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Consumers' willingness to pay for organic agriculture products: a case study of Nepalgunj city, Banke

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Abstract

This study was carried in Nepalgunj Sub-Metropolitan City, Nepal to understand awareness of consumers' about organic product, consumers' willingness to pay for organic products and socio-economic factors affecting their decision of willingness to pay for consumption of organic goods. Total of 200 respondents were selected as sample population. Among total respondents, 85.5% of respondent were aware about organic products, among which only 53% respondents were well informed about organic products and their importance. Out of 200 randomly selected respondents only 114 respondents were willing to pay addition cost or price premium for organic products. Among ten socioeconomic variables listed only seven variables found to be determinant of willingness to pay premium price for organic agricultural products, which are gender, occupation, income level and education of respondents, and awareness about chemical residue absence in organic agriculture products, perception of higher nutrition on organic products and awareness about health benefit from organic products. Result showed that income level and health consciousness are two most important determining factor. So, there is a need to find a way so that more and more people can be made aware about organic agricultural products and provide organic products at reasonable price premium.

Keywords: Consumer preference, Organic agriculture, Socioeconomic, Willingness to pay

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Introduction

Organic farming is the form of production and management system that avoids or excludes the use of synthetic chemical inputs or genetically modified organisms and focus on utilizing natural resource and management system. Organic farming gives importance to environmental preservation, protection and human health (Meena et. al., 2013). Organic farming is a form of agricultural production practice where chemicals are not used on crops from planting to the final consumption. It is an environment friendly production management system that aims to protect and improve biodiversity and environment as well as human health (Behera et. al., 2012). And, product of such production management system is known as organic products. Our current modern agriculture system is heavily influenced and dependent upon large amounts chemicals and synthetic products such as fertilizer, pesticide, growth hormone etc., which causes increase in cost of production and at the same time harms environmental quality and human health. Such increased large scale use of chemical products lead to the increase in extent and rate of several diseases such neural diseases, cancerous infection, body disorders etc. With the increase in occurrence of such life threatening diseases, world is moving toward increasing healthier and quality food (Rock et al., 2017a). The search of more sustainable, balance and healthier farming system, led to the organic farming. It not only helped to lower cost of production and minimization of environmental degradation also improvements of human health (Worthington, 2001).

There is increasing demand for organic production throughout the world especially in developed countries mainly due to health issue. But, we cannot forget that demand is always dependent upon price of the commodity. Generally output production level of organic production system is considered to be lower in comparison to inorganic farming system (Issaka et. al., 2016). Due to that reason, production, productivity, profitability and market competition has become significantly important issue on the discussion of food security and organic farming, especially in developing nation like Nepal. Nepal is developing nation with significantly lower per capita income (Shrestha and Baral, 2018a), so we cannot overlook production cost and purchasing cost as well. Ponti et. al. (2012) reported on an average general production level of organic farming is 20% less in comparison to inorganic farming system. Savage (2015) reported that on an average 89% of organic cultivated land shows lower productivity in comparison to inorganic farming. So lower productivity directly implies higher per unit cost of production and higher price for consumer.

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Nepal is a developing nation with lower per capita income, so price level obviously serves as an important decision factor for organic product consumption. So, this study was carried in Nepalgunj Sub-Metropolitan City, Nepal to understand awareness of consumers' about organic product, consumers' willingness to pay for organic products and socio-economic factors affecting their decision of willingness to pay for consumption of organic goods.

Materials and Method

Study Area

This study was conducted in Nepalgunj Sub-Metropolitan City, Banke, Nepal. It lies in terai belt near southern board of Nepal. It is capital of Banke District and oldest market of western Nepal. This area was particularly chosen because of availability of all range of organic to inorganic, cheap to expensive food products due to closeness of Indian boarder. This is the first research of Nepal that has been carried to understand willingness to pay for organic products.

Sample Size, Sampling Procedure and Selection of Respondents

For the study, total of 200 respondents were selected as sample population. Of which 25 respondents were randomly selected from home visit and remaining 175 respondents were randomly selected from vegetable and food market of the city. Due to economic and manpower limitation such limited number of respondents were selected for study.

