SOCIAL SCIENCES & HUMANITIES

Marketing of Apricot Supplied to the Market in Kandahar, Afghanistan

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ABSTRACT

Horticulture crops considerably amplify the country's profile. However, the quantity of apricot on the market has declined and its competitiveness has been challenged. This study focused on the marketing of apricot supplied to the market in Kandahar among 102 farmers. The respondents answered a structured questionnaire designed to explore the association between farmer's socio-demographic factors and the quantity of apricot supplied to the market, to map the marketing channels used by the supply chain players, as well as to identify the marketing constraints. The results from the descriptive analysis showed that major actors in the study area were apricot farmers, wholesalers, collectors, retailers, and exporters. The results also revealed that the chain was constrained by the lack of storage, price setting, lack of governmental support, poor quality of apricot, lack of supply, high transportation cost, and lack of demand. Meanwhile, the results of the chi-square analysis revealed that farm size, education level, farming experience, and family size were significantly associated with the quantity of apricot supplied to the market except for farmer's age. The findings of this study indicate that appropriate intervention mechanisms such as land acquisition

schemes and education awareness programs are necessary for the expansion of farm size and farmers' education to produce an increased quantity of apricot.

INTRODUCTION

Afghanistan is a landlocked and mountainous country comprising approximately 65.2 million ha of land where agricultural lands cover 38.7 million ha (Central Statistics Organization [CSO], 2009; Kakar et al., 2019). Approximately 70% of the population inhabits in rural areas and 61% of all households earn income from agriculture (Leao et al., 2018). For the country's sectoral GDP, agriculture accounted for 20.5%, 21.2% by industry, 51.5% services, and 4.6% tax on imports (Department of National Statistics and Information Authority [DONS&IA], 2019). Specifically, the contribution of horticultural crops to the national GDP accounted for 34% of the whole agricultural GDP, and 6.7% of national GDP (Ministry of Agriculture, Irrigation and Livestock [MAIL], 2019). Afghanistan agriculture is dominated by smallholder farmers cultivating less than 1 ha of the farm (Maletta, 2003).

Historically, Afghanistan has traditionally produced mainly horticultural crops such as fresh and dried fruits, nuts, and vegetables. Fresh produce such as almond, pomegranates, pistachios, grapes, and apricot are produced and exported to global markets since 1970 and earn dignity in global markets (World Bank, 2014). However, the quantity of apricot supplied to markets by Afghanistan has declined over the years from 2014 to 2018 (MAIL, 2019). The situation has adversely affected the farmer's actual income as productivity suffers heavily while the marketing of horticultural crops has increased the selling costs across the supply chain.

The world apricot production in 2017 was predicted at 4.26 million metric tons. Turkey, Uzbekistan, Algeria, Iran, and Italy are the top five apricot producers where Afghanistan is ranked 9th after Pakistan, France, and Spain in the world in 2017. The apricot production in most apricot producing countries largely involves smallholder farmers. There has been a significant rise in the global apricot production from 3.3 million metric tons in the year 2006 to 4.26 million metric tons in 2017 as shown in Table 1.

Afghan apricot production has fluctuated from 2010 to 2018 as depicted in Figure 1. In the year 2010, the quantity of apricot produced in Afghanistan was estimated at 66,560 tons and an upward trend of increasing production was observed for four consecutive years before it declined in 2016. There was a significant increase in 2017 when apricot production upsurges from 57,894 tons in 2016 to 131,816 tons in 2017. However, the increase in production failed to regain its momentum as production fell to 109,086 tons in 2018 (MAIL, 2019). This is mainly due to the consequence of decades of war including the destruction of orchards,

Table 1

Global apricot production from 2006 to 2017 (in million metric tons)

Year	Production (MMT)	Year	Production (MMT)
2006	3.30	2012	3.84
2007	3.80	2013	4.03
2008	3.73	2014	3.37
2009	3.66	2015	3.97
2010	3.32	2016	3.88
2011	3.76	2017	4.26

Source: Food and Agriculture Organization of the United States Statistics [FAOSTAT] (2018) and Statista (2018)

