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IMPACT OF SOCIO-ECONOMIC CHARACTERISTICS OF FARMERS ON THEIR AWARENESS REGARDING LIVESTOCK EXTENSION SERVICES RENDERED BY LIVESTOCK AND DAIRY DEVELOPMENT DEPARTME NT

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ABSTRACT

This study assessed the impacts of socio-economic characteristics of livestock farmers on their level of awareness regarding different services rendered by the Livestock and Dairy Development Department. A total of 383 randomly selected farmers were interviewed trough face to face. Collected data were analyzed through Statistical Package for Social Science (SPSS). Results showed that the educational level of respondents, income, land size and several animals had a statistically significant ($P<0.05$) association with awareness about the services provided. This implies that educated farmers were likely to have more awareness of the services as compared to less educated farmers. Similarly large farmers i.e. farmers with large herd sizes and landowners were more aware of the services. This study recommended that the Livestock department should consider the socio-economic profile of livestock farmers while developing and disseminating livestock production services. Moreover, this study urges more emphasis on small farmers and those who are less resourceful.

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INTRODUCTION

Livestock is regarded as one of the prominent contributors in terms of poverty alleviation, food security and empowering rural people around the globe. A recent study Banda and Tanganyika (2021) reported livestock as a prominent form of saving, which can easily be liquidated into cash income which is much needed for the farmers to substantiate their livelihoods. Of the multifold benefits, livestock has become an integral part of the social life and subsistence of poor communities (Meissner *et al.*, 2013). Economic benefits of livestock sector are increasing at pace and according to the estimate livestock system occupies 30% of earth ice-free terrestrial surface area and it has become a key asset of worth 1.4 trillion dollars (Steinfeld H. *et al.*, 2006). Pakistan is a developing country where agriculture is regarded as a prominent source of economic and livelihoods improvement. Around 8 million farm families in Pakistan are associated with livestock farming (Hussain and Zaheer, 2020).

Livestock as a subsector of agriculture contributes 60% to the agricultural GDP of Pakistan (Hashmi *et al.*, 2021). Livestock farmers are fetching more than 35-40% of their total income from this sector. This income earned was being spent by the farmers on their family, health, education and other important avenues (Alvi *et al.*, 2015).

The gross value of this sector has increased by 3% from

1461 billion Pakistani rupees in 2019-20 to 1505 billion rupees in 2020-21 (Government of Pakistan, 2021). On the other hand, the International Halal industry is worth 3 trillion U.S. dollars and the meat sector has a share of 600 billion dollars. Pakistan's share in the global meat market is 2.9% (Sohaib and Jamil, 2017). Pakistan is the 4th largest milk producer (Asghar *et al.*, 2021). Overall, Pakistan is ranked 4th regarding total livestock production in the world (Government of Punjab, 2018). In Pakistan, millions of farmers manage livestock to meet their daily needs. Punjab province has a 49% share in total cattle strength of the country with 65% buffaloes, 24% sheep, 37% goats, 22% camel, 47% horses, and 48% poultry (Times of Islamabad, 2016).

Despite a large herd and number of farmers, Pakistan invested a huge amount in the import of milk products (1213.5 million rupees) and on meat (1.08 million tonnes) to meet the domestic demand (Rehman *et al.*, 2017). The livestock sector of Pakistan has tremendous potential to meet feed demands. However, this gap can be bridged by improving the livestock production that is possible through the provision of quality advisory services to the livestock farmers.

The government of Pakistan has placed the dairy sector on a priority to bring development in this sector. Research institutions have an agenda to develop new technologies and strengthen the livestock value chain. Whereas, a separate department Livestock and Dairy Development (L&DD) department is operational across the Punjab province to facilitate the livestock farmers and enhance the productivities of their animals.

The L&DD Department has three Directorates which are Director-General Extension, Director General Research and Director General Production that is responsible to mainstream the departmental activities in the best interest of farmers. Director General (Extension) is mainly responsible for the field activities such as vaccination, treatment/medication, breeding, information dissemination and training of farmers (Government of Punjab, 2018). Extension field staff also organizes capacity building training of the farmers regarding different livestock aspects and dissemination of information regarding improved and site-specific technologies. Information dissemination through the extension staff had positive impacts on the adoption of recommended livestock production practices (Ijatuyi *et al.*, 2017). Idrees *et al.* (2007) found that more than half (53.3%) of respondents were satisfied with the extension services and institutional facilities served to the farmers.

