



Eating Choices and Planet's Sustainability; How Far Consumers Are Willing to Pay for Sustainable Food Consumption in Middle-Income Countries?

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Abstract

We often hear that the food that we enjoy must not cost the Earth; unfortunately, it frequently does. The food that we eat and the methods that are used to generate it have repercussions for the entire globe. Our food system needs to be improved if we want to live in a world where both people and wildlife can flourish. We are unable to make this adjustment to the system on our own, but choosing a diet that is both healthy and sustainable may be able to assist us in achieving a large decrease in the amount of greenhouse gas emissions that are produced by our food supply chain (WWF-2022). But there is always the question of how far average people from middle-income countries are willing to pay for a sustainable diet. Middle-income countries like Bangladesh manage to reach UN-SDG for zero hunger, but ordinary citizens might not enjoy sustainable meals regularly. Primary data from 200 respondents were collected through 'face-to-face' and 'drop-off and collect' survey methods by using an open-ended questionnaire set. Applying the binary logit regression, we have discovered the determinants that influence customers' willingness to pay for sustainable meals. The findings of this study can be applied in our other middle-income countries.

Keywords: consumer surplus, customer, fruit, middle income, price.

JEL Classification: M20, M21, Q13.

Introduction

The topic of sustainable food and its supply chain has been addressed in several research works. Godfray et al. (2010) stated that the development of agriculture into forests and natural habitats has greatly contributed to the loss of ecosystem services over time. This has bolstered the realization that future increases in food

supply must be addressed without expanding agricultural land. Similarly, Bruinsma et al. (2003) stated that feeding nine to ten billion people by 2050 constitutes a formidable problem. Several options have been proposed to address the issue, including closing the yield gap (i.e., reducing the difference between the attainable yield and the actual yield), increasing the production potential of crops (primarily through the use of new technologies and investment in research), reducing waste, altering diets, and expanding aquaculture, all of which must be coordinated in a multifaceted and interconnected global strategy to ensure sustainable and adequate food production (Farrokhzadeh et al., 2020; Shahraki et al., 2023). Furthermore, Smith et al. (2008) urges that the expanding of food production, we must also dramatically reduce the climate effect of food production and enhance food production's resistance to future environmental change (Li and Kallas, 2021; Kiani Ghalehsard et al., 2021). Additionally, other researchers address the non-climate-related needs include the protection of our freshwater resources (Frenken and Kiersch, 2011), the preservation of biodiversity (Bruinsma, 2003), etc. Obviously, we must examine all of these to maintain a sustainable world. Unfortunately, it is particularly difficult for low- and middle-income nations. Using data from Myanmar, Htwe et al. (2021) evaluated the cost-benefit of a sustainable strategy for rice growing. The study found that their proposed technology can lower overall cost of production, but may could be expensive to implement. It raises the question of how far people in middle-income countries are ready to pay for sustainable food production or consumption. Current study took an initiative to understand the consumers' willingness to pay for sustainable diet.

Middle-Income Countries (MICs) are classified by the World Bank as economies with a gross national income (GNI) per capita of between 1,036 and 12,535. Bangladesh is one of the lower middle-income countries, where the GNI per capita 5,310 PPP dollars for the year 2020 (World Bank, 2021). Lower Middle-Income countries usually manage to reach UN-SDG for zero hunger, but the ordinary citizens might not enjoy common fruits easily.

