

## ASSESSMENT ON CONSUMERS WILLINGNESS TO PAY FOR ORGANIC PRODUCTS IN RUPANDEHI DISTRICT, NEPAL

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### ABSTRACT

In recent years, production and consumption of organic product is increasing due to increasing awareness among consumers about its use. A study was conducted in two municipalities of Rupandehi district viz. Devdaha and Siddharthanagar to know about awareness, perception and consumer willingness to pay for organic product. Altogether 200 interviews were conducted, 100 from each municipality using interview schedule. According to a study, 86% of individuals were aware of organic products. Result also revealed that education status of household head ( $p < 0.01$ ), number of economically active female members ( $p = 0.05$ ) and annual household income ( $p < 0.05$ ) had significant positive effect, while number of economically active male members ( $p = 0.01$ ) had significantly negative effect on awareness of organic product. The majority of consumers believed that organic product was pesticide free, nutritious, and eco-friendly thus being healthy, tasty, and fresh and environmentally sound. However, the preference for organic products was shown to be hampered by factors like low availability, low trust, and high cost. Organic products preferred were mostly vegetables and fruits. Most of the people were willing to pay up to 20% price premium. Preference level ( $p < 0.01$ ), awareness about organic food ( $p < 0.01$ ), education status of household head ( $p < 0.1$ ), distance willing to travel for purchase ( $p < 0.01$ ) and annual household income ( $p < 0.01$ ) were found substantially related with willingness to pay price premium. Thus, it is necessary to motivate farmers for production of organic product owing to its increasing demand. Similarly, organic product certification from authorized organization is also necessary to boost its consumption.

**Keywords:** Awareness, eco-friendly, health, preference, price premium.

### INTRODUCTION

#### Background information

Organic agriculture is a method of farming that uses natural processes and biologically based techniques, without the use of synthetic fertilizers, pesticides, hormones, and GMOs, with local variety seeds if possible, and maintaining a buffer zone (5m) to separate from conventional farming methods (GON, 2008). Production and consumption of organic products has increased in recent years with the increase in awareness among consumers regarding environmental and food safety (Van Elzakker *et al.*, 2007). As more consumers desire organic foods and are willing to pay a premium for them, the market for organic products is expanding globally (Piyasiri & Ariyawardana, 2002).

The prospects for the organic farming industry are heavily reliant on the consumer demand and willingness to pay a higher price for organically grown products. Research indicates that there are several factors that impact consumers' willingness to pay more for organic products, such as their perception of the healthiness and environmental benefits of organic produce (Xia & Zeng, 2008), as well as their knowledge and awareness of the processing, packaging, certification, and labeling standards of organic products (Aryal *et al.*, 2009). Despite the fact that organic products tend to cost more than their non-organic counterparts, many consumers continue to purchase them (Aryal *et al.*, 2009). Additionally, consumers' purchasing power and affordability are also influential factors in determining their willingness to pay a premium for organic products (Voon, Ngui, & Agrawal, 2011).

### **Statement of Problem**

At present scenario, organic agriculture is expanding quickly. Globally, the organically managed area grew more than two times in the 2000s. Between 2007 and 2009, the organic land area throughout Asia expanded by 24%, however, during the same time frame, Nepal's organic land area decreased marginally (Willer, 2011; Karki *et al.*, 2011). Similar to the other developing nations, Nepal is a slow adopter of organic farming (Bhatta *et al.*, 2009). This might be due to several reasons that differ from one country to another. Among them the market for organic products might be one of the reasons which is underdeveloped and there are no reliable market figures in Nepal (Bhatta *et al.*, 2008). Besides this, lack of accredited laboratory facilities and standardized certification process has been a major problem for expansion of the organic market.

### **Rationale of Study**

Organic foods are safer to consume due to their high nutritional content and little pesticide residue, which has led it to a multi-billion-dollar industry (Crinnion, 2010). Rupandehi district was selected for the purpose of study because of its highest vegetable productivity (15.86 tons/hac) among the districts of Lumbini province and is also the most populous district and third most populous district of the province and country respectively (MoALD, 2022; CBS, 2021).