Farmer's engagements with the livestock extension staff are deemed essential in process of developing production (FAO, 2010). Poor coordination between the livestock farmers and extension staff squeezes the efficacy of innovative technologies (Suvedi and Ghimire, 2016). Adequacy, timely availability and communication skills of the extension agents are usually perceived as the criteria of effectiveness of extension staff (Lopokoiyit *et al.*, 2013) whereas farmers' readiness to access the information and contact the extension agents are elements that extension staff seeks in innovative farmers. Although, staff Farmers (Famers often participate in those services which are more beneficial for them. Therefore, it is indispensable for the extension staff to disseminate need-based services for the farmers (Adesope *et al.*, 2012). Extension agents must explore the socio-economic conditions of the farmers while disseminating the services. These background variables are regarded as important in the adoption of the process of technologies (Ashraf *et al.*, 2015). According to Padel (2001), age, education and resources of farmers have a great association with their participation in the extension programs.

The frequency of livestock extension activities organized in the area, the ratio of farmers to extension field staff, timing of the extension activities are the other major determinants of farmer's participation in the livestock extension activity (Agbamu, 2006). It is perceived that small farmers do not enjoy the full benefits of livestock extension services for many reasons like ignoring the problems and concerns of small farmers, which directly affects the production adversely (Baloch and Thapa, 2019).

Awareness is an important factor in the adoption of recommended livestock production practices. The adoption is linked with awareness which is further associated with the effective information dissemination and delivery of livestock extension staff. One of the key reasons behind the ineffectiveness of the livestock sector is the use of traditional management practices and lacking improved techniques. Therefore, improving awareness and knowledge of management practices is much needed for increasing livestock production.

Aziz et al. (2018) have reported that through need-oriented communication the potential of livestock can be exploited (Aziz *et al.*, 2018). Tambotoh *et al.* (2015) have

found that demographic factors of the farmers affect the utilization of services. In another study, Tandogan and Gedikoglu (2020) found that any technology or service rendered to farmers is not adopted unless the profitability and the need are not understood by the farmers. This implies that the socio-economic factors of the farmers have a significant association with the awareness of particular services followed by their use. Thus, this study was conducted. The purpose of this study is to know about the socio-economic conditions of the farmers, awareness of dairy farmers, and the relevance of socio-economic conditions to awareness of dairy farmers about public livestock services.

METHODOLOGY

Study area

Punjab is the most prominent province in Pakistan in term of the Livestock population (Awan, 2021). Punjab has thirty-six districts and Faisalabad district was selected purposively as it has the maximum number of registered livestock farmers those were registered by the Livestock and Dairy Development Department, during livestock census in 2017 (Table 1).

Faisalabad district lies from 30.35° to 31.47° the North latitude and 72.01° to 73.40° the East longitudes. In the Faisalabad district, there are 534499 numbers of cows, 999087 buffaloes, 528203 goats and 87691 sheep. There are 40 Civil Veterinary Hospitals, 50 Civil Veterinary Dispensaries, 3 Mobile Veterinary Dispensaries and 2 Disease Diagnostic Labs in the district Faisalabad (Govt. of Punjab, 2020).

Table 1. Ranking of top five districts based on the number of registered farmers.

District	Registered farmers
Faisalabad	194758
Muzaffar Garh	189493
Rahim Yar Khan	144234
Bahawalnagar	138535
Jhang	133262

Source: (Govt. of Punjab, 2018)

Sampling procedure and sample size

In the presents study, the cross-sectional research design was used; it involves looking at the data from a population at one specific point in time, moreover, it does not involve manipulating variables. The multistage sampling method was used in this study. At the first stage, the study district was chosen purposively as it has 194758of registered farmers. These 194758 farmers served as the population of the study.

In the second stage, the sample size was determined through the online sample size calculator, www.surveysystem.com. The calculated sample size was 383. While at the third stage, respondents were chosen through strategies proportionate sampling technique from the five tehsils (sub-districts) of the selected study district.

Using a proportionate sampling, 109, 71, 75, 25 and 102 farmers were selected from the tehsil Faisalabad, Samundri, Tandlianwala, jaranwala and Jhumra, respectively (Table 1). Respondents were selected at random from the prescribed list of farmers.

Table 2. Selection of sample from the five tehsils of district Faisalabad.