In terms of land area, Bangladesh is one of the smallest countries but the market size is substantial due to having a population of about 160 million (World Population Prospect-2022). The Gini coefficient of 32 is medium and implies that the purchasing power is not equal to all people living in Bangladesh (Gini-Index, 2022). That's why the customer willingness to pay (CWTP) varies due to socio-economic conditions and product-related factors. Willingness to Pay refers to the

highest price a customer agrees to pay for one unit of a good or service (Varian, 1992). Willingness to pay (WTP) is one of the basic issues of consumer demand. The marketers should have substantial knowledge of the WTP of the targeted market to design the offerings at the appropriate price (Schmidt and Bijmolt, 2020; Shah and Yang, 2022). Otherwise, the marketer's objective will fail by making all efforts and investments zero. There are six seasons in Bangladesh and each season offers new fruits and vegetables. Commonly cultivated fruits are mango, jackfruit, litchi, guava, pineapple, banana, coconut, lemon, orange, custard apple, wood apple, elephant apple, golden apple, Indian berry, papaya, tamarind, melon, watermelon, palmyra, plum, jujube (Kul) etc. Mostly imported fruits are orange, apple, pomegranate, grape, date, and mandarin (Banglapedia, 2021). According to BBS (2021), Bangladesh produced 4.972 million tons fruits in 2020-21 which is still insufficient to meet up national per capita fruits' requirement (200gm/Daily). Daily Prothom Alo (2019) reported that per capita fruit consumption is 80 gm daily which is 57% lower than the required amount of 200 gm.

For this study, we decided to consider Orange (kamala) as our sample fruits, which belonging to the genus *Citrus* of the family Rutaceae is one of the most preferable fruits in Bangladesh. The food value of the orange is beneficial to human which contains vitamin C, dietary fiber, total polyphenols, carotenoids, limonene, and dietary minerals, such as potassium and magnesium (Barros et al., 2012). Thus, it has many elements to make our meal health. Most of the orange is produced by Brazil, China, India, USA, Mexico, Spain, and Egypt respectively (FAOSTAT, 2019). Although orange is not native fruit in Bangladesh, orange is cultivated successfully in different parts of Bangladesh (Banglapedia, 2021). The demand for the orange is high and ever-increasing; entrepreneurs are being motivated to cultivate the orange in Bangladesh. As a result, the production of the orange has increased to 3739.31 metric tons in 2020-2021 which is more than double since 2007-08 (BBS, 2021-22). Since the product of orange is less than the demand, Bangladesh imported 323200 metric tons of citrus fruits like orange and similar categories (Statista, 2022).

Although all classes of people prefer fruits to make their meal as health and sustainable food chain, but the demand is not equal because of the various reason (Ren et al., 2022). For instance, the demand orange fruit is not equal for all because of the variation in the size, color, and taste. This signals that the consumer is not ready to pay a similar price for all orange varieties. Moreover, we can see that marketers attempt to sell different types of orange to customers

without understanding consumer preferences, and customers don't purchase the fruits like an orange until it suits their preferences which ultimately leads to losing marketers' investments. That's why the marketers should know which varieties and which factors of the fruits motivate the customer to pay the higher price. If they can identify the determinants of customer willingness to pay (CWTP) for orange, they will supply the preferred varieties to the target markets. This can influence customer willingness to pay for the best quality food which will ultimately improve the standard of living of the marketers by increasing their income. In addition, if the farmers cultivating the orange can understand the customer willingness to pay for orange properly and cultivate the preferred orange varieties in Bangladesh continuously more and more for increasing the production which can influence the balance of payment (BOP) positively by reducing the import on orange.

To understand the customer's willingness to pay, we tried to develop a theoretical framework based on the existing literature review is included in this part. An outline of theoretical principles on consumer willingness to pay (WTP) is presented in the first portion of this section. Following that, we'll go through a review of previous research on consumer willingness to pay (WTP) for various sorts of items in Bangladesh and beyond.

Literature Review

Willingness to Pay (WTP)

The willingness to pay emerged as one of the fundamental topics in behavioral economics (Britwum and Yiannaka, 2019; Ren et al., 2022). This topic has been able to draw the attention of academics, researchers, politicians, and social activists. As a result, the concept of the WTP has been used in research focusing on macroeconomics, microeconomics, and the consumer market. The willingness to pay is defined as the highest price a customer is willing to pay for a single unit of the market offering (Kalish and Nelson, 1991; Kohli and Mahajan, 1991; Wertenbroch and Skiera, 2002). WTP is combined with the reservation price (Kalish and Nelson, 1991; Kristensen and Gärling, 1997; Krishna et al., 2006) or the "floor reservation price" when the last one is viewed in terms of margin (Wang et al., 2007). The "floor reservation price" refers to the maximum price at or below which a consumer will definitely buy one unit of the product.