Total Production

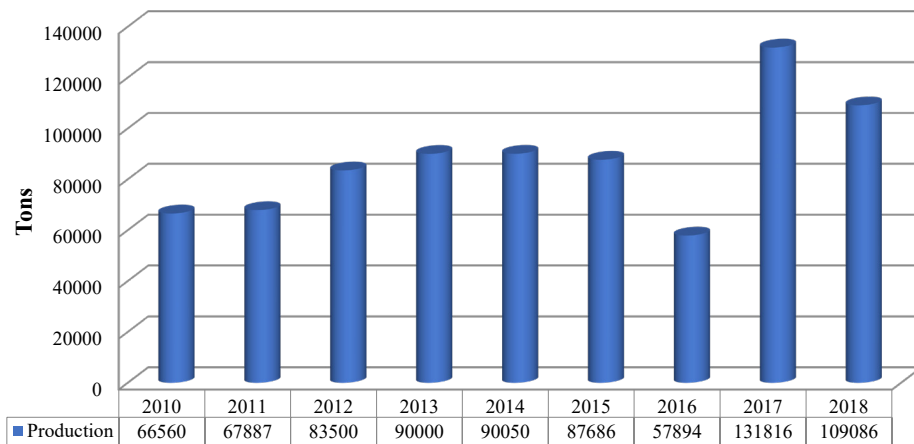|	2010	2011	2012	2013	2014	2015	2016	2017	2018
Production	66560	67887	83500	90000	90050	87686	57894	131816	109086

Figure 1. The trend of apricot production in Afghanistan (tons)

vineyards, farms, lack of horticulture modernization, and shortage of investment caused an almost total loss of access to the international markets (MAIL, 2016).

Moreover, farmer's education, farm inputs, biodiversity, social system, and political system, and the economic system are among the factors hindering agricultural production in Afghanistan (Sarhadi et al., 2014). Agricultural marketing has been recognized as the most important energetic force of economic development and has a guiding and stimulating impact on the production and distribution of agriculture commodities. In Afghanistan, the performance of agriculture marketing is constrained by a number of factors such as poor quality of agricultural produce, lack of market facilities, lack of extension services that ignored marketing improvement, poor

linkage of research, lack of extension service, lack of marketing information, limited access to credit, and transportation problems (Asian Development Bank [ADB], 2018). Furthermore, the consequences of decades of war including the destruction of orchards, vineyards, farms, lack of horticulture modernization, and shortage of investment in Afghanistan have caused almost a total loss of access to markets (MAIL, 2016). Farmers in Afghanistan, especially in the province of Kandahar, are more centered on the production part, yet there is limited market information about their products and the marketing growth is rather slow.

In addition, National Union for Horticulture Development [NUHDA] (2008) identified major problems in increasing the sales of apricot in Afghanistan's value chain, namely the poor quality of production, poor packing, and branding for fresh and dried apricots. Most importantly, the chain coordination in the apricot industry was very poor. Supportive links that have been identified indicated the use of poor packing materials, lack of standards certification, lack of credit, poor roads, and shortage of farmland in the apricot production and a weak value chain. It can be concluded that the value chain of Afghan apricot is less competitive due to the chain players lacking in skills to be effective and efficient. Another study conducted by Roots of Peace [ROP] (2016) regarding best practices for apricot production and marketing in Afghanistan revealed that the marketing channels for apricot farmers were limited. Most of

the farmers are selling their produce to collectors and wholesalers that sometimes control the market price.

The program of Commercial Horticulture and Agriculture Marketing (CHAMP) was introduced by United States Agency for International Development [USAID] (2014) since 2010 to work with Afghan farmers to increase the yield and quality of horticultural crops such as pomegranates, grapes, apricots, apples, almonds, and melons in order to accelerate new export channels on the global market. CHAMP promotes and encourages every stage of the market process in order to improve the effectiveness of Afghan horticulture products throughout the value chain. CHAMP's agribusiness activities stimulate growth in Afghanistan's agricultural sector by creating jobs, improve livelihoods, and boost the economy. Activities in this program include handling pre and post-harvest quality improvements for fresh fruit to meet modern market requirements, linking farmers with traders, and traders with domestic and international markets, facilitating the export of selected fresh and dry fruits to regional and international markets and improving the performance of new and existing businesses.

