The Use of Mobile Phones for Marketing Purposes by Live- Stockers in Sindh Province, Pakistan

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Abstract

This research work is an attempt to focus on the role of mobile phones in the profession of livestock. It particularly concentrates on how mobile is used by livestock holders to get market information related to the products of their profession. Due to the nature of the research questions and required data, a quantitative cross-sectional survey was conducted on the livestock holders in the sampled areas of Sindh, province, Pakistan. Whereas, to reach the targeted survey respondents purposive sampling technique was supposed to be most suitable and applied due to the non-availability of a comprehensive list of the livestock holders, however with a pre-condition that the livestock keeper must own a mobile phone. The data collection instrument was pre-designed with close-ended questions. The data were analyzed with SPSS statistical software having used descriptive and inferential statistical techniques. Some of the key findings disclosed that the majority of livestock keepers adopted this profession by inheritance. They also admitted that they use mobile phones to communicate market information to have the latest updates about livestock products. Additionally, it was found that educated livestock keepers on average use more mobile phones in comparison to their uneducated counterparts. It was also observed that due to mobile phone usage, there has been an increase in the earnings of the livestock keepers; and there has been a reduction of transport expenses of the livestock keepers due to mobile phone usage, as they seek market-related information earlier to transport their livestock products in the market for selling.

Keywords: *Marketing, livestock products, mobile phone, information*

INTRODUCTION

Information and communication technology tools are revolutionizing the modes of livestock management and production across the world as different I.C.T tools are being used

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for creating awareness among livestock holders regarding the marketing of livestock products, disease control, and dairy herd management (Meena & Singh 2013). In this context, it is pertinent to mention that impact of cell phone use on the earnings of livestock holders is visible as they are increasingly using the device for getting information related to suitable markets and new production techniques (Barrantes 2010). Moreover, livestock holders in different developing countries have started to use mobile phones for information about grazing fields, weather updates, and marketing decisions (Debus et al., 2016). In addition to it, cell phone is also being effectively used for animal health management and extension service (Karimuribo, 2016). In a similar context, the use of the mobile phone has remarkably changed the professional behavior of farmers due to greater awareness generated due to the use of new devices resulting in the adoption of scientific practices in livestock farm management (Satyanarayan, 2018). In this way, mobile phones and other tools of Information and Communication Technology are contributing to sustainable growth in the livestock sector as the transfer of scientific knowledge about livestock from the research and extension department to a common farmer has become easier due to the use of I.C.T tools. Furthermore, these farmers are getting in time market updates about livestock farming inputs and outputs through mobile phones (Sheokand, Pawar, & Singh 2012). Hence, the mobile phone is playing the role of catalyst to improve farm productivity across the world as it is being recognized as an effective tool for the dissemination of information in rural cultural settings (Mittal & Tripathi 2009; Khan, Muhammad, & Chaudhary 2014).

The livestock sector is an important source of livelihood for millions of people in the rural part of Sindh province, Pakistan. At the national level, livestock provides 56% of value addition in agriculture and its contribution to GDP is around 11%. The service sector related to agriculture is also dependent on the livestock sector (Rehman et al, 2017). The majority of the farmers in Pakistan are small landholders and they rely on livestock holdings as a source of supporting source of income. In this way, livestock plays a significant part in reducing the poverty level in rural areas of the country (Iqbal, Ahmad, & Jahangir, 1999). Additionally, livestock has significant potential for increasing the sources of livelihood in Sindh province and it provides vital support to the farm sector in the province (Farooq, & Qudoos, 1999). In this context, the data indicate that since 1955 the population of cattle, buffaloes, sheep, goats, and camels is gradually increasing in Sindh province, Pakistan (Wasim 2007). Nevertheless, the outdated practices of livestock management that include cattle feeding, breeding, and marketing are major hurdles in modernizing the sector (Tagar & Shah, 2013). Therefore, this

study was conducted to determine the role of mobile phones in the profession of livestock. It particularly concentrates on how mobile is used by livestock holders to get market information related to the products of their profession.

RESEARCH OBJECTIVES

1. To assess the mobile usage patterns by livestock holders
2. To assess the use of the mobile phone for marketing purposes by livestock holders
3. To assess the impact of socio-demographic factors on the use of the mobile phone by livestock holders.