Source of Information

For primary data pretested systemic semi-structured questionnaire was used for face to face interview of consumers and key informant interview. As only primary source of data cannot be used for overall data collection and verification (Shrestha, 2018), several other means of resources were also implied. So that, several books, reports, article and other publications published by Government of Nepal, several research institutes, newspaper articles and publication of several NGOs were used as source of secondary information.

Data Collection and Analysis

The field survey and key informant interview for the study was conducted in July, 2018. Two different set of questionnaire were prepared for respondents and key informants. The respondents were interviewed using face to face method by visiting their homes. Key informants were interviewed in the same manner. Information obtained from the interview was crosschecked through key informants (Shrestha et. al., 2018). Collected data were coded, tabulated, summarized and analyzed for determination and interpretation. Microsoft Excel and STATA 12 were used for analysis purpose.

Socio-economic Factors Affecting Willingness to Pay

To estimate or analyze socioeconomic factor affecting willingness to pay for organic products Logistic regression was used, due to binary nature of dependent variable. Logistic regression is used to determine the relationship between several socioeconomic variables and willingness to pay of respondents (Shrestha and Baral, 2018b). After key informant interview, focus group discussion and some reviewing, several socioeconomic factors such as gender and education of household head, occupation, annual income etc. were used as independent variable to estimate their effect on willingness to pay for organic products.

The binary Logit regression model can be expressed as;

$Y_i = f(\beta_i x_i) = f$ (Age, Gender and Education of HH head, Occupation, Family size, gender and education of household head, occupation, annual income, availability etc.). Other details and value about variables are presented in Table 1.

Table 1. Description of the variables used in the Logit model

Variables	Description	Value
Age	Age of Respondent	Number of Years
Gender	Gender of Respondent	Female=0, Male=1
Education	Education of Respondent	Number of Years
Occupation	Major family occupation	Other=1, Agriculture=0
Total size	Number of family members	Number
Income	Monthly income	Less than 50,000= 0 More than 50,000= 1
Chemical	Consumers knowledge about absence of chemical in organic product	No=0, Yes=1
Taste	Consumers perception about better taste of organic product	No=0, Yes=1
Nutrients	Consumers perception about better nutrition of organic product	No=0, Yes=1
Health	Consumers perception about better health with organic product	No=0, Yes=1

Result and Discussion

Consumers' Knowledge of Organic Products

Among total respondents, 85.5% of respondent were aware about organic products, which is on par with the report of Rock et. al. (2017b). Of which 53% respondents were very clear about organic products and their importance, 23.5% respondent were ambiguous about organic products and 9% respondents had only limited knowledge about organic products. Among total respondents, major source of information about organic products and their importance found to be media sources such as social media, FM, TV, Newspaper etc. Details of awareness and source of information are presented in Table 2.

Extent of Willingness to Pay

Out of 200 randomly selected respondents only 114 respondents (57%) were willing to pay addition cost or price premium for organic products. This is very low in relation to report of Vapa-Tankosic et. al. (2017). Among those willing consumers, majority of them are willing to pay additional 10% for organic products, which makes for 46.49% of total willing consumers. With the increase in price premium, number of willing consumers keep declining. This indicates that majority of willing consumers are willing to pay price premium only for limited extent. This indicates that price premium hinders consumers' willingness to pay for organic product (Sriwaranun et. al., 2015). Detail of this distribution is presented in Table 3.