Since apricot is the fourth main agricultural produce in Afghanistan, the GDP of apricot contributes significantly towards the country's income (United States Agency for International Development, 2017). Furthermore, according to Sharzai (2016) and MAIL (2019), apricot production faces many challenges due to inadequate attempts

to revamp marketing link activities and poor market knowledge among actors, local varieties, and aged farms. By improving marketing activities in apricot production, farmers are able to generate better incomes that can boost the economy of the country (World Bank, 2018). However, apricot production in Afghanistan is constrained by several factors such as regular droughts and other natural disasters, conflict in the region, degradation of the land, poor technology, inadequate inputs, poor infrastructure, poor knowledge, lack of apricot supportive services (MAIL, 2016).

MAIL has introduced the National Comprehensive Agriculture Development Program 2016–2020 as the development policy for the country. The extension of horticulture land and market improvement is one of the seven strategic fundamentals and pillars of the program. Beneath the pillar of horticulture land extension and market improvement, the importance and priorities are (1) extension of the horticultural acreage; (2) upsurge crop productivity; (3) development of value chains for selected crops where the country has a high comparative advantage; (4) infrastructure and market improvement; (5) upgrade of standardization and certification; (6) provision of support to the private sector, (7) growth of crop nurseries through adaption research; and (8) expansion of the area under conservation agriculture.

Several studies have been conducted in Afghanistan regarding fruit marketing, however, a specific study on the marketing of apricot supplied to the markets has yet to be carried out. In order to bridge the gap, it is essential to determine the association between socio-demographic factors and the quantity of apricot supplied to markets and marketing channels used by the supply chain actors in the study area. Thus, the aims of this study were to map the marketing channels used by the supply chain players; identify the marketing constraints faced by the apricot farmers; and to determine the association between farmer's socio-demographic factors and the quantity of apricot supplied to the market in the study areas.

MATERIALS AND METHODS

In order to select a representative sample, a multi-stage random sampling method was applied to select apricot farmers. In the first stage, Arghandab district was selected upon consultation with the agriculture officer of the area. In the second stage, out of 72 villages in the district of Arghandab, five (5) apricot villages were purposively selected based on the quantity of apricot production and accessibility. In the third stage, a registered list of apricot farmers was obtained from the Department of Agriculture, and the size of the sample was selected according to Yamane's (1967) formula where the actual size of the farmer's population is calculated with 5% level of precision. Out of 154 farmers from the registered list, 112 farmers were selected randomly based on proportional to the population size of the selected villages. Finally, primary data was collected using a structured questionnaire via face to face

surveys from 102 farmers according to their availability in Kandahar.

The data collected were analyzed using descriptive analysis and chi-square analysis. Descriptive analysis was employed to summarize the data into simpler and easier forms that could be easily understood and managed. The summarized data can be used for further analysis to present a comprehensive explanation of the results. Additionally, descriptive analysis can be used to categorize a large data set into smaller groups. Chi-square is a technique that computes the statistical significance of the cross-tabulation form. This analysis is broadly used by the researchers to test the significance of the association between two categorical attributes, to test the goodness of fit, and to test the homogeneity or the significance of population variance (Kothari, 2004). Chi-square analysis is one of the simplest methods to test the significance of the relationship between the variables. It is also an inferential statistic that is typically used to analyze the association between two variables (Field, 2009). In this study, the significant level was determined at a 5% level. For instance, the null hypothesis was rejected if P-value ≥ 0.05 (Field, 2009). The focal point of this study was to explore the association between the socio-demographic profile of the farmers and the quantity of apricot supplied to the market. The null and alternative hypotheses were developed as follows:

H_0: There is no association between the farmer's socio-demographic factors and the apricot quantity supplied to the market.

H_a: There is an association between the farmer's socio-demographic factors and the apricot quantity supplied to the market.

RESULTS AND DISCUSSION

This section presents the socioeconomic and farm characteristics of the sampled apricot farmers including their age, gender, family size, education level, farming experience, farm size, land ownership, and quantity of apricot supplied to the market. The marketing constraints faced by the farmers and the results of chi-square analysis are also presented.