LITERATURE REVIEW

Research about the role of mobile phone and other information and communication tools are emerging as a growing area in development communication research (Schulz et al. 2022; Farooq et al., 2022; Anadozie, Fonkam, & Celeron, 2022; Tabe Ojong, Hauser, & Mausch, 2022; Mwanga. 2020). In this context, a study conducted in Ethiopia indicates that during the past decade, the penetration and use of the mobile phone for accessing market information among the live-stockers have increased among the African live-stockers (Debus et al., 2016). The penetration of cell phones in deep countryside areas has significantly enhanced the opportunities for farmers to directly reach out to advisory services related to livestock management and marketing (Karimuribo, 2016). Therefore, SMS service and the use of special mobile phone applications aimed at engaging farmers to adopt scientific practices for profitable ventures in the livestock sector are increasing day by day (Satyanarayan, 2018). In this context, smart mobile phone applications are also being used by extension services for the dissemination of essential information. A study by Nyinondi, & Sospeter, (2022) assessed the use of cell phone applications in Swahili languages in Tanzania indicating that the use of Swahili language applications for farm development in Tanzania is a new phenomenon at the early stage of adoption. Therefore, they need to be improved for more effective use to engage farmers in extension activities. Similarly, a study conducted by Khan, Muhammad & Choudri, 2014, also indicates a significant role of the cell phone in the dissemination of information related to livestock/poultry in a timely and interactive manner.
Similarly, a study conducted in Pakistan by Shafique, Ali, & Salman, M. (2019) also indicates the usefulness of I.C.T tools in livestock farming, growth, management, and market identification. However, there is a dire need to make efforts for further extension in the livestock sector and engagement of live stockers in extension policies (Amin et al., 2010).

Hence, it has been observed that information related to livestock needs to be disseminated to the rural communities for further improvement in the livestock sector (Neethirajan, & Kemp, 2021). Thus, the use of mobile phones is contributing to modernizing the livestock and agriculture sector in South Asia and other parts of the world and these devices are being used for connectivity of farms with the market (Chhachhar et al., 2016).

METHODOLOGY

The technique of cross-sectional survey was used to collect data for this study as it is being extensively utilized in the field of media and communication research (Hansen, Cottle, Negrine, Newbold, & Halloran, 1998) Therefore, it is considered as a prime source of data collection in communication research (Ponto, 2015). Furthermore, it is also widely acknowledged that quantitative surveys can be used for collecting a large amount of data with fewer resources (Rahman, 2020). Moreover, for sample selection purposive sampling technique was used to select the respondents for the study; because a comprehensive list of the livestock holders was not available. In this context, Singleton & Straits (1999) add that the purposive sampling technique is highly recommended in such situations when the database of the population is not available.

Moreover, the districts of Tharparkar and Umerkot which are considered a hub of livestock in Sindh province were selected as the target area for this study, and two hundred mobile using live-stockers actively involved in farm management were purposively selected as respondents. A pre-designed questionnaire mostly containing close-ended questions was used for data collection. The questionnaires were filled in a face-to-face situation following the interview scheduled technique which allows the data collector to fill the questionnaire according to the wish and will of the survey participant. The questionnaire was developed based on the literature review and keeping into consideration the objectives and research questions of the study. The questionnaire was tested in formal and informal discussions with the livestock holders as a pilot study.

The questionnaire was divided into the following different sections dealing with the personal and professional profiles of the respondents, mobile phone usage patterns, and the role of mobile phones in the livestock profession and marketing. The researcher visited different Talukas of District Tharparkar, and Umerkot to collect the data. Each district was visited various times to get the data from one hundred respondents from each selected district. Finally, the data was coded in SPSS (Statistical Package for Social Science) and data

were categorized and analyzed to address the research questions of the study. The findings were presented in tabular form for discussion and conclusion.

RESULTS AND CONCLUSION

Demographic Profile of the Livestock Holders

Regarding the demographics of the survey participants (see Table 1) first, about gender it was found that all of them (100.%) were male and Sindhi language speakers (100.0%). Similarly, almost all the respondents (99.0%) showed themselves being married. However, regarding education level, the quantity of slightly higher than one-fifth (20.5%) said that they were uneducated. And though the remaining proportion of nearly four-fifths (79.5%) was educated, however, the majority proportion (61.5%) had sought education just from primary to the high school level. Whereas, the last proportion of about one-fifth (18.0%) had education from college to university level. Finally, about age, almost half ratio (47.0%) was up to 40 years old. And the second-highest quantity (28.0%) was between 41 to 50 years old. Whereas, the remaining part of exactly one-fourth (25.0%) were above 50 years old. Thus, it established that all the participants were Sindhi-speaking males and married. Though the majority were educated, however, their education was limited from primary to high school. Lastly, the highest number of respondents was up to 40 years old.