Table 2. Awareness of organic products

Characteristics	Frequency	Percent
Awareness of organic products		
Well informed	106	53.0%
Little ambiguous	47	23.5%
Little information	18	9%
Not informed	29	14.5%
Major source of awareness		
Media	101	50.5%
NGO/INGOs	9	4.5%
School	23	11.5%
Family member	22	11%
Neighbor/colleges	16	8%

Table 3. Extent of Willingness to Pay

Extent of Pay	Frequency	Percent (Among willing consumer)	Percent (Total respondents)
Up to 10%	53	46.49%	26.50%
10 - 15%	31	27.20%	15.50%
15- 20%	24	21.05%	12.00%
> 20%	6	5.26%	3.00%
Total	114	100%	57%

Socioeconomic Factors Affecting Willingness to Pay

Among ten socioeconomic variables listed only seven variables found to be determinant of willingness to pay premium price for organic agricultural products. Gender and education of respondents, and awareness about chemical residue absence in organic agriculture products found to be significant at10%level, while occupation of respondents and perception of higher nutrition on organic products found to be significant at 5% level. Similarly, income level of respondents and awareness about health benefit from organic products found to be significant at 1% level. Further details are presented in Table 4.

Table 4. Determination of Willingness to Pay

Variables	dy/dx	Std. Err.	p> |z|	
Age HH	-0.0544	0.0814	0.404	
Gender#	0.0275	0.0091	0.051	*
Education	0.0131	0.0083	0.053	*
Occupation #	0.0912	0.0328	0.032	**
Size	-0.0156	0.0251	0.534	
Income#	0.2143	0.0451	0.003	***
Chemical#	0.1232	0.0756	0.062	*
Taste#	0.2131	0.2431	0.336	
Nutrition#	0.1328	0.0867	0.042	**
Health#	0.3214	0.0653	0.002	***

***, ** and * indicates 1%, 5% and 10% level of significance respectively.
(#) dy/dx is for discrete change of dummy variable from 0 to 1.

Result showed that, probability of willing to pay premium price for organic products is increased by 2% for male respondents in comparison to female respondents. This is opposite of what Rani et. al. (2018) reported, as they suggested that there is no significant relation between willingness to pay and gender of consumer. It is also visible in result that increase in education by 1 year can increase probability of willingness to pay by 1.31%. This result is supported by findings of Rani et al., (2018), as they suggest that increase in education level has positive relation with willingness to pay for organic agriculture products. Similarly, awareness about chemical residue absence in organic agriculture products can increase the probability of willingness to pay by 12.32%. It has been observed that, there is strong and positive relation between consumers' willingness to pay with awareness about chemical residue and uses in agricultural products (Owusu and Anifori, 2016).

Result showed that, respondents involved in occupation other than agriculture have higher probability of paying premium price for organic agricultural products, i.e. 9.12%. Similarly, people who perceives organic products are more nutritional compared to normal agricultural products, have 13.28% more probability of willing to pay premium price for organic products. This finding is supported by Rani et al., (2018). Madhavaiah and Shashikiran (2015) stated that willingness to pay for organic agricultural products are outcome of several socioeconomic factors of individual concerning their occupation, income, lifestyle and awareness and perception toward organic products.

Result showed that people with the income more than NRs. 50,000 have 21.43% more probability of willingness to pay premium price for organic agriculture products. Similarly, people who perceive that organic agricultural products ensure better health are 32.14% more likely to pay premium price for organic agricultural product. This finding shows that most important factor determining willingness to pay for organic agriculture products are income level of people and their conscience toward health and importance of organic products (Amirnejad and Tonakbar, 2015).

Conclusion

There is increasing demand for organic production throughout the world especially in developed countries mainly due to health issue. But, we cannot forget that demand and supply both heavily relies upon price of the commodity. Specially for developing nation like us, price possesses as significant determinants of demand of product. This study proves that there is general concern among significant amount of population about organic agricultural products and health advantages associated with it. This study reveals that more than half of population are willing to pay premium price for organic products, provided limited price addition. This study shows that willingness to pay has significant and adverse relation with price of organic products. Study showed that 53% of population are well informed about organic products and their importance. Study shows that about 51% of population received awareness about organic products through media source, indicating reach and strength of the media to enhance and improve awareness programs. Study showed that most important factor determining willingness to pay are income level and consumers' awareness regarding health advantages associated with climate change. So, there is a need, to be find a way so that more and more people can be made aware about organic agricultural products and provide with reasonable price premium.

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