The study attempted to identify the elements that affect consumers' willingness to pay more for organic goods. Similarly, the study also attempted to assess the factors that influence consumer's purchasing habits (behavior) for organic food in Rupandehi district. Additionally, the paper sought to contribute to a better understanding of customer awareness, attitude, and perceptions of organic products. It will aid companies in gaining a deeper understanding of consumer attitudes towards organic products and creating strategies to promote wider adoption of organic products among the general population.

### **Objectives**

The broad objective was to study the consumers' willingness to pay for organic products whereas the specific objectives were;

- a. To assess factors affecting consumer awareness about organic product
- b. To evaluate perception of different consumers towards organic product
- c. To examine different factors influencing consumers' willingness to pay and willingness to purchase for organic product.

**MATERIALS AND METHODS**

Rupandehi district was selected for the purpose of study. Two municipality namely Siddharthanagar and Devdaha were selected for the purpose. The research sites were selected purposively and after that random sampling was done. According to Poate and Daplyn (1993) sample size of 60 is sufficient for the purpose of data analysis and certainty in decision making. In order to increase the precision of estimate 100 respondents were selected randomly from each location. Thus, total of 200 respondents were randomly selected. Interview schedule was prepared to collect primary data from all the respondents and survey was conducted. Similarly, for secondary data various articles, reports, books, internet material and other publication were studied, and necessary information were taken. The data were collected using Water portal application and then entered to MS excel 2013. Analysis of the data for both descriptive and inferential study was done using statistical package SPSS version 21. Simple frequency, standard error and mean were calculated. Similarly ranking was also done to know perception of consumers towards organic products and factor affecting willingness to pay for organic product. The index of importance was computed by using formula Miah (1993) given below:

$$I_{imp} = \frac{\sum S_i F_i}{N}$$

Where,  
 $I_{imp}$  = index of importance

$\sum$  = summation

$S_i$  =  $i^{th}$  scale value ( $i= 0.20, 0.40, 0.60, 0.80, 1$ )

$F_i$  = frequency of  $i^{th}$  importance given by the respondents

$N$  = total number of respondents

Score of 0.2, 0.4, 0.6, 0.8 and 1.0 was given according to the preference of respondent towards the given problem where 1 indicated very high preference and 0.2 indicated very low preference.

Chi-square test was performed to know the factor influencing consumer willingness to pay price premium for organic product. Logistic regression was conducted for purpose of identifying the factor affecting awareness about organic product. Since the dependent variable was binary or dichotomous binary, logit was best model to analyze the data (Gujrati & Porter, 2012). The model can be stated as,  $P = \frac{1}{1+e^{-z}}$

Where, P was probability of awareness towards organic product,  $z = \alpha + \sum \beta_i X_i$ ,  $\alpha$  represented the intercept,  $\beta$  was the co-efficient of independent variables and  $X_i$  were various independent variables which were used in the model. From the given equation, we derived the log of probability towards awareness to organic product. Thus, model became,

$$Z_i = \alpha + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_n X_n + u_i$$

We selected our independent variable and used those explanatory variables to define awareness of consumer towards organic products.

$$Z_i = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \beta_8 X_8 + \beta_9 X_9 + u_i$$

where,  $Z_i$  was awareness to organic product,  $X_1$  was type of household head (dummy),  $X_2$  was age of household head,  $X_3$  was years of schooling of household head,  $X_4$  was ethnicity of household head (dummy),  $X_5$  was family size,  $X_6$  was economically active male member in family,  $X_7$  was economically active female member in the family,  $X_8$  was primary occupation of household head (dummy) and  $X_9$  represented annual household income in lakhs. The characteristics of independent variable used in the model was shown in table 01.