Generally, the customer does not purchase any product when the price exceeds the WTP (Chen et al., 2019). Without understanding the consumer WTP toward sustainable meal, the major percentage of farmers cultivate different

varieties of fruits in their field and the marketers also attempt to sell different types of fruits in the same market of Bangladesh. Due to the absence of the expected fruits based on the WTP, customers cannot consume the orange optimally. On the other hand, the marketers charge a higher price without sensing the customer WTP and fail to sell their fruits at the right time which leads to quality degradation and physical damage. That's why sometimes marketers have to bear a significant loss. If this study is carried out successfully, it will work as a guideline for the farmers, traders, and eventually policymakers to understand the factors of choosing sustainable food variety as well as other fruits and vegetables. The present study will be undertaken to answer the following questions:

1. Do the socio-economic and product related factors influence consumers' willingness to pay for sustainable meal?
2. How much percentage price premium consumers are ready to pay for sustainable meal?

Measurement of the WTP

There are a number of studies that explain the need for healthy food and sustainable supply chain. However, accurately estimating customers' willingness to pay for a product or service is essential for competitive efforts, value audits, and product creation (Anderson et al., 1993). Nonlinear pricing, one-to-one pricing, and personalized marketing all need it. WTP may be estimated using a variety of methods (Briedert et al., 2006). The methods may be divided into two categories depending on how WTP is estimated: directly or indirectly, and hypothetically or really (Miller et al., 2011). There is a method titled the BDM mechanism that Becker, DeGroot, and Marschak (1964) put out for determining real WTP that relies on a lottery in which the price chosen is either lower than or equal to the stated WTP (Wertenbroch and Bernd, 2002). Briedert et al. (2006) summarized numerous estimation approaches for WTP, including an indirect procedure where participants are obliged to purchase based on WTP inferred from their reported preference through the BDM mechanism. They divided the WTP measuring methods into two categories: those that revealed preferences and those that stated preferences explicitly. "Revealed preference data" refers to the information gleaned through pricing answers. The term "stated preferences" is often used instead of "revealed preferences" to describe survey-derived preference data (Louviere et al., 2000). Direct or indirect surveys may be used to collect data about stated preferences. Consumer feedback and expert opinion are included in the direct survey. Indirect survey measurement also uses discrete

choice analysis and conjoint analysis. Market data and experiments may measure the revealed preference as opposed to the stated preference given. After that, the experiment is carried out in a lab, in the field, and at an auction. This research used a framework to analyze the willingness of a client to pay for an orange in accordance with the model of buyer behavior. The buyer's purchasing behavior is impacted by the surrounding environment, which includes marketing stimuli and other influences (Kotler and Armstrong, 2016). Product, pricing, location, and promotion are all examples of marketing stimuli. In contrast, technical, economic, social, and cultural elements all have a role. Customers' willingness to pay is claimed to be affected by marketing stimuli such as product (size, kind, freshness) and price, as well as other stimuli such as age, gender, family size, income, and education.