Socio-economic Characteristics of the Apricot Farmers

Table 2 demonstrates the socio-demographic characteristics of apricot farmers in the study area. The results revealed that approximately 46.1% of the apricot farmers were aged between 40-49 years, 35.3% were aged between 30-39 years, whereas very few (1.0%) of the total number of farmers were aged between 60 and above years old. The average age of the farmers was 38.5 years. This indicates that apricot production is managed by young farmers in the study area. Interestingly, Maletta (2003) found that the average age of Afghan farmers was approximately 47 years old. It is reasonable to attribute the difference between the findings as to the area of the research. The research of Maletta (2003) was conducted throughout the agro zones of Afghanistan

Table 2

Socio-economic and farm characteristics of the apricot farmers

	Category	Frequency	Percentage	Mean
Age	20 – 29	11	10.8	
	30 – 39	36	35.3	
	40 – 49	47	46.1	
	50 – 59	7	6.9	38.5
	60 – and above	1	1.0	
	Total	102	100.0	
Gender	Male	102	100.0	
	Female	0	0.00	-
	Total	102	100.0	
Family size	1 – 3	34	33.4	
	4 – 6	38	37.3	
	7 and above	30	29.4	
	Total	102	100.0	
Education level	No formal Education	71	69.6	
	Primary School	20	19.6	
	Secondary School	11	10.8	-
	High School	0	0.00	
	Total	102	100.0	
Farming experience/ Year	Less than 10	16	15.7	
	10 – 20	63	61.8	16
	21 – and above	23	22.5	
	Total	102	100.0	
Farm size (Ha)	Less than 1	69	68.1	
	1 - 2	27	26.2	0.394
	More than 2	6	5.7	
	Total	102	100.0	
Land ownership	Farmer's Property	85	83.3	
	Belongs to farmer's family	8	7.8	
	Leased	9	8.8	-
	Total	102	100.0	

Table 2 *(Continued)*

	Category	Frequency	Percentage	Mean
Quantity Supply (Kg/Year)	Less than 10,000	35	34.3	
	10,000 – 20,000	45	44.1	
	21,000 – 30,000	13	12.7	15299.2
	More than – 30,000	9	8.8	
	Total	102	100.0	

while this study only covered the Arghandab district in Kandahar.

All the sampled farmers were male (100%). This finding is more elaborated by Pain et al. (2016) who stated that women face barriers to working outside as villagers in Kandahar were mostly culturally conservative where females were commonly engaged in home-made tailoring. There are, of course, exceptions, with examples of married females managing and earning livestock revenue. Most of (37.3%) the family members comprised of 4-6 while (29.4%) of the family members were 7 and above. The average family size of the sampled farmers was 5 head. Most of the farmers had no education (70%), 19.6% of the farmers obtained primary education while only a few numbers of farmers obtained secondary education (10.8%). Majority of the farmers had 10-20 years of farming experience (61.8%), 22.5% had between 21 and above years of farming experience, whereas the remaining had less than 10 years of farming experience (15.7%). The average farming experience of the farmers was 16 years.

The farmland areas owned by the farmers comprised approximately 68.1% of apricot cultivation on less than 1 ha, a portion of the farmers cultivates on 1-2 ha (26.2%) and the rest of the farmers cultivate on more than 2 ha of land (5.7%). The average farm size for apricot production was 0.394 ha. This average indicates that majority of the apricot farmers in the study area are operating on a small scale. Maletta (2003) also reported that most Afghan farmers owned less land for cultivation. Majority of the farmers own (83.3%) their farmland, 8% of the farmers cultivate on their family land which does not directly belong to them, while the rest cultivate on rented (9%) farmland. The majority of sampled farmers supplied apricot ranging between 10,000 kg –20,000 kg (44.1%), 34.3% of the farmers supplied less than 10,000 kg and some of them supplied 21,000 kg – 30,000 kg (12.7%) while 8.8% of the farmers supplied more than 31,000 kg of apricot. The average quantity of apricot annual supply was 15,299.2 kg.

Marketing Channels of Apricot in Kandahar

Agriculture marketing can be defined as the whole set of production, distribution, and marketing process through which the desired product is delivered to the consumer (Woods, 2004). Agriculture marketing deals with the production management initiates from harvest to its final use. Activities such as collecting, grading, packaging, storing, shipping, selling prices, market information, and extension services are the various components that have an important role in the marketing system of agricultural produce (Yadav & Chhatwal, 2020).

