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The Impact of Market Outlets Choice on Beekeepers' Income in Rural Poor: A Case Study of Badakhshan Province

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Abstract
This research carried out to uncover the effect of beekeeping on the income of rural poor and to which extent that market outlet choice affects the income of beekeepers. The findings of Multinomial Logit regression, from 129 questionnaires of 4 districts indicate that there is no relationship between market outlet choice and income of beekeepers. The income of beekeepers is mostly affected by their family size and working experience. But the factors affecting to choose the home selling market outlet is very different from those of three other channels. In order to promote the income of beekeepers, it's recommended that the government and other involved NGOs work on arrangements on wholesale opportunities for beekeepers. Because over 102 out of 129 samples have indicated that their products aren't sold out on time. It means that there is a huge opportunity of filling the gap of honey demand in Afghanistan by promoting the links between producers and buyers.

Keywords: Market Outlet, Beekeeping, Rural Poor, Badakhshan, Afghanistan

1. Introduction

Afghanistan one of the least developed countries in the world struggling to keep up with the rest of the world in term of economic development and growth. As the majority of the country is suffering from the poverty (CSO, 2009; Central Statistic Organization, 2014) and over 80% of the population rely on livestock and agriculture as their main sources of income, which is not modernized so far (IPC, 2019) it's hard to achieve economic development.

In recent years in cooperation and financial aid of international community and NGOs, the government of Afghanistan has implemented major projects to improve income and livelihood in rural areas (Citizen Charter Program, 2019). To address this issues the Government of Afghanistan with the financial assistance of international community has worked and implemented several initiatives. For instance by different projects they have helped the rural poor to grow their fruit orchard and beekeeping business in Agriculture sector, but still the farmers are facing problems in making the most income from their activities. From the production to the marketing

there are lots of challenges that hurdles the activities farmers to making money. To solve this problem the farmers especially the beekeepers are using many market outlets to sell their products, for instance they are selling from home, sending the honey to the local shops, wholesalers, contractors, and selling through branches in other provinces. Till now there is no any research in the area of value chain of honey production and also the impact of market outlet choice is vague in Badakhshan province despite its importance in income and rural development (Marsden, Banks, & Bristow, 2000). In this research the impact of every market outlet would be clear and the best choice would be pointed.

Market outlet choice have different impact on income when chose to sell a product, whether its beekeeping (Tarekegn, Haji, & Tegegne, 2017) or tomato production (Tura & Hamo, 2018). In some cases the marketing chain has affected the income of producers from their honey, for instance the income of producers from their honey production is less than those of retailers in the case of Ethiopia (Yamaneberhan, 2012). The question is to which extent does the market outlet choice affects the income of beekeepers in Badakhshan province of Afghanistan. The hypothesis of this paper is that the market outlet choice has a significant impact on income of rural poor. To uncover the impact of marker outlet choice on income, the research designed to ask the every interviewee whether they are selling their product in certain markets. This year the production due to cold weather has been delayed, so the research covers the production of last year (2019).

The findings of this research will help the government and NGOs (Non-governmental Organizations) to address the market problem of produced honey which faces challenges and hasn't been sold since last year. The study also will pave the way for future studies in the area to tackle such challenges in another research about other products. As the research area covers the rural poor, and those with low income to find the best market outlet will have a positive impact on their income. The government and NGOs have helped the beekeepers with tools, trainings, and some extension services. But they do less about marketing and helping the beneficiaries of their honey projects to gain the most from this activities. In rare cases some beekeepers just send to attend in Ag-fairs in Kabul the capital. Also it's worth to mention that the beekeeping sector doesn't receive any attention from the academia for research about its challenges and problems. So this research solves the problem of best market outlet choice for honey production and kicks start a new trend for analyzing the local problems empirically from academia. Because in understudy districts the beekeeping is one of the major income sources (Department of Agriculture and Livestock, 2020).

The literature which has been read so far in market outlet choice, has focused on four main points. These are demographic characteristics of producers, geographical characteristics of production area, product itself, and financial facilities and institutions. As farmers are producing different products, and they are in large numbers, somehow the market is a competitive one. Every farmer will try to maximize his/her gain from selling of their products, but they have many choices or market outlets, which they should choose from. In lots of cases the market outlet choice is determined by gender, age, marital status, education and some other demographic variables, so their gains from this activities will vary based on mentioned characteristics (Nxumalo, Oduniyi, Antwi, & Tekana, 2019; Dessie, Abate, & Mekie, 2018). As farmers are in large number their collective activity will affect their choice of market outlet and their earnings in turn too (Xaba & Masuku, 2013) which have happened in case of honey producers in Chena district of Ethiopia, they are selling most of their product via cooperatives (Tarekegn, Haji, & Tegegne, 2017). In some area the farmers are having problem as they don't have market information to sell their product in the best market. Assisting them working in groups and sharing information with each other also will help with market outlet choice, which increases their earnings from market outlet selection (Tura & Hamo, 2018; Tadesse, 2011). In addition in developing countries the farmers and majority of the people have no or less formal education. By giving them some education and training regarding marketing, production, and so on they will overcome some of the burdens which decreases their income from market selection (Omari, 2010).