Name of Tehsil	Registered farmers	Proportionate Sample
Faisalabad	55431	109
Samundri	36203	71
Tandlianwala	38344	75
Jaranwala	12909	25
Jhumra	51871	102
Total	194758	383

Data collection

For the collection of data, an interview schedule was prepared in line with the study objectives. The reliability of the interview schedule was tested through Cronbach's Alpha and the value appeared 0.69. The accepted value for the alpha is 0.7 however a > 0.6 is also accepted (van Griethuijsen *et al.*, 2014). Thus, instrument was reliable. Data were collected through the face-to face.

Data Analysis

The collected data were analyzed by using the software Statistical Package for Social Sciences (SPSS). Frequency,

percentage, mean and standard deviation were calculated. Whereas, the Chi-square technique was used to identify the relationship between the demographic attributes the awareness level.

Dependent and Independent variables

Age of respondents, educational level, annual income earned, land size, number of animals were the independent variables in this study. The Association of independent variables was checked with the dependent variable (awareness level).

Computation of dependent variable (awareness)

Total recommendations were counted for ascertaining the farmers' level of awareness about the services livestock services rendered by the L&DD Department. The score of one was given if the farmer was aware and two to those to whom he was unaware. After that, an index of awareness (Table 3) was developed with the help of adding the number of recommendations with which the farmer was aware. The maximum score was 25 while the minimum score was 13, farmers were then categorized i.e. low (13-17), medium (18-21), and high (22-25) based on awareness cores. Different parameters involved in computing the awareness are mentioned below.

1. Existence of veterinary department
2. Location of the veterinary hospital
3. Are you aware of the Prime Minister scheme
4. Know helpline?
5. Mobile veterinary Dispensaries visited?
6. Ever got free vaccination?
7. The department providing breeding?
8. Are you Aware of the Sahulat centre?
9. Did the child participate in a school-based activity?
10. Housing information?
11. Feeding information?
12. Breeding information?
13. Health information?

Table 3. Indexation of computed variable.

Variable	No. of Matrix Question	Scale	Min. value	Max. value	Mean	S.D.	Alpha	Range		
								Low	Medium	High
Awareness about services rendered by the LDDD	13	2	13	25	18.02	1.67	.747	13-17	18-21	22-25

Hypothesis development

The hypothesis of this study that was tested through the chis square is as under;

Hypothesis 1: The age of the farmers and their awareness about Livestock extension services rendered by the Livestock and Dairy Development Department are directly related to each other

Hypothesis 2: Education of the farmers is directly related to their awareness about the livestock extension services rendered by the Livestock and Dairy Development Department

Hypothesis 3: The income of the farmers is directly related to their awareness about livestock extension services rendered by the Livestock and Dairy Development Department

Hypothesis 4: Size of landholdings and the farmers' awareness about livestock extension services rendered by the Livestock and Dairy Development Department is directly related

Hypothesis 5: The number of animals Owned by farmers and their awareness about livestock extension services rendered by the Livestock and Dairy Development Department is directly related

RESULTS AND DISCUSSION

Table 4 indicates that 46.1% of the respondents were aged above 40 years. More than one fourth (26.1%) of respondents had an age between 30-40 years. Around one fourth (24.8%) of respondents fell into the age category i.e. <30 years. The educational level shows that 53% of the respondents were educated less than matriculation and 12% were educated above

matriculation level. Of the total respondents, 35% were illiterate. As for as land size is concerned, 64.5% had less than 5 hectares, 5.2% more than 10 hectares and 8.6% had land between 5-10 hectares. Out of total farmers, 30% had a monthly income of less than Rupees 15000 34.2% Rupees 15000-30000 monthly income and 17.6% had earnings of more than Rupees 30000 monthly. Out of the total respondents, 18.1% did not disclose their income. As for as types of animals keeping were concerned, the farmer had more inclination towards mixed farming as 76.8% had cows, 89.6% had Buffaloes 1.6% sheep and 52.2% of the farmers had goats in their animals' herd. This implies that farmers had more cows followed by goats.

Table 4. Socio-Economic attributes.

Attributes	f (%)
Age (years)	
< 30	98 (24.8)
30 to 40	103 (26.1)
> 40	182 (46.1)
Education	
Illiterate (0)	134(35)
Up to Matric	203(53)
Above Matric	46(12)
Landholding (Hectare)	
No landholding	83(21.7)
< 5	247(64.5)
5 – 10	33(8.6)
> 10	20(5.2)
Income/Month (Rs.)	
<15000	116(30.3)
15000-30000	131(34.2)
>30000-45000	42(11)
> 45000	25(6.5)
No response	69(18.1)
Number of animals owned by the farmers	
Cows	294 (76.8)
Buffaloes	343 (89.6)
Sheep	6 (1.6)
Goat	200 (52.2)

Table 5. Relationship between the age of the farmers and their awareness.