Table 1: Demographic characteristics of the surveyed livestock holders

Demographic Variables	**Number**	**Percentage (%)**
Gender		
Male	200	(100.0)
Female	0	(0.0)
Mother tongue		
Sindhi	200	(100.0)
Other	0	(0.0)
Marital status		
Married	198	(99.0)
Unmarried	4	(2.0)
Education level		
Uneducated	41	(20.5)
Primary to High School	123	(61.5)
College & University	36	(18.0)

Age group		
Up to 40 years	94	(47.0)
41 – 50 years	56	(28.0)
Above 50 years	50	(25.0)
Subdivision		
Umerkot	25	(12.5)
Pithoro	25	(12.5)
Kunri	25	(12.5)
Samaro	25	(12.5)
Mithi	16	(8.0)
Deeplo	14	(7.0)
Nagarparkar	14	(7.0)
Chachro	14	(7.0)
Islamkot	14	(7.0)
Dahli	14	(7.0)
Kaloi	14	(7.0)
District		
Umarkot	100	(50.0)
Tharparkar	100	(50.0)

Professional Profile of the Livestock Holders

See Table 2, regarding the professional characteristics of the livestock holders. It mentioned that all of them (100.0%) were livestock holders. Further, they described that the quantity of over fifty percent (51.0%) had inherited the livestock profession. Whereas, the second-highest fraction of almost one-third (32.5%) had adopted this profession due to circumstances around them. However, the remaining two little less than one-tenth proportions of them adopted the livestock profession due to personal choice (8.5%) and having been inspired by their friend circle (8.0%). Therefore, it was seen that the best part of the respondents had inherited the profession of livestock. Regarding cattle keeping place, a proportion of almost three-fifths (59.0%) said they kept their cattle at home. However, the remaining proportion a little higher than two-fifths (41.0%) had cattle farms. Further, regarding the nature of ownership, the majority (55.5%) had cattle in partnership; however,

the remaining fraction of over two-fifths (44.5%) had personal cattle. Hence, it was found that the bulk of the livestock holders had cattle in partnership.

Table 2: Profession-related characteristics of the surveyed livestock holders

Professional variables	**Number**	**Percentage (%)**
Profession		
Livestock-holding	200	(100.0)
Other	0	(0.0)
Profession adoption mode		
Inherited	102	(51.0)
Personal choice	17	(8.5)
Circumstances	65	(32.5)
Friend circle	16	(8.0)
Cattle-keeping place		
At home	118	(59.0)
Cattle farm	82	(41.0)
Nature of cattle ownership		
Personal	89	(44.5)
Partnership	111	(55.5)
Number of cattle		
Up to 10	84	(42.0)
11 – 15	46	(23.0)
Above 15	70	(35.0)
Professional experience		
Up to 10 years	62	(31.0)
11 to 20 years	64	(32.0)
Above 20 years	74	(37.0)
Monthly income		
Up to 10000 Rs.	79	(39.5)
11000 to 20000 Rs.	66	(33.0)

In so far as the number of cattle is concerned then in this view, the quantity of more than two-fifths (42.0%) had cattle up to 10. The other proportion over one-third (35.0%) had cattle above 15. Whereas, the leftover part of over one-fifth (23.0%) owned 11 to 15 cattle. On the whole, it was figured out that the highest proportion of the livestock holders owned up to 10. Regarding professional experience, it was identified that the maximum quantity of nearly two-fifths (37.0%) had above than 20 years of professional experience; and the second-greatest proportion (32.0%) had professional experience in livestock holding from 11 to 20 years. Nonetheless, the final quantity above one quarter (31.0%) had professional experience of up to 10 years. As a result, it was realized that the top fraction of the livestock holders had professional experience of over 20 years. Last of all, regarding the monthly income of the livestock holders the uppermost proportion of almost two-fifths (39.5%) earned monthly up to 10,000 PK rupees. The second-highest percentage (33.0%) earned monthly from 11,000 to 20,000 PK rupees. Whereas, the final fraction of over one quarter (27.5%) earned monthly above 20,000 PK rupees. Hence, it was deduced that the highest proportion of the surveyed livestock holder earned monthly up to 10,000 PK rupees.