The second set of variables affecting market outlet choice in the literature which have been reviewed is the geographical distance to markets, depending on product characteristics. For dairy, vegetables and other perishable products the long distances to urban centers limiting the market outlet choice and earnings (Kuma, Baker, Getnet, & Kassa, 2013; Xaba & Masuku, 2013). As the honey is not one of those perishable products, the geographical distance is not affecting the product itself, but poses obstacles in the marketing process. Reaching the reliable

market especially to urban, regional and international markets are main problems, which locating in remote area will affect the income of farmers (Omari, 2010). Another challenge which comes from geography is the integration process to the market. They are faced challenges trying to access international markets by forging links with lead firms, they have difficulties to sustain vertical linkages and the interventions are insufficient when it come to market oriented activities (Mitchell, Keane, & Coles, 2009). Which affects the amount of honey supplied to the market. Beside that also some personal characteristics also have positive impact on the amount of marketable honey, which in turn affects the income of beekeepers (Abebe, 2009).

Developing countries are struggling to find financial resources, which hiders the market entry for small scale fruit producers in some cases (Tadesse, 2011), the access to credit is also affecting positively market outlet choice (Tura & Hamo, 2018). Helping with farmers will affect both farmers and the country as a whole (Otto & Varner, 2005). Some countries are helping with the beekeepers in different sections to overcome the financial problem (Miklyaev, Jenkins, & Barichello, 2013). The missing point in all of these papers and market outlet related research is that, they didn't take the effect of market outlet choice on income of farmers and producers. It's worth mentioning that market outlet choice has impact on income, economic development, employment, and food security as other value chain activities (Bammann, 2007; Hailu, May 2016; Lie & Rich, 2016; Rich, Baker, Negassa, & Ross, 2009). This paper took this important issue as main objective of the research to uncover in which extent the market outlet choice affects the income of rural honey producer in Badakhshan province of Afghanistan.

2. Method

In this paper the sampling has been in done in multi-stages. Looking down to the research area which is Badakhshan province, there are 28 districts, from which nearly 10 districts are suitable for honey production (Majidi, 2020). As some districts are under control of Taliban, we have selected 6 safe districts for this research. The districts under sampling are Baharak, Shuhada, Jurm, and Kishem and data collected in the month of August 2020 but due to security reason the access to the other two districts was unsafe. The mentioned districts cover over 50% of honey producers of Badakhshan province. From selected districts, villages have been randomly pulled out and the data has been collected accordingly. The number of samples has been calculated from the following formula:

$$n = \frac{N}{1+(N(e^2))} = \frac{600}{1+(600(0.08^2))} = \frac{600}{4.84} \approx 124 \qquad\qquad (1)$$

In the above equation, n stands for sample size, N is the total honey producers' population and e denotes the level of precision.

In total 150 questionnaires have been collected in randomly base in order to get avert the questionnaires with missing data. From which 129 have been used the rest had missing data and we were unable to include it into the analysis. From the total number of sample, kishem (29), Baharak (49), Jurm (38) and Shuhada (14) have been collected. These four districts are the main producers of honey and geographically very suitable for honey production and beekeeping industry.

By using both structured and semi-structured questionnaires the primary and secondary data have been obtained from beekeepers, producers, and civil servants. For more supporting information and data during questionnaire development, focused group discussions and key informant interviews have been carried out with traders, producers, and officials to make the questionnaire more reliable. The structured questionnaire was used to capture the determinants and affecting factors of market outlet choice as well as socio-economic and demographic characteristics of interviewees. We have selected data collectors from the mentioned districts residents in order to collect the most reliable data from the field while making the process run smooth and faster.

In this research two kind of methods have been used to do the analysis. The first one is multivariate Probit Regression model which is an excellent model to analyze the market outlet choice, which is a binary outcome (Gujrati, 2004; Cappellari & Jenkins, 2003). The second one is the OLS method to analyze the determinants of

income. The multinomial logistic Regression model is used to find out the determinants of market outlet of beekeepers. The analysis applied for the following model:

$$M.outlet = \beta_0 + \beta_1 NUC + \beta_2 MI + \beta_3 MT + \beta_4 ES + \beta_5 HQ + \beta_6 NB + \beta_7 BE + \beta_8 PCO + \beta_9 PM + \in \quad (2)$$