In many countries, fresh products are marketed through a range of various channels. These channels include the local market, wholesale market, retail and middleman, and street vendor. Marketing channels provide a visual movement of the product from conception to end consumer,

each involves different actors in the chain with specific roles and linkages (McCormick, 2001). Marketing channels are frequently used to place performers in the chain for a better understanding of interfaces in order to determine the obstacles and resolve possible issues arise at various sequences (Anandajayasekeram & Gebremedhin, 2009). Marketing channels of apricot in Kandahar province of Afghanistan resemble other fruits like grapes, pomegranates, and figs which comprise of the connections of series of actors such as producers/ processors, intermediaries, and consumers. The current marketing channels of fresh and dried apricots are illustrated in Figure 2 and Figure 3 respectively.

The results of fresh apricot channels showed that the farmers directly sold their apricot to wholesalers (69.6%), collectors (18.6%), and retailers (11.8%) (Figure 2). Most of the wholesalers sold their apricot to the retailers (78.9%) and directly to
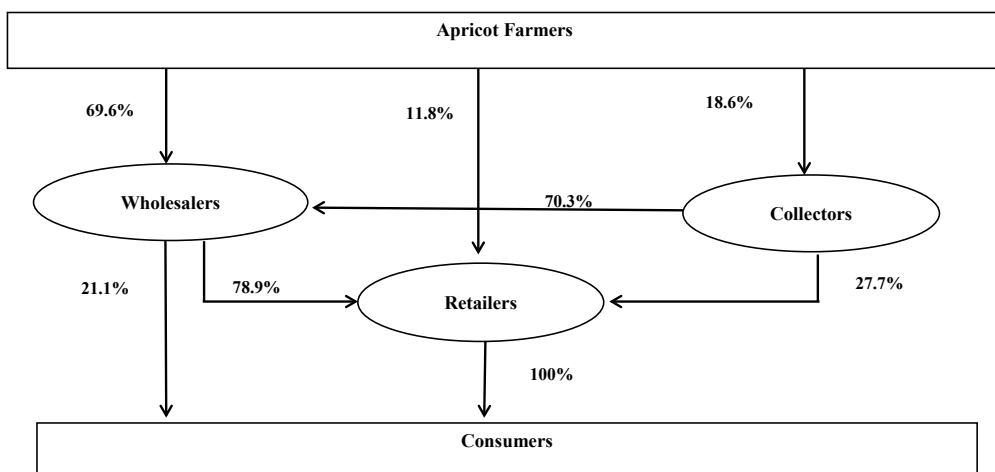

Figure 2. Fresh apricot marketing channels in Kandahar

consumers (21%). Meanwhile, the collectors, also known as small wholesalers sold their apricot to wholesalers (70.3%) and to retailers (27.7%). The retailers subsequently sold their apricot to consumers (100%). The results indicated that wholesaler plays a major role in the buying and selling process within the apricot marketing channel in Kandahar. These findings are congruent with the studies of Aujla, Abbas, Mahmood, & Saadullah (2007) and Jaji (2016) who also found that fruits marketing channels were mostly led by wholesalers in Pakistan and Malaysia, respectively. The marketing channels usually vary from one product to another as well as from one province to another. For each product, there is always more than one marketing channel.

On the other hand, the results of dried apricots showed that the farmers sold their processed apricot to wholesalers (60.2%), collectors (20.8%), exporter (11.2%),

and retailers (7.8%) (Figure 3). Most of the wholesalers sold their apricot to the exporter (88.2%), retailers (11%), and directly to consumers (0.8%). The collectors (or small wholesalers) sold their apricot to wholesalers (83.6%) and to exporters (16.4%). The retailers subsequently sold their apricot to consumers (100%). For dried apricot, exporters play a significant role along the supply chain as compared to fresh apricot. Exporters supply in huge amounts after sorting, cleaning, packaging, and branding mainly to India and Pakistan and some amount to the United Arab Emirates and Europe.