**Table 1. Socio-economic information of household head**

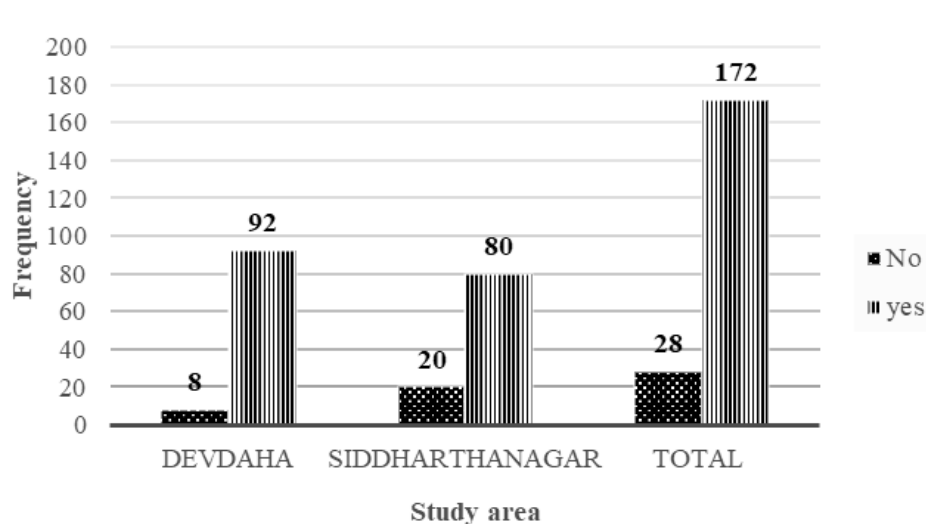
Variable	Description	Devdaha	Siddharthanagar	Total
HH	Household type (1=male, 0 = female)	0.83 (0.04)	0.87 (0.03)	0.85 (0.03)
AGE	Age of household head	49.14 (1.31)	51.93 (1.21)	50.54 (0.90)
EDU	Years of schooling of household head	7.06 (0.50)	6.76 (0.50)	6.91 (0.34)
ETH	Ethnicity (1 = Brahmin/Chhetri, 0 = other)	0.56 (0.05)	0.41 (0.05)	0.49 (0.04)
SIZE	Family size	4.93 (0.20)	6.03 (0.20)	5.48 (0.15)
MALE	Economically active male	1.29 (0.06)	1.58 (0.09)	1.44 (0.05)
FEMALE	Economically active female	0.64 (0.06)	0.51 (0.07)	0.58 (0.05)
OCCU	Primary occupation (0 = others, 1 = Agriculture)	0.14 (0.04)	0.15 (0.04)	0.15 (0.03)
AI	Annual household income (in lakh)	7.55 (0.95)	8.64 (1.14)	8.10 (0.74)

Note: Figure in parenthesis indicates standard error

## RESULTS AND DISCUSSION

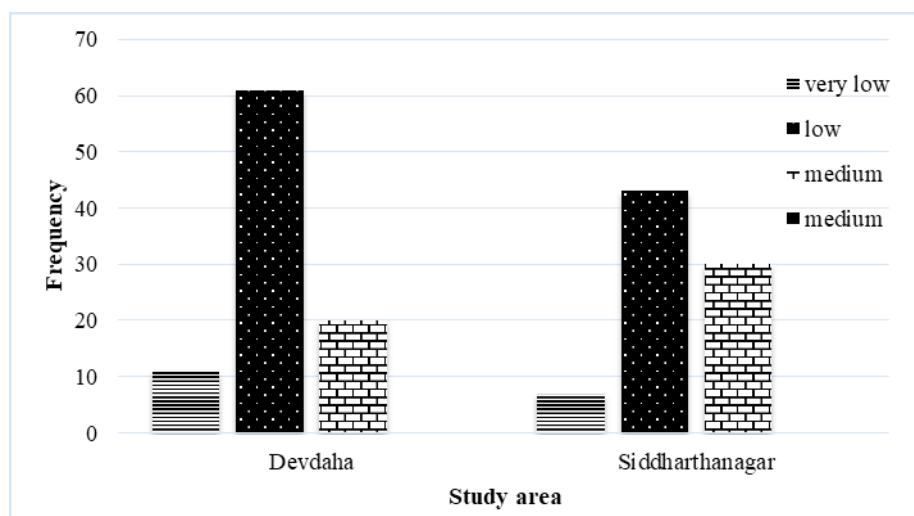
### Factors affecting consumers' awareness towards organic product