In model 2 market outlet is a factor variable for market choices. NUC indicates the nearest urban center which is continuous variable in KMs. MI stands for market information, which takes 1 if the beekeepers have information about market situation and 0 otherwise. MT is a binary variable for marketing training which takes 1 if they took one or taking one and 0 otherwise. ES shows the beekeeping extension services as binary variable, which takes 1 if they are receiving and 0 otherwise. HQ stands for honey quantity which is continuous variable as KGs in monthly bases. NB is stands for number of beehives which is a continuous variable. BE is the beekeeping experiences of beekeepers which is a continuous variable. PCO is the price of honey for certain marketing outlet as AFNs. PM is the payment method as binary variable which takes 1 if cash and 0 otherwise. $\in$ is the residuals and βs are the parameters. In second model we are going to analyze the impact of every market outlet choice on households' income. The following model is intended to be used:

$$Y = \beta_0 + \beta_1 MOC + \beta_j Xi + \in \quad (3)$$

In model 3 Y stands for monthly income of households in AFNs. MOC is the market outlet choice of the beekeepers as factor variable for all choices. And Xi is the matrix of demographic characteristics of beekeepers (age, education, household size, number of educated member etc.)

3. Results

In order to present the empirical findings, this part divided into two parts. At first the descriptive statistics are reported and in the following the findings from Multinomial Logit regression and OLS regression have been reported. To start with, in the table 1, the descriptive statistics of the variables has been reported. As it is obvious in the table there is mean, standard deviation, minimum and maximum have been listed for all variables. For more detail look at table 1.

Table 1: Descriptive Statistics of Variables Used in Analysis

Variable	Obs	Mean	Std. Dev.	Min	Max
Age	129	39.68992	9.995154	20	70
Education	129	8.565891	6.525006	0	16
Experience	129	9.085271	6.530016	1	38
Household size	129	8.511628	3.869182	0	21
Last year production	129	512.7674	607.8735	0	3700
Income	129	251886.7	333557.2	7000	2220000
Trainings	129	0.48062	0.501572	0	1
Other income	129	9514.851	8628.863	0	70000
Total income	129	259336.3	332805.1	7000	2220000
Beehive number	129	26.65116	23.50487	2	176
Urban distance	129	4.810853	6.032467	0	25
Market information	129	0.31783	0.467448	0	1
Marketing education	129	0.193798	0.396814	0	1
Consultation of Gov. NGOs	129	0.426357	0.496475	0	1
Local market price	129	304.6512	244.5054	500	700
Wholesale market price	129	272.1094	226.0432	400	650
Contract price	129	18.21705	91.62977	400	550
Home selling price	129	369.7674	220.9195	450	800

As indicated in table 1, 19 variables have been used in this paper. Dependent variable here is the income of beekeepers and the interested variable is market outlet choice. Market outlet choice of beekeepers is 4 channels in Badakhshan, namely, wholesale, selling from home, contract and local market retail selling. Nearly all of the farmers using more than one market outlet to sell their product. But every one of the farmers are using at least one market as the main channel for selling the honey they are producing. So the biggest market outlet of farmers which they have indicated in the sample gathered, has been reported in table 2:

Table 2: Biggest Market Outlet Used by Beekeepers

No	Outlet	Frequency	Percentage	Cumulative%
1	Selling to contractor	5	3.88	3.88
2	Selling from home	22	17.05	20.93
3	Selling to local market retail	36	27.91	48.84
4	Wholesale	66	51.16	100
	Total	129	100%	

As it's obvious from the table 2, the biggest share of market outlet usage is the wholesale market. The second one is retail selling in local market and selling from home takes the third position. Selling to contractor is very rarely used market outlet in Badakhshan province and the study area of this research.

Looking to results from table 3, it has been indicated that the contractor market outlet, doesn't have any factor affecting it comparing to the base which is wholesale. It means that the contractor selling and wholesale carry the same dynamics and share the same characteristics. This finding is very rational as the wholesale and contract selling are fall into the same selling type, with very little differences. But looking to the second column which is selling from home, which has lots of affecting factors comparing wholesale market outlet. Maybe there are less examples of such marketing outlet tool in other countries. There is much more trust to beekeepers themselves regarding the quality of product comparing to the shops and stores of the market. Lots of local residents prefer to buy first hand from the beekeepers themselves. The first affecting factor of home market outlet is the urban center. Being located far from urban center pushes the beekeepers to sell their products from home rather comparing to wholesale market outlet. In recent years, government and other NGOs are providing many consultation to beekeepers in lots of issues regarding to beekeeping and honey production. This variable affects the home selling market outlet negatively. If a farmers receives this kinds of consultation they are tend to use the wholesale market rather than selling from home. But other beekeeping training have positive impact on home selling market outlet usage. Quantity of production affects the home market negatively, which means by increasing the production, the beekeepers are using wholesale market rather home selling market. Beehives quantities, educational level of beekeepers and home selling market outlet price affecting this market outlet positively. But price of wholesale market affects it negatively.