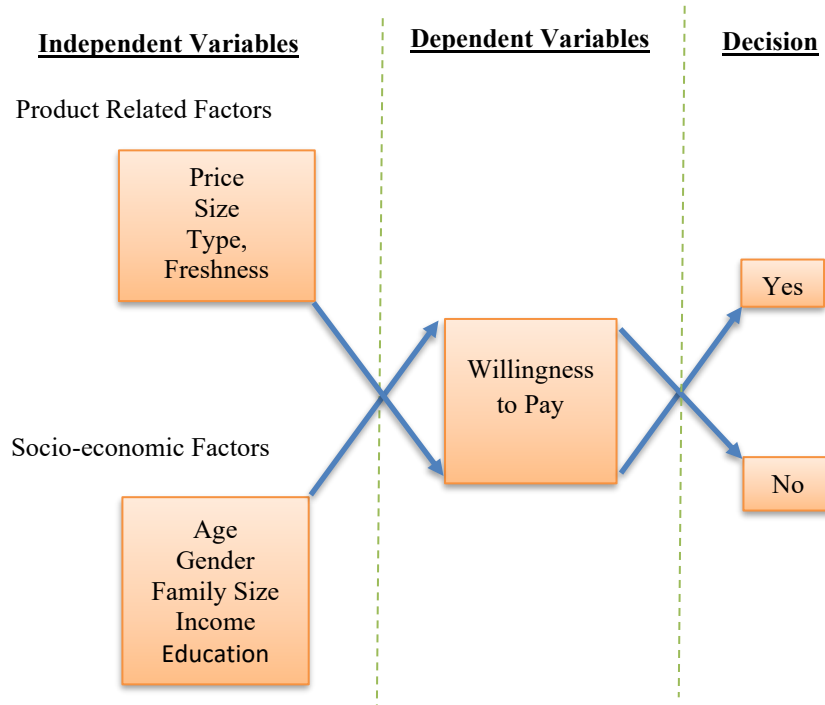


Figure 1. Determinants Customers Willingness to Pay for Sustainable Food

Source: Research finding.

Empirical Studies of WTP

Few studies conducted on consumer willingness to pay for various products in Bangladesh and abroad are summarized in Table 1.

Table 1. Summary of the Empirical Studies

Author(s)	Objectives	Methodology	Findings
Saphores et al. (2007)	To examines consumer willingness to pay for “green” electronics	Choice Experiment (CE)	Most customers in California are ready to spend an extra 1% for "ecofriendly" household electronics.
Aryal et al. (2009)	To examine peoples' perception about organic products and assess their willingness to pay organic products	Semi-structured questionnaire and descriptive study	All of the respondents are ready to pay a premium price at a different level. WTP for organic items is influenced by product creation, innovation, processing, packaging, and labeling.
Ha-Brookshire and Norum (2011)	To identify the significant factors influencing consumers' willingness to pay a premium for three different socially responsible products – organic cotton, sustainable cotton, and US-grown cotton shirts	500 Customer survey via telephone, Stepwise regression	More than half of those respondents were ready to pay a premium for organic, sustainable, and American-grown cotton shirts. Furthermore, attitudes toward socially responsible clothing, environmental beliefs, age, and gender all affected customers' willingness to pay a premium. Likewise, the brand name, laundry requirements, color, and fit criteria were demonstrated to have an impact on WTP.
Ward et al. (2011)	To investigate the extent to which consumer preferences for a residential appliance are affected by information on whether or not the appliance manufacturer was a member of the GPP	Choice Experiment (CE)	If the refrigerator is made by a company having a membership of Green Power Partnership, American consumers' willingness to pay (WTP) ranges from USD 48.52 to USD 70.95
Boys et al. (2013)	To explore Dominica's current and potential domestic demand for organic and/or “locally grown” produce	Contingent Valuation method	Dominican customers are ready to spend 17.5% more for organic produce and 12% more for locally grown produce.
Sriwaranun et al. (2015)	To investigate factors affecting consumers' willingness to pay (WTP) a premium for organics	Exploratory factor analysis and the double-bound contingent valuation	Customers were prepared to pay a premium for organic goods like pork items that satisfied ethical and environmental standards. In contrast, Respondents with children were less willing to pay a premium for organic items.
Sarma and Raha	To examine	Probit Regression	All the customers in the study were