Widely, in the context of the professional profile of the livestock holder, it was known that the greater part of the respondents adopted the livestock profession for the reason that they inherited it. And the bulk of them further mentioned that they kept their cattle at home. However, the nature of cattle ownership of the majority of livestock holders was a partnership, despite the fact, the highest proportion of the respondents had many cattle up to 10. Additionally, it was also established that the highest proportion of the livestock holder had professional experience of over 20 years; likewise, the utmost quantity of them earned monthly from the livestock profession up to 10,000 PK rupees.

Mobile Phone usage Patterns of the Livestock Holders

Regarding patterns of mobile phone use (see Table 3) all the survey participants (100.0%) said they used mobile phones and also had their own mobile set. However, a fraction of around four-fifths (79.5%) had a feature mobile phone; whereas, the leftover quantity (20.5%) owned a smart mobile phone. Hence, it was deduced that the majority of the livestock holders had a simple mobile phone. In context to the network company, the first uppermost fraction (40.0%) used Ufone. And the second greatest quantity (27.0%) told they owned the Zong company network; however, among the left, the percentage of almost one-fifth (19.0%) used Telenor company SIM, and the final quantity higher than one-tenth (14.0%) had Jazz/Warid company connection. Thus the uppermost percentage of the

livestock holders used the Ufone company network. Regarding the type of mobile SIM, all the participants used pre-paid SIM. Regarding mobile credit, all the participants(100.0%) told they seek easy to load.

Table 3: Mobile phone usage patterns of the surveyed livestock holders

Mobile phone usage variables	**Number**	**Percentage (%)**
Use a mobile phone?		
Yes	200	(100.0)
No	0	(0.0)
Owning a mobile phone?		
Yes	200	(100.0)
No	0	(0.0)
Mobile type		
Feature	159	(79.5)
Smart	41	(20.5)
Network name		
Jazz/Warid	28	(14.0)
Ufone	80	(40.0)
Telenor	38	(19.0)
Zong	27	(27.0)
SIM type		
Prepaid	200	(100.0)
Postpaid	0	(0.0)
Credit seeking mode		
Mobile card	0	(0.0)
Easy load	200	(100.0)
Monthly mobile expenses		
Up to 500 Rs.	90	(45.0)
600 to 1000 Rs.	75	(37.5)
Above 1000 Rs.	35	(17.5)

Lastly, regarding monthly mobile expenses, the percentage of higher than two-fifths (45.0%) spent monthly up to 500 PK rupees; whereas, the second proportion nearly two-fifths (37.5%) uttered that they spend monthly 600 to 1000 PK rupees. However, the last fraction of a little less than one-fifth (17.5%) spent monthly more than 1000 PK rupees on mobile phone payments. Overall, it was known that the uppermost quantity of the livestock holders spent monthly up to 500 PK rupees as mobile charges.

Factor Analytics of the Mobile Phone Usage for Marketing Purposes

Six various uses of mobile phones (see Table 4), related to marketing cattle and dairy products were asked from the surveyed livestock holders. Those six statements were measured on a three-point Likert scale ranging from Agree=3 to Disagree =1. The statements follow: **a)** I use mobile to know cattle and dairy product prices, **b)** I use mobile to talk with cattle and dairy product dealers/buyers, **c)** I use mobile to find a suitable market to sell cattle and dairy products, **d)** I use mobile to seek professional livestock marketing advice, **e)** I use mobile to get information to change the market for selling cattle and dairy products, **f)** I use mobile to receive cattle and dairy product price alerts.

Table 4: Mobile phone use for marketing purposes

Mobile phone use for marketing purposes	**Factors**		
	Mean	**1**	**2**
Factor1: Livestock market information	**1.91**		
To know cattle & dairy product prices	1.92	.98	
To talk with cattle & dairy product dealers/buyers	1.90	.98	
To find a suitable market to sell cattle & dairy products	1.92	.98	
To seek professional livestock marketing advice	1.88	.95	
Factor2: Livestock market communication	**1.52**		
To get information to change the market for selling cattle & dairy products	1.98		.46
To receive cattle and dairy product price alerts	1.06		.92
Cronbach's Alpha (Reliability score %)		.98	.12
Eigenvalue		3.93	1.04
% of variance		64.65	18.31

Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization (Eigenvalue > 1). Higher mean scores equal greater mobile usage. The scale ranges from Agree=3 to Disagree =1.