Constraints associated with the marketing of apricot faced by the farmers are related to the marketing of apricot in supplying pattern. The major constraint faced by the sampled apricot farmers was the lack of storage and about 90% of farmers reported this problem. The survey also
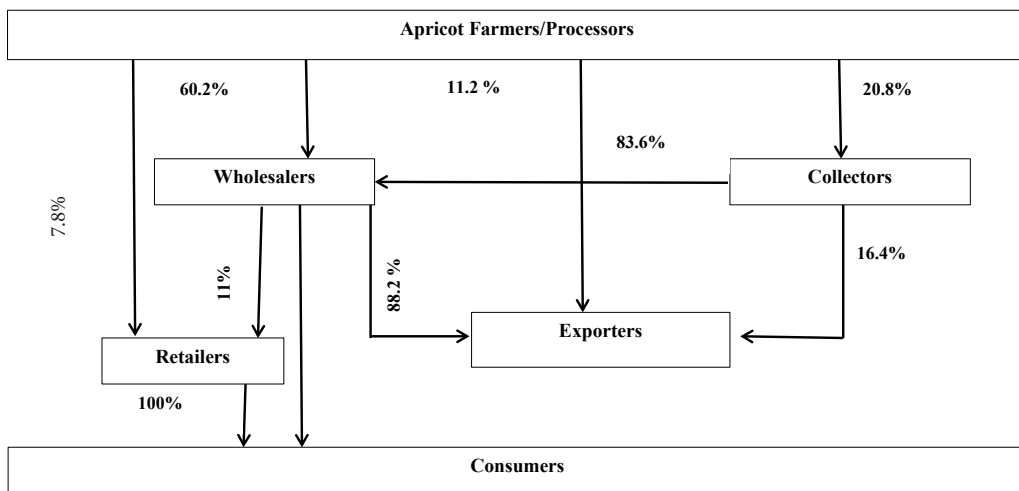

Figure 3. Dried Apricot Marketing Channels in Kandahar

showed that there were no regulated cool storages for apricot produce in the study area. Price setting was another major problem in the study area. Farmers were unaware of market prices as well as the supply and demand due to the ambiguity ensued by the informal regulation. Price setting ranked second in the survey, followed by a lack of government support for improving the market, poor quality of apricot, lack of supply, high transport cost, and lack of demand as summarized in Table 3.

Table 3

Major apricot marketing constraints

Marketing Constraints	Frequency	Percentage	Rank
Lack of storage	92	90	1
Price setting	79	77.5	2
Lack of Gov. support for apricot market	62	60.7	3
Poor quality of apricot	51	50	4
Lack of supply	26	25.5	5
High transport cost	13	12.7	6
Lack of demand	5	4.9	7

Note: Multiple responses from respondents

Chi-square Analysis

Chi-square was used to test statistical independence. The hypotheses were formulated to establish an association between the socio-demographic profile and the quantity of apricot delivered to the market. If the socio-demographics are not associated, the outcome of the statistical test will be insignificant and the null hypothesis will not be rejected, which means that there is no statistical association between the quantity of apricot and socio-demographics, and vice versa. That is, if the variables between dependent and independent variables are statistically significant, then the null hypothesis will be rejected, indicating that there is an association between dependent and independent variables.

The following hypotheses were tested for this study:

H_0: Farmer's socio-demographic factors have no association with the quantity of apricot supplied to the market.

H_a: Farmer's socio-demographic factors have an association with the quantity of apricot supplied to the market.

Chi-square analysis revealed that 4 out of 5 independent variables were significantly associated with the dependent variable as shown in Table 4. These variables were education level (p=0.046), farm size (p=0.000), farming experience (p=0.027),

Table 4

Association between socio-demographic factors and the quantity of apricot supplied

Variable	X^2	d.f	Sig.	Decision
Age	12.341 [a]	12	0.419	Fail to reject H_0
Education level	37.144 [a]	6	0.046*	Reject H_0
Farming experience	27.905 [a]	6	0.027*	Reject H_0
Family size	9.810 [a]	9	0.038*	Reject H_0
Farm size	88.716 [a]	9	0.000**	Reject H_0

Note: Dependent Variable: Quantity of Apricot Supplied, **Significant at 1% level of significance, *Significant at 5% level of significance

and family size (p=0.038) of the farmers confirming their importance with the quantity of apricot supplied to the market. On the other hand, the age of the farmers showed a non-significant association with the quantity of apricot supplied to the market.