(2016)	consumer's perception about organic beef and assess their willingness to pay for beef	model	ready to pay a price premium for an organic. While, WTP was found to be impacted significantly by few factors such as slaughtering procedure, processing, packaging, labeling, and Islamic foundation hallal certification.
Ravi et al. (2017)	To investigate consumers' willingness to pay (WTP) for organic fruits and vegetables and relevant factors affecting consumers WTP	The contingent valuation method, Binomial logit regression 200 survey data	The majority of customers agreed to pay a price premium of 5% to 100% for purchasing better-quality fruits and vegetables. Furthermore, WTP was influenced by a few factors, such as household income, size, gender of the customer, and issues like chemical residue in foods, trust in retailers, taste, and ecofriendly concerns significantly.
Hayati et al. (2017)	To investigate factors affecting consumers' willingness to pay premium prices for the pesticide-free fruit and vegetables in Marand city	Contingent valuation survey Ordered logit	Despite 3percent of customers were not ready to pay a premium, 97 percent of customers are prepared to pay premium at a different level for the organic fruits and vegetables. In addition, willingness to pay a premium is influenced significantly by few issues such as income, environmental and health concerns besides a wholesome diet, safer shopping criteria, and consumer's awareness
Ullah et al. (2018)	To explore the factors that influence willingness to pay (WTP) for organic food of urban consumers in Pakistan	Structural Equation Modeling (SEM)	The willingness to buy (WTB) of organic food is determined by attitudes, subjective norms, organic food knowledge, distribution, and labeling and certification.
Migliore et al. (2018)	To explore young (18–35 years old) consumers' interest and willingness to pay for chewing gums having the natural attribute	BDM incentive compatible mechanism	More than 68 percent of consumers are interested in natural attributes and are prepared to pay a price premium for them. Furthermore, elderly customers and those concerned about the environment favor natural attributes.
Li et al. (2019)	To review on a small but promising body of literature on consumers' willingness to pay for organic foods in China	Qualitative Approach	In China, consumers' health consciousness, individual norms, consumer knowledge, food safety, environmental concerns, animal welfare, and purchasing power all play a significant role in their willingness to pay for organic foods.

Kim et al. (2019)	To examine South Korean consumers' willingness to pay (WTP) price premium for a RE100 commodity using the specific case of smartphones	Contingent Valuation Survey, Spike Model	Consumers in South Korea are ready to pay price premium for RE100 smartphones.
Vapa-Tankosić et al. (2020)	To explore the consumers' perceptions of organic and local honey in the Republic of Serbia and identify factors that contribute to predicting consumers' willingness to pay (WTP) for organic and local honey	Contingent Valuation Survey, Ordinal Regression	Consumers are ready to pay the price premium for organic honey more than for local honey. Furthermore, customers' WTP is influenced by socio-economic factors such as income and education, as well as honey features such as food safety.

The findings from these studies indicate that consumers across the world are ready to pay a price premium for the best quality products. Moreover, socio-demographic factors of the consumer such as age, gender, education, family size, income, perception, attitudes, and environmental and legal concerns are also found to be significant factors influencing the consumer's willingness to pay. A huge number of studies have been carried out to measure consumers' willingness to pay for different product categories across the world. Despite the fact that orange is one of the most popular winter fruits in Bangladesh and around the world, no one has studied customers' willingness to pay for oranges. Given this situation, this study aims to explore the factors influencing the consumers' willingness to pay for oranges in Bangladesh.