The principal component analysis test was applied to assess the interrelationship of the six items. As a result, two factors, first named, "*Livestock market information*" and second, called "*Livestock market communication*" with Eigenvalue bigger than one surfaced, explaining a total 82.96% variance. Table number 4 enlists those six items of the two factors. The reliability was tested by using Cronbach's coefficient alpha (.84). And Bartlett's test of sphericity stood (1941.80) ($p<.000$) with a KMO value of .79, $p<.000$. Overall, the items had good reliability scores indicating that the items could be clustered into two factors.

Factor one "*Livestock market information*" (M=1.91) collected four items. Thus, among those the first two equally highest-scored items (M=1.92 and M=1.92 respectively) were "to know cattle and dairy product prices", and "to find a suitable market to sell cattle and dairy products" respectively. Then these two equally first highest items were followed by the item "to talk with cattle and dairy product dealers/buyers" (M=1.90). Whereas, the item under the first factor that scored lowest (M=1.88) was "to seek professional livestock marketing advice". Added the second factor titled *"Livestock market communication"* (M=1.52) magnetized to the remaining two items. In this way, among those, the greatest mean score (M=1.98) stood for the item "to get information to change the market for selling cattle and dairy products". However, the lowermost mean score (M=1.06) was accounted for by the item "to receive cattle and dairy product price alerts".

Mobile Phone Usage for Marketing Purposes and Demographic Variable Differences

Besides that non-parametric Mann-Whitney U test was applied to know the significant differences between the demographic variables and the use of the mobile phone for marketing purposes. Such results follow:

1. Educational status differences

Table 5: Mobile phone use for marketing purposes and education status

	Education status			
Mobile phone usage for marketing purposes	**Uneducated Mean rank**	**Educated Mean rank**	**MW-U**	**P-Value**
Factor1: Livestock market information				

To know cattle & dairy product prices	66.82	109.19	1878.50	.00
Talk with the dealer/buyer	64.50	109.78	1783.50	.00
Find a suitable market to sell products	65.40	109.55	1820.50	.00
Seek professional market advice	64.22	109.86	1772.00	.00
Factor2: Livestock market communication				
To get information to change the market for selling cattle & dairy products	71.01	108.10	2050.50	.00
To receive cattle and dairy product price alerts	102.38	100.02	3182.50	.43

Note: High scores equal a greater level of mobile usage. The scale ranges from Agree=3 to disagree=1.

Data in Table 5 reports that educated livestock holders (Mean rank=109.19) used the mobile phone more than uneducated (Mean rank=66.82) “to know cattle and dairy product prices” in the market, U(200)=1878.50; p=.00, 2-tailed. Similarly, the educated livestock holders (Mean rank=109.78) used the mobile phone more than those who were uneducated (Mean rank=64.50) “to talk with dealer/buyer” in the market, U(200)=1783.50; p=.00, 2-tailed.

Further, it was found that the educated livestock holders (Mean rank=109.55) used mobile phones greatly than those who were uneducated (Mean rank=65.40) “to find a suitable market to selling cattle and dairy products” in the market, U (200)=1820.50; p=.00, 2-tailed. Additionally, the educated livestock holders (Mean rank=109.86) compared with the uneducated (Mean rank=64.22) used mobile phones greatly for “seeking professional market advice”, U (200)=1772.00; p=.00, 2-tailed.

In a similar vein again, the educated livestock holders (Mean rank=108.10) used mobile phones greater than those who were uneducated (Mean rank=71.01) “to receive information on mobile to change market to sell cattle and livestock products”, U(200)=2050.50; p=00, 2-tailed. Finally regarding the item “to receive cattle and dairy product price alerts” it stood that the uneducated livestock holders (Mean rank=102.38) rated a higher score on this item than those who were educated (Mean rank=100.02), U(200)=3182.500; p=430, 2-tailed.

Age category differences

Table 6: Mobile phone use for marketing purposes and age categories

	Age categories			
Mobile phone usage for marketing purposes	**Up to 40 Mean rank**	**Above 40 Mean rank**	**MW-U**	**P-Value**
Factor1: Livestock market information				
To know cattle & dairy product prices	92.05	108.00	4187.50	.03
Talk with the dealer/buyer	92.03	108.01	4185.50	.03
Find a suitable market to sell products	91.67	108.33	4152.00	.03
Seek professional market advice	91.74	108.26	4159.00	.03
Factor2: Livestock market communication				
To get information to change the market for selling cattle & dairy products	108.95	93.01	4188.00	.02
To receive cattle and dairy product price alerts	101.76	99.39	4864.00	.32

Note: High scores equal a greater level of mobile usage. The scale ranges from Agree=3 to disagree=1.