Figure 1 indicated the awareness of consumer towards organic product. From the figure, it was found that most of the people (172) in both the areas were aware about organic product. In Devdaha municipality 92% people were aware whereas in Siddharthanagar 80% people were aware about organic product.



**Figure 1. Bar Diagram showing awareness for organic product**

However, Figure 2 illustrated that even among consumers who were aware of organic products, their level of understanding and knowledge was limited. Most people perceived organic food products as those grown without pesticides, naturally in the home garden.



**Figure 2. Awareness of organic products in studied area**

Table 2 showed logistic regression analysis to identify the factors affecting consumers' awareness towards organic product. The finding showed that education status of household head ( $p < 0.01$ ), economically active female member ( $p = 0.05$ ) and annual household income ( $p < 0.05$ ) had significant positive impact on awareness towards organic product whereas economically active male member ( $p = 0.01$ ) had significant negative impact on awareness towards organic product. This meant that as education status increased the probability of awareness towards organic product increased by 1.240. Similarly, increase in household income increased likelihood of awareness towards organic product by 1.214. The result was parallel with the study conducted in India by Kumar and Ali (2011), who found that educated people and people with high monthly income were more aware towards organic products. Altarawneh (2013) in his study in Jordan also revealed that increase in education and increase in income level, increased the awareness towards organic product. Higher number of economically active female increased likelihood of awareness towards organic product by 2.396 factors but increase in economically active male member decreased likelihood of awareness towards organic product by 0.315 factors. Since women were mostly responsible for purchasing food for the household kitchen, having many economically active women in the family contributed to greater public knowledge of organic products. The result also demonstrated that, in comparison to men, women were more concerned with feeding organic food to their families and children and were more aware of their health. The result was supported by the study conducted by Lea & Worsley (2005) in Australia stating that presence of women increased the awareness and preference of family towards organic food. Similarly, head of the family, age of household head, family size, ethnicity, and occupation were found non-significantly affecting awareness of consumers towards organic product. The model was significant at 1% level of significance. Hosmer-Lemeshow test significance value of 0.983 indicated that model was good fit to the data i.e. the difference between observed and predicted value were not statistically significant. Likelihood ratio chi square value of 38.03 also indicated the model was good fit to the data. Similarly, value of Pseudo R square

was 0.235 which explained that 23.5% variation on awareness of consumer towards organic product was explained by independent variables present in the model.

**Table 2. Factors affecting consumer awareness towards organic product**

Variable	Beta coefficient	Odds ratio	P> z
HH	-0.684 (0.754)	0.504	0.364
AGE	0.016 (0.023)	1.015	0.492
EDU	0.215 (0.066)***	1.240	0.001
ETH	0.047 (0.508)	1.048	0.926
SIZE	0.262 (0.164)	1.300	0.109
MALE	-1.156 (0.447)***	0.315	0.010
FEMALE	0.874 (0.459)**	2.396	0.050
OCCU	0.365 (0.651)	1.440	0.575
AI	0.194 (0.097)**	1.214	0.046
_cons	-0.913 (1.636)		
Prob > Chi <sup>2</sup>	0.000***		
Pseudo R square	0.235		
Log likelihood	-61.979		
LR chi2	38.03		
Hosmer-Lemeshow (Prob > Chi <sup>2</sup> )	0.983		

Note: \*\*,\*\*\* denotes data are significant at 5% and 1% level of significance. Figure in parenthesis represents standard error. Dependent variable: consumer awareness (1 = yes, 0 = no)

### Perception towards Organic foods

Table 3 showed that majority of people perceived organic product to be pesticide free, nutritious, eco-friendly, having no adulteration, and costlier than that of inorganic product. This perception was found to be similar in both study areas. Dardak *et al.* (2009) also stated in their paper that 90% of the people believed organic products were pesticide free whereas 54% people considered that organic product was natural and free from any adulteration.