Methodology

This study was carried out following the quantitative and explorative research design to identify the factors that influence consumer willingness to pay for sustainable meal in Bangladesh. The study needed both qualitative and quantitative data from primary and secondary sources to conduct this study. The researcher has chosen Dhaka city as the study area because it is the largest metropolitan city, where we can find different groups of people. Moreover, all marketers prefer to sell their produce in Dhaka city due to the largest market size in Bangladesh. Following the stratified random sampling, the researchers

distributed 730 questionnaires. Unfortunately, it was found that we were unable to collect less than 100 completed questionnaires. Considering the difficulties, researchers then started reminding individuals personally. Eventually, we managed to collect 217 completed questionnaires, among them only 200 were completed and usable. The researcher collected the primary data from the different consumer markets in Dhaka city following the main objectives of the present study. At first, to measure consumers' willingness to pay for sustainable meal, 200 respondents (consumers) who were at least purchasing fruits from the various markets in Dhaka city were selected based on both probability and non-probability sampling techniques. Consumers' willingness to pay for sustainable meal was assessed by the binary logistic regression technique through STATA software. This study assumed that both the product-related and socio-demographic factors of the consumer can affect the willingness to pay for a particular product. Consequently, following the studies (Ha-Brookshire and Norum, 2011; Sarma and Raha, 2016; Vapa-Tankosić et al., 2020), the binary logistic regression can be expressed as below:

Binary Logit Model

$$WTP_i = \beta_0 + \beta_1 X_{1i} + \beta_2 X_{2i} + \cdots \dots \dots + \beta_9 X_{9i} \dots + \varepsilon_i$$

$$P(WTP_i = 1|X)$$

where $WTP_i = 1$ the i^{th} customer agreed to pay for sustainable meal;
Otherwise = 0

X_{1i} = Price (Tk/ Kg)

X_{2i} = Freshness level (Percentage)

X_{3i} = Size (1= small, medium =2, large= 3)

X_{4i} = Type (1= local variety, 2= imported)

X_{5i} = Age of the customer (Years)

X_{6i} = Gender (1= Male, 2= Female, and 3= other)

X_{7i} = Family Member (Numbers)

X_{8i} = Income of the customer (000Tk)

X_{9i} = Education of the customer (Number of the Schooling Years) and

ε_i = Error term

Results and Discussion

In this section, we tried to cover the result that we obtained from this study

Table 2. Summary Statistics

Variable(s)	Mean	Standard Deviation	Minimum	Maximum
WTP	0.61	0.49	0.00	1.00
Price (Tk/ Kg)	107.03	27.50	60.00	180.00
Size (1= small, medium =2, large= 3)	1.86	0.73	1.00	3.00
Type (1= local variety, 2= imported)	1.55	0.52	1.00	2.00
Freshness level (Percentage)	83.65	14.92	50.00	100.00
Age (Years)	34.56	5.79	25.00	70.00
Gender ((1= Male, 2= Female, 3= Other)	1.62	0.49	1.00	3.00
Family Member (Number)	4.25	1.49	2.00	7.00
Income (000Tk)	22.90	17.32	10.00	150.00
Education (Year)	10.63	6.10	2.00	20.00

Source: Research finding, 2022.

For estimating customers' willingness to pay for oranges, the study assumed that product-related factors such as price (Tk./Kg), size (small, medium, large), type (local, imported), and freshness level (percentage); as well as socio-demographic factors of customers like age (years), gender (male, female, other), family size (no), income (000Tk), and education (years) influence decision making. A few significant issues have been noticed during conducting the survey.

Firstly, huge price fluctuations have been seen in the market. Table 1 shows the mean price of the orange was 107.03 Taka/Kg with a range of 60 Taka/Kg to 180 Taka/Kg. Although market regulatory bodies such as the department of agricultural marketing (DAM) and the National Consumers Rights Protection Department of the Government of Bangladesh are monitoring the marketing practices, a huge price gap exists which causes consumers to suffer when purchasing fruits like oranges.

Secondly, orange is found in only two types: locally cultivated and imported. Market demand is met by imported orange because national production is 3739.31 metric tonnes (BBS, 2020-21), which is insufficient to meet national demand, which is estimated to be around 12.00 million tonnes [(164.7 million population 200 gm daily 365 days], BBS-2022].