As per data in Table 6 those livestock holders who were above 40 years old (Mean rank=108.00) used their mobile phones more for "knowing cattle and dairy product prices" in the market than those who were just up to 40 years old (Mean rank=92.05), U(200) =4187.50; p=.03, 2-tailed. Similarly, for "talking with dealer/buyer" as well those livestock holders who were above 40 years old (Mean rank=108.01) used the mobile phone more than those who were just up to 40 years old (Mean rank=92.03), U(200)=4185.50; p=.03, 2-tailed. Added the livestock holders who were above 40 years old (Mean rank=108.33) used the mobile phone more for "finding a suitable market to sell livestock products" than those who were just 40 years old (Mean rank=91.67), U(200)=4152.00; p=.03, 2-tailed.

Regarding "seeking professional market advice" it was found that those livestock holders who were above 40 years old (Mean rank=108.26) used the mobile phone more than those who were only up to 40 years old (Mean rank=91.74), U(200)=4159.00; p=.03, 2-tailed. Moreover, it was seen that those livestock holders who were up to 40 years old (Mean

rank=108.95) compared with those who were above 40 years old (Mean rank=93.01) used the mobile phone more for "getting information to change market to sell cattle and livestock products" where they can get better rates, U(200)=4188.00; p=.02, 2-tailed. Finally regarding the item "to receive cattle and dairy product price alerts" the (Mean rank=101.76) the livestock holders who were up to 40 years old rated higher to the item "to receive cattle and dairy product price alerts" than those whose age was above 40 years (Mean rank=99.39), U(200)=4864.00; p=32, 2-tailed.

Professional experience differences

Table 7: Mobile phone use for marketing purposes and professional experience

	Professional experience			
Mobile phone usage for marketing purposes	**Up to 10 yrs Mean rank**	**Above 10 yrs Mean rank**	**MW -U**	**P-Value**
Factor1: Livestock market information				
To know cattle & dairy product prices	80.94	109.29	3065.00	.00
Talk with the dealer/buyer	82.39	108.64	3155.00	.00
Find a suitable market to sell products	81.39	109.09	3093.00	.00
Seek professional market advice	84.47	107.70	3284.00	.00
Factor2: Livestock market communication				
To get information to change the market for selling cattle & dairy products	104.73	98.60	4016.00	.42
To receive cattle and dairy product price alerts	100.73	100.40	4264.00	.90

Note: High scores equal a larger level of mobile usage. The scale choices are from Agree=3 to Disagree =1.

Regarding professional experience, the data in Table 7 stated that those livestock holders who had above 10 years of professional experience (Mean rank=109.29) used the mobile phone more for "knowing cattle and dairy products prices" compared with those who had professional experience up to 10 years (Mean rank=80.94), U(200)=3065.00; p=.00, 2-tailed. In the same vein, those livestock holders who were professionally experienced for above than 10 years (Mean rank=108.64) used the mobile phone more for "talking with dealers/buyers" than that livestock who were professionally experienced for up to 10 years

(Mean rank=82.39), U(200)=3155.00; p=.00, 2-tailed. Additionally, it surfaced that the livestock holders having professional experience greater than 10 years (Mean rank=109.09) used mobile phones highly for "finding a suitable market to sell cattle and dairy products" than those who experienced 10 years (Mean rank=81.39), U(200)=3093.00; p=.00, 2-tailed. Similarly, the above than 10 years professionally experienced livestock holders (Mean rank=107.70) used the mobile phone more for "seeking professional market advice" than those whose had experience till 10 years (Mean rank=84.47), U (200)=3284.00; p=.00, 2-tailed.

However, under factor two the livestock holders having professional experience of up to 10 years used the mobile phone more "to get information to change the market for selling cattle & dairy products" and for "receiving cattle and dairy product price alerts" (Mean rank=104.73, and Mean rank=100.73 respectively) than those whose professional experience was above 10 years (Mean rank=89.60 and Mean rank=100.40 respectively), U (200)=4016.00; p=.42, 2-tailed, and U(200)=4264.00; p=.90, 2-tailed respectively.