Farmer's age is not associated with the quantity of apricot supplied to the market as indicated by the alpha value (α=0.419) at a 5% significance level. The null hypothesis which assumes that there is no association between the age of farmers and the quantity of apricot supplied to the market is accepted. This finding is in line with the studies conducted by Jaji et al. (2018) who revealed a non-significant relationship between farmers' age and quantity of pineapple supplied to the market. On the contrary, Negasi (2015) found a significant relationship between farmers' age and quantity of fruits and vegetables supplied to the market. The education level is associated with the quantity of apricot supplied to the market. The alpha value

(α=0.046*) at a 5% level of significance indicated a rejection of the null hypothesis and the education level of farmers is significantly associated with the quantity of apricot supplied to the market. This finding is congruent with the studies conducted by Ayalew (2015), Hailu (2016), and Jaji et al. (2018) where farmer's education is significantly associated with the quantity of potato and fruits supplied to the market.

Farming experience is statistically significant with the quantity of apricot supplied to the market at a 5% level of significance. The alternative hypothesis which assumes that there is an association between farming experience and the quantity of apricot supply is accepted (α=0.027*). This finding is in line with the studies conducted by Mahlet et al. (2015) on the significant relationship between farming experience and tomatoes and potatoes supplied to the market. Jaji et al. (2018) and Negasi (2015) also showed that farming experience is significantly associated with the quantity of pineapple supplied to

markets. The family size of the respondents also showed a significant association with the quantity of apricot supplied to the market. The significance test at a 1% level with alpha value (α=0.038*) indicated family size significantly associated with the quantity of apricot supplied to the market. This finding is in line with the studies conducted by Hailu (2016) and Negasi (2015) where the family size is significantly associated with the quantity of fruits and vegetables supplied to the markets.

Finally, farm size also had an association with the quantity of apricot supplied to the market. The significance test at a 5% level with alpha value (α=0.000**) indicated the acceptance of the alternative hypothesis and farm size can be concluded as statistically associated with the quantity of apricot supply to the market. This finding is in line with the studies conducted by Bosena, Bekabil, Gebremedhin, & Hoekstra (2011) and Jaji et al. (2018) where the size of the land allocated for cotton and pineapple was associated with the supply of cotton and pineapple to the market respectively. Moreover, studies by Negasi (2015), Hailu (2016), and Ayelech (2011) also showed a significant relationship between farm size and quantity of fruits and vegetables supplied to the markets.

CONCLUSION

It can be concluded that apricot is cultivated by smallholder farmers and the production is managed by young farmers. Most of the farmers own their farmland in the study areas. The marketing channels were mostly controlled by wholesalers where other intermediaries were supplying a smaller amount of apricot compared to wholesalers. The most important constraints regarding the marketing of apricot were lack of storage and price setting. Family size, education level, farming experience, and farm size had a significant association with the quantity of apricot supplied to the market. Based on the findings from the present study, appropriate intervention mechanisms such as the expansion of farm size programs and education awareness programs are necessary to enable the apricot farmers to increase their production, hence the quantity of apricot supply to the market. These interventions will enhance the economy of the country in general and farmers' livelihood in particular.

This study contributes to the knowledge where marketing channels for both fresh and dried apricot were mapped and the socio-demographic factors associated with the quantity of apricot supplied in Kandahar were identified. The study further contributes to the identification of these factors and suggested measures that will benefit the farmers and executing the operations in a manner so the supply quantity can be increased to the market. The research outcomes help farmers, traders, and service providers engaged in the study area to have a better understanding of apricot production and marketing. Furthermore, the findings also provide policymakers with information and perspective of the entire market channels that can be used as a framework for formulating apricot marketing development programs and

enhancing the marketing channels for apricot.

However, the small number of respondents participating in this study posed a limitation which prohibited the generalization of the results into entire Afghanistan since the results were only specific to Kandahar province. In addition, finding the apricot farmers and who are willing to participate in the study was a difficult task because of security concerns. Therefore, future research on this topic should include more apricot farmers from different provinces of Afghanistan in order to bridge the gap found in the literature so that the findings can be generalized beyond the samples in this study.

ACKNOWLEDGEMENT

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