Thirdly, there are three types of orange based on sizes, such as small, medium, and large, available on the market (Agbetoye and Oloye, 2009). The survey showed that a major percentage of customers prefer to purchase the medium-sized orange. Because the medium-sized orange is easier to serve, more available, and more economically reasonable than other sizes.

Fourthly, the survey revealed that not all oranges were equally fresh. The average freshness level was assumed to be 80%. Despite the department of agricultural marketing (DAM) and the National Consumers Rights Protection Department of the Government of Bangladesh monitoring the quality of the fruit, the study found a few oranges looking garden-fresh and about to be useless.

Similarly, the study found that the socio-demographic factors of customers were not homogenous. A few issues were remarkably pointed out, such as the mean age of customers was 34.56 years, which varied from 25 to 70. Next, the average number of family members of customers was 4.25, but it was found to change from 2 to 7. This signals that customers belonging to nuclear families and large families purchase the orange.

Although the study found the average income of customers was Tk. 22.90 thousand, the income was found to fluctuate from Tk. 10 thousand to Tk. 150 thousand because people belonging to different socio-economic classes live in Dhaka city. Finally, the average schooling year of customers was 10.63 years, which ranged from 2 years to 20 years. This indicates that customers with tertiary education and the least education purchase the orange in Dhaka city.

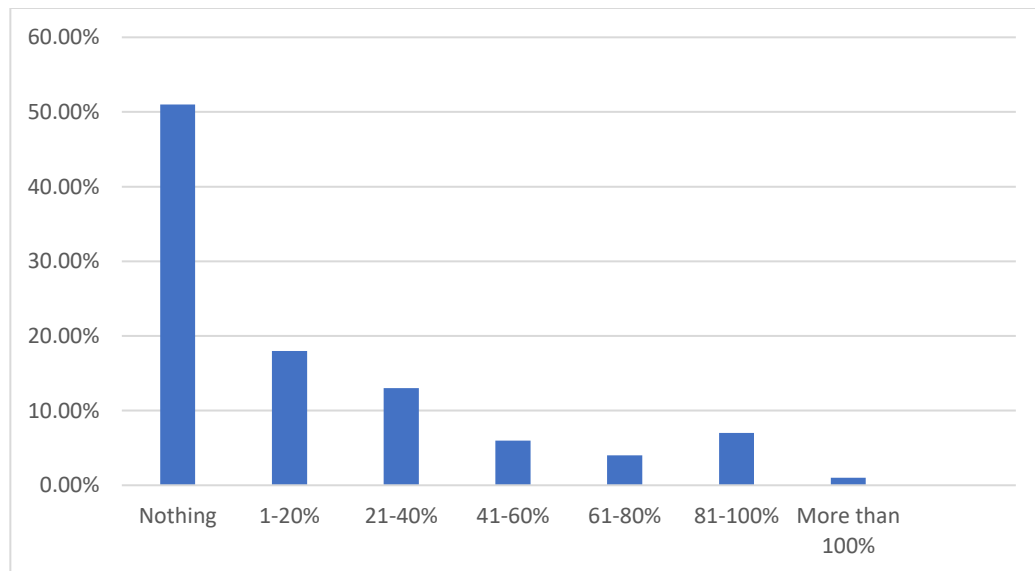


Figure 2. Willingness to Pay More than the Purchased Price

Source: Research finding, 2022.

Figure 1 shows how much more customers were prepared to pay for the already purchased fruits (orange). The study found that customers' willingness to pay was not identical for the already purchased fruits. At first, it was remarkably

noticed that 51% of customers were not ready to pay more than the purchased price. This indicated that 51% of customers did not have any consumer surplus on the orange. Apart from that, 18%, 13%, 6%, 4%, and 7% of customers were willing to pay 1-20%, 21-40%, 41-60%, 61-80%, and 81-100% more for already purchased oranges. It implied that about 49% of customers felt that they were enjoying different levels of consumer surplus on purchasing the sustainable meal. Finally, 1% of customers were interested in paying more than 100% of the market price for already purchased oranges.