2. Monthly income differences

Table 8: Mobile phone use for marketing purposes and monthly income

	Monthly income level			
Mobile phone usage for marketing purposes	**Up to 10000 Rs. Mean rank**	**Above 10000 Rs. Mean rank**	**MW-U**	**P-Value**
Factor1: Livestock market information				
To know cattle & dairy product prices	89.03	107.99	3873.000	.015
Talk with the dealer/buyer	86.84	109.42	3700.000	.004
Find a suitable market to sell products	88.49	108.34	3830.500	.011
Seek professional market advice	87.71	108.85	3769.000	.007
Factor2: Livestock market communication				
To get information to change the market for selling cattle & dairy products	98.34	101.91	4608.500	.622
To receive cattle and dairy product price alerts	105.09	97.50	4416.500	.002

Note: High scores equal a greater level of mobile usage. The scale ranges from Agree=3 to Disagree =1.

2:2 (December, 2024) pp. 084 – 106

About monthly income differences (see table 8) present those livestock holders whose monthly income was above 10000 PK rupees (Mean rank=107.99) used the mobile phone more for "knowing cattle and dairy product prices" than those who had monthly income till 10000 PK rupees (Mean rank=89.03), U(200)=3873.00; p=.01, 2-tailed. Further, the livestock holders having monthly income higher than 10000 PK rupees (Mean rank=109.42) also used the mobile phone more for "talking with dealers/buyers" than those whose monthly income was up to 10000 PK rupees (Mean rank=86.84), U(200)=3700.00; p=.00, 2-tailed. While for "finding a suitable market to sell cattle and dairy products" the livestock holders having monthly income above 10000 PK rupees (Mean rank=108.34) used the mobile phone more than those whose monthly income was up to 10000 PK rupees (Mean rank=88.49), U(200)=3830.50; p=.01, 2-tailed. Lastly, when it came to "seek professional market advice" then as well those livestock holders who had a monthly income above 10000 PK rupees (Mean rank=108.85) used mobile phones greater than those who had a monthly income of 10000 PK rupees (Mean rank=87.71), U(200)=3769.00; p=.00, 2-tailed.

Subject to the second factor, the livestock holders having monthly income above 10000 PK rupees used the mobile phone more (Mean rank=101.91) "to get information to change the market for selling cattle & dairy products" than those who had monthly income till 10000 PK rupees (Mean rank=98.34), U(200)=4608.50; p=.62, 2-tailed. However, on the contrary, those livestock holders whose monthly income was up to 10000 PK rupees (Mean rank=105.09) used mobile more for "receiving cattle and livestock products price alerts on mobile" compared to those whose monthly income was above 10,000 PK rupees (Mean rank=97.50), U(200)=4416.50; p=.00, 2-tailed.

3. Monthly mobile phone expenses differences

Table 9: Mobile phone use for marketing purposes and monthly mobile phone expenses

	Monthly mobile expenses			
Mobile phone usage for marketing purposes	**Up to 500 Rs. Mean rank**	**Above 500 Rs. Mean rank**	**MW-U**	**P-Value**
Factor1: Livestock market information				
To know cattle & dairy product prices	80.50	116.86	3150.000	.000
Talk with the dealer/buyer	80.27	117.05	3129.000	.000
Find a suitable market to sell products	80.09	117.20	3113.000	.000

Seek professional market advice	78.11	118.82	2934.500	.000
Factor2: Livestock market communication				
To get information to change the market for selling cattle & dairy products	87.06	111.50	3740.000	.001
To receive cattle and dairy product price alerts	101.94	99.32	4820.000	.280

Note: High scores equal a greater level of mobile usage. The scale ranges from Agree=to Disagree=1.