**Table 3. Ranking of perception of consumer towards organic food**

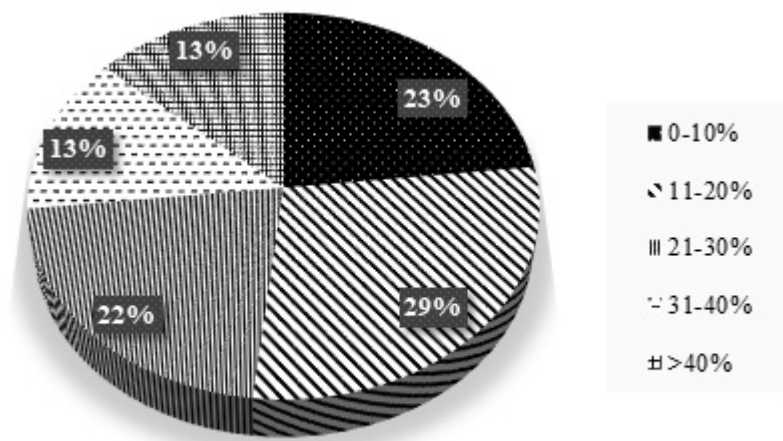
Perception	Devdaha	Siddharthanagar	Total
Pesticide Free	0.88	0.83	0.86
Nutritious	0.87	0.82	0.85
Eco-Friendly	0.87	0.81	0.84
Costlier	0.83	0.80	0.82
No Adulteration	0.80	0.81	0.81

Note: figure in the table represents index of importance value.

### Consumer's willingness to pay towards organic product

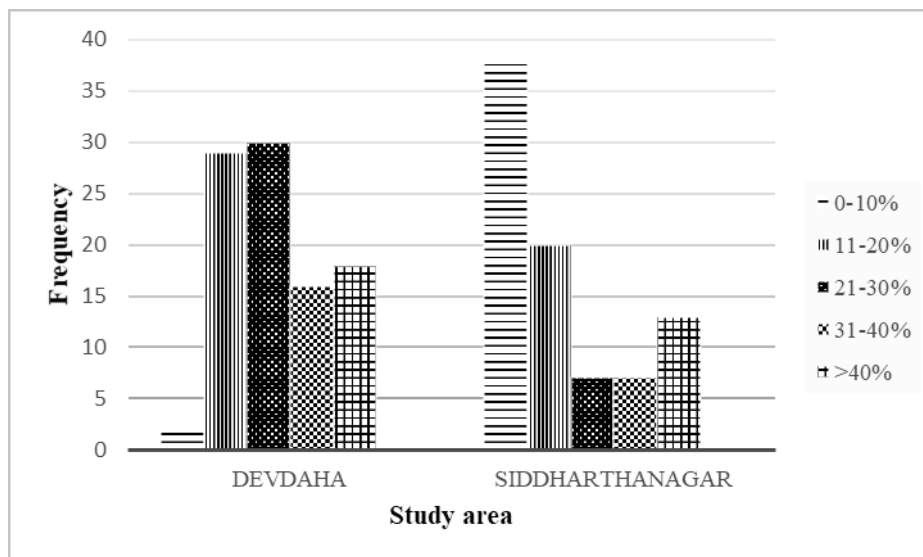
Figure 3 showed that in case of product availability, all the consumers were willing to pay higher price for organic products. The consumers' survey revealed that 29% of the aware consumers (N=172) were willing to pay 11-20% price premium compared to non-organic

products. Similarly, 22% of the consumers were willing to pay 21-30% price premiums. Only 13% of the surveyed consumers were willing to pay >40% price premium. The study of Aryal *et al.* (2009) in Kathmandu valley also indicated that consumers were willing to pay price premiums ranging from 5% to 50% depending on the type of product and its availability. Our study showed that majority of consumers (52%) were not willing to pay more than 20% price premium on organic product. Asadi *et al.* (2009) in his paper also stated that consumers were not willing to pay more than 20% price premium for any kind of organic product.