Age groups (in years)	Awareness about services rendered by the LDDD			Total
	Low	Medium	High	
Less than 30	59	29	10	98
	60.2%	29.6%	10.2%	100.0%
30-40	65	31	7	103
	63.1%	30.1%	6.8%	100.0%
More than 40	109	59	14	182
	59.9%	32.4%	7.7%	100.0%
Total	233	119	31	383
	60.8%	31.1%	8.1%	100.0%
Chi-square = 1.11 d.f. = 4		P-value = .892^{NS}		

Table 5 reports a statistically non-significant (χ^2 = 1.11, p = .173) association between the age of the farmers and the awareness level. This could be said that each group had almost the same awareness about livestock services rendered by the Livestock and Dairy Development Department. Findings show that the young

age (Up to 30) group of farmers had low (60.2%), medium (29.6%), and high (10.2%) levels of awareness. The age group (more than 40) had low (59.9%), medium (32.4%), and high (7.79%) level awareness about services rendered by the Livestock and Dairy Development Department. The hypothesis "age of the farmers and their awareness about Livestock extension services rendered by the Livestock and Dairy Development Department Directly related with each other" is rejected. Findings are supported by those of Akintunde (2015) as he found that livestock farmers' age was found not to be the determinant of their awareness about Dairy department extension services. Farayola *et al.* (2013) reported that the age of the farmers was negatively associated with their awareness about the extension services. On the other hand, in another study, Neiss *et al.* (2009) concluded that age and awareness level was positively associated with each other.

Table 6. Relationship between the education of the farmers and their awareness.

Education level of the farmers	awareness about services rendered by the LDDD			Total
	Low	Medium	High	
Illiterate	124	5	5	134
	92.5%	3.7%	3.7%	100.0%
Metric/under Metric	99	88	15	202
	49.0%	43.6%	7.4%	100.0%
Above metric	10	26	11	47
	21.3%	55.3%	23.4%	100.0%
Total	233	119	31	383
	60.8%	31.1%	8.1%	100.0%
Chi-square = 107.02 d.f. = 4	P-value = .000**			

Table 6 shows a statistically significant (P<0.05) association between the educational level of the farmers and the awareness. Findings infer that highly qualified farmers had more awareness about services rendered by the Livestock and Dairy Development Department as compared to the less educated farmers. The hypothesis "education of the farmers is directly related with their awareness about the livestock extension services rendered by Livestock and Dairy Development Department" is accepted. It also implies that by improving the literacy level of dairy farmers the likelihood of an increase in awareness about the public veterinary services will increase. Kankarne *et al.* (2017) had similar findings that education had a positive and highly significant (P<0.01) correlation with the awareness about the livestock services. Findings are also supported by those of Arora *et al.* (2006) and Rajput (2007) as they found that education was significantly related to the awareness level. It is deduced from the results that education is the key attribute playing an important role in creating awareness among the farmers about the livestock services. With the increase in educational level, the farmers could be enabled to access more information sources including modern gadgets like social media and other information communication technologies.

Table 7. Relationship between monthly income of the farmers and their awareness.

Income/Month	awareness about services rendered by the LDDD			Total
	Low	Medium	High	
No response	46	16	6	68
	67.6%	23.5%	8.8%	100.0%
Less than 15000	90	22	5	117
	76.9%	18.8%	4.3%	100.0%
15000-30000	85	41	5	131
	64.9%	31.3%	3.8%	100.0%
30000-45000	7	30	5	42
	16.7%	71.4%	11.9%	100.0%

More than 45000	5	10	10	25
	20.0%	40.0%	40.0%	100.0%
Total	233	119	31	383
	60.8%	31.1%	8.1%	100.0%
Chi-square = 93.015 d.f. = 8		P-value = .000**		

Table 7 shows a statistically highly significant relationship (P=0.000) between the income of farmers and the awareness Thus, the hypothesis is that income of the farmers is directly related to their awareness about livestock extension services rendered by the LD &DD is hereby accepted. This implies that with the change in the level of income the variation in awareness is likely. The farmers in the higher income group are likely to have more awareness, perhaps due to the increased opportunities to access more modern information sources. Whereas, the low-income group farmers could have fewer opportunities to access information sources followed by the limited access to extension services which could have led them to minimum access to information and awareness. K.S. (1999) have reported that economic condition or level of income influenced the information needs. Level of income derives the information needed preferences and access to the channels of information (Cai and Cao, 2012). This indicates that the farmers falling in a high-income group has more opportunities to prefer their needs and access the right channels to meet their information needs and build a high level of awareness on a particular aspect. N. (2008) was of the view that farmers with high income were users of newspapers, published magazines and the internet to access information.