Table 9 has data about monthly mobile expenses differences showing that the livestock holders having mobile expenses above 500 PK rupees (Mean rank=116.86) used the mobile phone more for "knowing cattle and dairy product prices" than those who had monthly mobile expenses till 500 PK rupees (Mean rank=80.50), U(200)=3150.00; p=.00, 2-tailed. Similarly, for "talking with dealers/buyers" the livestock holders who had monthly mobile expenses above 500 PK rupees (Mean rank=117.05) used mobile phones greater than those who had monthly mobile expenses till 500 PK rupees (Mean rank=80.27), U(200)=3129.00; p=.00, 2-tailed. Added the livestock holders who had monthly mobile expenses above 500 PK rupees (Mean rank=117.20) used the mobile phone more than those who had monthly mobile expenses till 500 PK rupees (Mean rank=80.09) for "finding a suitable market to sell cattle and dairy products", U(200)=3113.00; p=.00, 2-tailed. Lastly, the livestock holders having monthly mobile expenses above 500 PK rupees (Mean rank=118.82) used the mobile phone more for "seeking professional market advice" than those who had monthly mobile expenses till 500 PK rupees (Mean rank=78.11), U(200)=2934.50; p=.00, 2-tailed. Further, the livestock holders who showed monthly mobile expenses above 500 PK rupees (Mean rank=111.50) used the mobile phone more for communicating 'to change market to sell cattle and dairy products" than those who had monthly mobile expenses till 500 PK rupees (Mean rank=87.06), U(200)=3740.00; p=.00, 2-tailed. In the last, the livestock holder who spent monthly a mobile cost of up to 500 PK rupees (Mean rank=101.94) used the mobile phone more for "receiving cattle and dairy product price alerts" than those whose monthly mobile expenses were above 500 PK rupees (Mean rank=99.32), U(200)=4820.00; p=.28, 2-tailed.

DISCUSSION AND CONCLUSION

The live-stocking is revolutionized due to awareness disseminated among the live-stock holders through tools of Information and Communication Technology. Such tools are also used to spread information for the marketing of livestock products, disease control, and

dairy management. Particularly, the impact of mobile phone use on the earnings of livestock holders is apparent as they increasingly use this gadget for getting information related to suitable markets and the latest production techniques. In this way, this study was conducted to assess the use of the mobile phone for marketing purposes by livestock holders in Sindh province, Pakistan. The objectives were to know the mobile phone usage patterns, to assess the use of the mobile phone for marketing purposes, and also to assess the association between socio-demographic factors and the use of the mobile phone for marketing purposes.

Thus, it was established from the findings that all the surveyed participants were Sindhi-speaking, male, and married. The majority were educated; however, their education was limited from primary to high school. The typical livestock holder was aged up to 40 years. Additionally, he had inherited his profession, and the majority owned nearly 10 cattle, mostly in partnership. Moreover, the highest number of livestock holders claimed their professional experience over 20 years and they earned an average of 10,000 PK rupees monthly. Regarding mobile phone usage, it found that the majority of the livestock holders had a simple mobile phone and the highest number used the Ufone network, pre-paid SIM, and all sought credit by the easy load. Finally, the highest number of them on average spent 500 PK rupees monthly on mobile charges.

About mobile phone usage for marketing purposes, six various uses of mobile phones, related to marketing cattle and dairy products were asked from the livestock holders. Those six items were measured on a three-point Likert scale ranging from Agree=3 to Disagree =1. The items follow as **a)** I use mobile to know cattle and dairy product prices, **b)** I use mobile to talk with cattle and dairy product dealers/buyers, **c)** I use mobile to find a suitable market to sell cattle and dairy products, **d)** I use mobile to seek professional livestock marketing advice, **e)** I use mobile to get information to change the market for selling cattle and dairy products, **f)** I use mobile to receive cattle and dairy product price alerts.

The principal component analysis test was applied to assess the interrelationship of the six items. As a result, two factors, "*Livestock market information*" and "*Livestock market communication*" with Eigenvalue bigger than one explained a total 82.96% variance. The reliability was tested by using Cronbach's coefficient alpha (.84). And Bartlett's test of sphericity stood (1941.80) ($p<.000$) with a KMO value of .79, $p<.000$. Overall, the items had good reliability scores indicating that the items could be clustered into two factors. Factor one "*Livestock market information*" (M=1.91) collected four items. Among those the first two

equally highest-scored items (M=1.92 and M=1.92 respectively) were “to know cattle and dairy product prices”, and “to find a suitable market to sell cattle and dairy products”. These two equally first highest items were followed by the item “to talk with cattle and dairy product dealers/buyers” (M=1.90). Whereas, the item under the first factor that scored lowest (M=1.88) was “to seek professional livestock marketing advice”. Added factor two *“Livestock market communication”* (M=1.52) magnetized to the remaining two items. Among those the greatest mean score (M=1.98) stood for the item “to get information to change the market for selling cattle and dairy products”. However, the lowermost mean score (M=1.06) was accounted for by the item “to receive cattle and dairy product price alerts”.

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