Table 3: Factors Affecting Market Outlet Choice of Beekeeper in Badakhshan Province Multinomial Logit Model

Market outlet choice	Contractor	Selling from home	Retail in Local
Urban center	-0.430	0.230	-0.047
	(1,102.047)	(0.116)**	(0.176)
Market information	-17.363	-0.200	-7.887
	(16,351.102)	(1.556)	(3.195)**
Marketing education	36.225	-1.320	2.140
	(20,380.286)	(1.738)	(1.686)
Government & NGO consulting services	-2.871	-3.305	2.113
	(4,730.186)	(1.840)*	(1.670)
Trainings	9.187	6.696	6.752
	(11,564.828)	(2.423)***	(2.600)***
Quantity of production	0.019	-0.016	-0.001
	(11.392)	(0.008)**	(0.001)
Beehive	-0.580	0.213	-0.067

	(919.017)	(0.111)*	(0.044)
Experience	2.501	-0.197	-0.265
	(1,126.129)	(0.233)	(0.180)
Age	-0.731	-0.039	0.244
	(2,920.605)	(0.105)	(0.103)**
Education level	-1.890	0.551	-0.048
	(2,531.742)	(0.231)**	(0.145)
Local market price	-0.056	0.000	0.039
	(52.024)	(0.005)	(0.015)***
Wholesale market price	-0.010	-0.023	-0.044
	(43.765)	(0.007)***	(0.013)***
Contract price	0.041	-0.007	-0.052
	(25.384)	(0.012)	(34,685.604)
Home selling price	0.021	0.020	-0.002
	(69.284)	(0.008)**	(0.005)
Constant	-13.993	-7.689	-12.542
	(74,384.923)	(5.348)	(5.408)**
N	128	128	128

Number of observation= 128, LR chi2 (45) = 219.75, Prob > chi2 =0.0000, Log likelihood = -21.562986 Pseudo R2= 0.8359

The last market outlet is local market retail selling. Market information of beekeepers affects it negatively, which means if they are aware of honey market they will choose wholesale market rather than local retail. Age of beekeeper and local market price affecting the selection of local market outlet positively while wholesale market price affects it negatively (Ref. Table 3).

Table 4: Factors Affecting Total Income of Beekeepers in Badakhshan Province OLS Model

Income	Coefficient	S.Error	T stat	P-value
Market Outlet (Ref. Contract selling)				
Selling from home	-19407.7	65053.99	-0.3	0.766
Selling in Local market retail	-49324.5	64229.32	-0.77	0.444
Wholesale	45739.95	71387.21	0.64	0.523
District (ref. Kishem)				
Baharak	-113905	52202	-2.18	0.031
Jurm	94448.46	102288.1	0.92	0.358
Shahada	-162553	55586.24	-2.92	0.004
Age	1315.659	3620.739	0.36	0.717
Education	4615.285	3611.013	1.28	0.204
Experience	11581.05	5001.972	2.32	0.022
Household size	8009.453	4520.327	1.77	0.079
Constant term	20069.13	142810.7	0.14	0.888
N	129			

R-squared= 0.2498, F (10, 118) = 3.88

Table 4 reporting the factors affecting total income of beekeepers. In this part some variables like working experience and household size affecting the total income of beekeepers in study area, but none of market outlet choices affecting the income of beekeepers. This shows that there is no relationship between income of beekeepers and their decision to select the certain market outlet to sell their honey product. Although that the wholesale market outlet has a positive relationship with income of beekeepers, but the coefficient is not statistically significant even in 10% level. Selling in local market and selling from has negative relationship with income of beekeepers. They

also not statistically significant parameters. Also there was one question about selling the product on-time which from 129 of sample 102 of them indicated that their products don't have market. Which shows, that if there would be wholesale opportunities they can earn more than what they are earning now.

4. Conclusion

This paper investigated the impact of market outlet choice in beekeepers of Badakshan province of Afghanistan. The findings of this paper shows that beekeepers are using four major channels of marketing or market outlets to sell their product (honey). They are mainly using wholesale, local market, contractor and selling from home. The factors affecting beekeepers to choose the home selling channels are very different from that of wholesale market while the contract selling carry nearly the same determinants as wholesale market.

Looking to impact of market outlet choice in income of beekeepers, this paper have found that there is no relationship between them. It means that selecting among different market outlet the beekeepers are not receiving more income. Maybe it's because of similarity of prices in all this market outlets. If we look through the price of each market outlet, we can observe that the prices are not very different. Despite being statistically insignificant, the relationship between wholesale market outlet and income is positive. It means that selling in wholesale market will affect the income of beekeepers positively. Also there was one question about selling the product on-time which from 129 of sample 102 of them indicated that their products don't have market. Which shows, that if there would be wholesale opportunities they can earn more than what they are earning now.

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