week(TW), fortnightly (F) and daily (D). It seems that the high percentage of weekly mobile phone use in accessing agricultural information is due to the nature of the information that vegetable growers are seeking in the study area, which does not require daily use or communication such as marketing and disease information.

#### ***Types of agricultural information acquired through farmers mobile usage***

regarding types of agricultural information accessed through mobile phone, the vegetable farmers indicate that information about yield marketing came in first rank(3.55), followed by information about irrigation water, Information about diseases control methods(3.41, 3.02), respectively. **Table 4.**

Vegetables are highly perishable produce, this calls for marketing it quickly and safely that reduces yield loss and ensures got the best prices. Vegetable growers need necessitates effective marketing information, that helps them in making a quick and appropriate marketing decision, information such as;

marketing place and time, means of yield transferring , market price. Market information was ranked as the highest accessed information among the rest of farm-related use ( Khan *et al.*, 2019; Aldosari *et al.*, 2017; Masuka *et al.*, 2016; Yekinni *et al.*, 2016).

Water shortage is one of the biggest vegetable production constraints in Iraq, it can hinder vegetable production, especially for summer vegetables( Kshash, 2019). Therefore, information related to irrigation water occupies a large part of the interests of vegetable growers, who trying to obtain continuous information regarding the quantities of water and the distribution of water rations, in addition to information about modern irrigation systems, and share this information.

Diseases attack vegetable crops and It caused huge losses in the quantity and quality of the yield (Savary *et al.*, 2019). Vegetable growers are constantly trying to control the diseases that affect their crops, know their causes, and eliminate them, by seeking suitable information

#### ***Factors affecting the use of mobile***

Results indicated that there was a significant difference between the mean scores of the use of mobile scale for the groups of education and years of experience (Table 5). Respondents within university education level have higher mean scores in mobile use(34.8). Respondents with an educational level under secondary have the lowest mean scores in mobile use(17.8).

#### **Conclusion and recommendation**

Half of the vegetable growers in Iraq had a medium usage level of mobile phone for accessing agricultural information. 95.3% of the farmers responded used their mobile for making and receiving calls. Progressive farmers ranked first among agricultural information sources that of vegetable growers contact by mobile. Most of vegetable growers make use of mobile phone weekly, information about yield marketing, irrigation water and diseases control methods , were the

highly accessed through mobile phone. Respondents within university education level have higher mean scores in mobile use.

The development of an agricultural mobile application in the Iraqi telecommunication industry will improve access to agricultural information.

#### **Novelty Statement**

This research is attempts to discover the use of mobile phone for accessing agricultural information by vegetable farmers in Iraqi.

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**Table 1.** Distribution of respondents according to their overall use of the mobile phone ( n=180)

Used categories	Freg.	%	M.	SD.
Low usage (< 19.8)	20	11.1	14.8	2.7
Medium usage(19.8 – 35.2 )	94	52.2	27.4	3.2
High usage (> 35.2 )	66	36.7	40.3	1.8
Total (7 – 42)	180	100	27.5	7.7

**Table 2.** distribution of respondents according to how the use of mobile (n=180)

Uses how	F *	%
Making and receiving calls	130	72.2
Internet access	87	48.3
Making and receiving SMS	49	27.2

\*Table indicate multiple responses

**Table 3.** information sources and their frequency usage by respondents (n=180)

Information sources	Frequency usage						
	D %	TW%	W%	F%	M%	O%	Total%
Progressive farmers	7.1	5.5	15.0	6.1	1.1	2.2	37.2
Internet sites	5.0	5.0	7.8	3.3	2.2	1.1	24.4
Extension agents	0.6	4.4	2.8	3.9	0.6	0	12.2
Input dealers	0.6	2.2	3.3	2.8	0	0	8.9
Traders	0	2.8	1.1	1.7	2.2	0	7.8
Agriculture Officers	0	1.7	0.6	2.2	1.1	0	5.6
Agricultural information center	0	1.7	0	1.7	0.6	0	3.9
Total	13.3	23.3	30.6	21.7	7.8	3.3	100



**Table 4.** types of agricultural information accessed through mobile phone

Types of information	W.M	SD.
information about yield marketing	3.55*	0.63
information about irrigation water	3.41*	0.77
Information about diseases control methods	3.02*	1.03
Information on improved varieties and seed	2.76	0.83
Hiring or borrowing equipment	2.64	0.76
Transport information	2.58	1.13
Buying production input	2.44	0.57
information about agricultural practices	2.39	1.01
Insect-pest control methods	2.08	0.68
Fertilizer and pesticide information	1.87	0.85
Soil fertility management information	1.74	1.11
Information on seed production	1.63	0.93
Weeding methods	1.62	0.79
weather information	1.54	0.86
Harvest and post-harvest technologies	1.50	1.15
Hiring farm labor	1.17	1.21

\*W.M.  $\geq$  3.0= High level of access

#### 5: mobile usage according to respondents characteristics

Variable	Categories	% (n=180)	Usage	
			M	F
Age M= 42.2, SD= 11.8	< 30	20.6	27.6	
	30 – 50	47.8	27.3	1.876
	> 50	31.7	27.7	N.S
Education	< Secondary	30.0	17.8	
	Secondary	55.0	29.9	304.35*
	University	15.0	34.8	
Years of experience M= 23.6, SD= 4.2	< 20	6.1	19.4	
	20 – 30	67.2	34.0	188.28*
	> 30	26.7	29.1	
Duration M= 8.1, SD= 1.1	1 – 4	12.8	27.8	
	8 – 5	34.4	27.6	1.257
	12 – 9	52.8	27.3	N.S