**Figure 3. Price premium consumers want to pay for organic product**

Figure 4 showed that majority of consumers were willing to pay 0-10% of price premium in Siddharthanagar whereas 21-30% of price premium in Devdaha. This might be because people from Devdaha were found more literate than Siddharthanagar. Similarly, economically active female members were found more in Devdaha as compared to Siddharthanagar.



**Figure 4. Price premium according to municipality**

### Factors affecting consumers' willingness to pay for organic product

Table 4 showed that there was a significant relationship of consumers' willingness to pay with preference level of consumer ( $p < 0.01$ ). It was seen that consumers' preference level was medium followed by high, low and very low. Medium preference level indicated that majority of consumers were willing to buy organic products in case of availability but were not organic products specific consumer. It was also seen that increase in preference level from very low to high increased the willingness of consumer to pay higher price premium.

Table also showed significant relation of consumers' willingness to pay with level of awareness ( $p < 0.01$ ) about organic product. It was seen that increase in the level of awareness about organic product increased the likelihood of consumer paying high price premium as consumers were well known about the benefit and importance of organic product.

Similarly, education status of household head ( $p < 0.1$ ) was also found significantly related with willingness to pay for organic product. Result showed that higher the educational status higher the knowledge about organic product and thus higher willingness towards it. Annual income of household ( $p < 0.01$ ) was also found significantly related with consumers' willingness to pay for organic product. Table showed that people with higher income level were willing to pay higher price premium for the organic product. Gumber and Rana (2017) also found significant relation of education status and income level with price premium of organic products. Tsakiridou *et al.* (2008) also found a positive relation between education status and income level with price premium of organic products.

Table also showed that maximum people were willing to travel up to 1 km for the purchase of organic product. Similarly, people who were willing to go farther to purchase an organic product ended up willing to pay higher price premium ( $p < 0.01$ ). It might be due to the fact that these categories of people were more aware about the importance of organic product.

**Table 4. Relation between price premium for organic products and various factor affecting it**

		Price Premium for Organic product					Chi-square	Sig.	
		0-10%	11-20%	21-30%	31-40%	>40%			Total
<b>Preference level of organic food</b>	Very Low	0	0	1	1	2	4	51.029***	0.000
	Low	0	2	12	5	2	21		
	Medium	24	40	23	14	18	119		
	High	16	7	1	3	1	28		
<b>Total</b>		40	49	37	23	23	172		
<b>Level of awareness about organic foods</b>	very low	9	5	2	1	1	18	28.901***	0.000
	low	21	31	27	14	11	104		
	medium	10	13	8	8	11	50		
	<b>Total</b>		40	49	37	23	23		



<b>Education status of household head</b>	illiterate	10	5	1	2	5	23	24.597*	0.077
	literate	8	7	3	2	5	25		
	primary	6	4	3	2	2	17		
	secondary	10	22	15	8	8	63		
	higher	6	11	15	9	3	44		
<b>Total</b>		40	49	37	23	23	172		
<b>Distance travel for purchasing organic products</b>	Upto 1km	20	21	9	13	11	74	54.315***	0.000
	1 to 2 km	19	16	4	4	7	50		
	2 to 3 km	1	11	15	1	3	31		
	More than 3 km	0	1	9	5	2	17		
	<b>Total</b>		40	49	37	23	23	172	
<b>Annual income of household (in lakhs)</b>	< 4	8	12	2	0	0	22	30.705***	0.002
	4 to < 8	21	23	23	13	6	86		
	8 to < 12	7	7	9	6	11	40		
	12 and more than 12	4	7	3	4	6	24		
	<b>Total</b>		40	49	37	23	23	172	

Note: \*\*\* and \* represent data are significant at 1% and 10%. Figure in table represents frequency.