Table 8. Relationship between the size of land holdings of the farmers and their awareness.

Size of landholdings (Acre)	awareness about services rendered by the LDDD			Total
	Low	Medium	High	
No land holding	55	23	5	83
	66.3%	27.7%	6.0%	100.0%
Less than 12.5 acre	167	75	5	247
	67.6%	30.4%	2.0%	100.0%
12.5-25 acre	6	16	11	33
	18.2%	48.5%	33.3%	100.0%
>25	5	5	10	20
	25.0%	25.0%	50.0%	100.0%
Total	233	119	31	383
	60.8%	31.1%	8.1%	100.0%
Chi-square = 101.20 d.f. = 6		P-value = .000**		

Table 8 shows that the size of landholdings was statistically significantly associated (P=0.000) with the farmers' awareness about the livestock services. This means that with the increase in landholdings there was a chance of an increase in awareness. Farmers with a large land size had high information needs which guide them to access more information through diversified information sources. Thus, the hypothesis "size of land holdings and the farmers' awareness about livestock extension services rendered by the Livestock and Dairy Development Department is accepted". The results are in line with the findings of Singh *et al.* (2020), who have reported that land size was directly related to the availability of livestock services and the awareness of the farmers about livestock services. Similarly, Chander *et al.* (2010) reported that progressive farmers receive better attention from livestock extension field staff. Therefore, progressive farmers are well aware of the livestock department activities as compared to small and landless livestock farmers.

Table 9. Relationship between the number of animals of the farmers and the awareness.

No. of animals	awareness about services rendered by the LDDD			Total
	Low	Medium	High	
1-5	96	32	5	133
	72.2%	24.1%	3.8%	100.0%
6-1	95	25	5	125
	76.0%	20.0%	4.0%	100.0%
11-15	25	30	10	65
	38.5%	46.2%	15.4%	100.0%
>15	17	32	11	60
	28.3%	53.3%	18.3%	100.0%
Total	233	119	31	383
	60.8%	31.1%	8.1%	100.0%
Chi-square = 62.38	d.f. = 6	P-value = .000**		

Table 9 accepts the hypothesis that there is a direct relationship between the number of animals owned by farmers and their awareness about L&DD department Extension services because there was a statistically highly significant relationship (P=0.000) between the number of animals and the awareness among farmers. This implies that with the unit increase in the number of animals, the information needs are likely to increase and farmer tends to be more aware through different information sources. Blum (2016) has reported that in Tanzania most of the poor livestock farmers did not know about the livestock extension services. Possible reasons behind this poor awareness could be the small herd of animals. Therefore, he suggested the expansion in livestock extension services to small farmers particular for the awareness building. In a study, Akintunde (2015) found that herd size owned by livestock keepers was significantly associated with their awareness and participation in livestock extension services. Similarly, Farayola *et al.* (2013) reported that farm size is a significant variable that influences the probability of awareness of the farmers about the extension services in their area. This is deducted that large farmer need more information however the need is to make sure that the information needs of the small farmers should be addressed so as are large farmer's needs are addressed.

CONCLUSION AND RECOMMENDATIONS

This study concludes that the socio-economic attributes of the farmers are strongly associated with the awareness about the livestock department services. Education, monthly income, size of landholdings, and the number of animals owned by the framers had a statistically significant and positive association with the awareness about the departmental services. This implied that with the increase in education, land size, income and number of animals there is a probability of an increase in awareness. Simultaneously, the information needs of the farmers in wake of an increase in income and farm size are likely to increase significantly. To meet these information needs the L &DD department should accelerate their capacity and diversify their working strategy. Keeping in view the findings, it is recommended that the Livestock department should render the services to livestock farmers without any discrimination; moreover, the department should also advertise about their free services so that each farmer can get benefit from the departmental services. Formal as well as non-formal educational activities among the farmers should be promoted. Livestock extension field staff can also play role in adult education by emphasizing the regular organizing of farmer field schools.

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