### Preference of organic product

Table 5 showed that majority of the consumers' preferred organic products were organic vegetables followed by organic fruits, organic meats and eggs and organic processed food. Thus, majority of consumers preferred organic vegetables and fruits followed by other organic products (Dardak *et al.*, 2009; Aryal *et al.*, 2009; Chandrashekar. 2014).

**Table 5. Ranking of preference of organic products.**

	Devdaha	Siddharthanagar	Average
Organic vegetables	0.97	0.98	0.98
Organic fruits	0.78	0.76	0.77
Organic meats and eggs	0.5	0.49	0.5
Organic processed foods	0.25	0.26	0.25

Note: figure in the table represents index of importance value.

### Factors influencing consumers' willingness to purchase

Table 6 showed that health consciousness was the major reason for preference of organic products followed by taste and freshness in both the study areas. The result is supported by Dardak *et al.* (2009) who found that health was the major factor that influence consumer to buy organic product with factor loading ranging from 0.69 to 0.93. Lea and Worsley (2005) also found in their study that people were more conscious about health, taste and environment and thus influenced by organic product. Sivathanu (2015) also found

that people preferred to buy organic product because they perceived organic product to be healthy, safe, nutritious and eco-friendly. Study done by Aryal *et al.* (2009) also found that consumer preferred organic product due to health benefit (75%), taste and palatability (18%) and freshness (7%).

**Table 6. Ranking of factors influencing willingness to purchase**

Factors	Devdaha	Siddharthanagar	Average
Health	1.00	0.99	0.99
Taste	0.76	0.79	0.78
Freshness	0.64	0.62	0.63
Price	0.31	0.32	0.32
Environment	0.30	0.28	0.29

Note: figure in the table represents index of importance value.

### Factors contributing to non-preference of organic products

Table 7 showed various factor contributing to non-preference of organic product. From the table it was seen that low availability was the major factor followed by low trust, high price and poor appearance. Lea and Worsley (2005) also found that less availability and expensiveness of organic product were among the major hurdle behind non-preference of consumer towards organic product.

**Table 7. Ranking of factors contributing to non-preference of organic products.**

Factors	Devdaha	Siddharthanagar	Average
Low availability	0.97	0.97	0.97
Low trust	0.93	0.93	0.93
High Price	0.86	0.94	0.90
Poor appearance	0.80	0.86	0.83

Note: figure in the table represents index of importance value.

## CONCLUSION

There is rising awareness about organic products in Rupandehi district of Nepal as study showed 86% people were aware about the organic products. However, level of awareness is low. People of Rupandehi district preferred organic vegetable and fruit followed by organic meat, egg, and processed foods. Education status of household head, annual household income, economically active male and economically active female significantly affected awareness towards organic product. People perceived organic product to be pesticide free, nutritious, and eco-friendly than non-organic product. Among aware consumers, 52% were not willing to pay more than 20% price premium for any type of organic product. Preference level of people towards organic product, level of awareness about organic products, education status of household head, distance willing to travel and annual income of household were found significantly related to consumer willingness to pay price premium for organic products.

Health, taste, and freshness were the major reasons for willingness to purchase whereas low availability, low trust and high price were the prime factors for non-preference of organic products.

Results suggested that government policy should focus on education and skill-building programs and ways to increase income in order to raise awareness and consumer willingness to pay for organic products. However, organic certification from authorized organizations is also necessary to build trust and increase demand for organic products in local, national, and international markets. Additionally, it's important to encourage farmers to produce organic products due to the increasing awareness of the health, taste, and environmentally-friendly benefits of organic products.

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