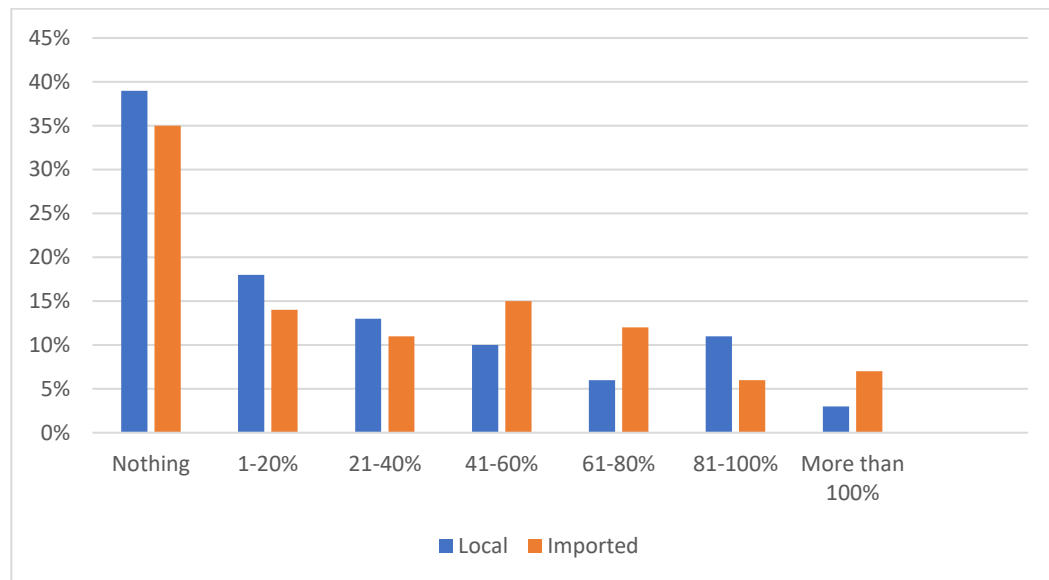


Figure 3. Willingness to Pay More than the Purchased Price

Source: Research finding, 2022.

Figure 2 revealed how much customers were willing to pay a price premium for the local and imported types of oranges. First, about 39% and 35% of customers were not ready to pay more than the purchase price for the local and imported types of oranges, respectively. The survey found that 18% and 14% of customers were willing to pay 1-20% more than the purchase price for the local and imported types of oranges, respectively. Next, 13% and 11% of customers were willing to pay 21-40% more than the purchase price for the local and imported types of oranges, respectively. Similarly, 10% and 15%, 6% and 12%, 11% and 6% of customers were interested in paying 41-60%, 61-80%, and 81-100% more than the purchase price for the local and imported types of oranges, respectively. Finally, 3% and 7% of customers were willing to pay more than

100% of the purchase price for the local and imported types of oranges, respectively.

Table 3. Binary Logit regression of the determinants of the willingness to pay for orange

WTP	Coeff.	Standard Dev.	z	P-Value
Constant**	-18.138	6.206	-2.922	0.003
Price**	-0.050	0.016	-3.150	0.002
Size	0.293	0.31	0.945	0.256
Origin	0.441	0.692	0.637	0.524
Freshness***	0.171	0.048	3.531	0.000
Age	0.018	0.054	0.324	0.746
Gender	0.483	0.419	1.153	0.180
Family Size*	-0.367	0.210	-1.751	0.091
Income*	0.079	0.042	1.900	0.057
Education**	0.387	0.139	2.783	0.005
Log Likelihood Value= -87.859				
LR chi2(9) = 232.65				
Prob > chi2 = 0.0000				
Pseudo R2 = 0.2669				

Source: Research finding, 2022.

Note: * ** *** denote significant at >10%, >5%, and >0% level, respectively.

Determinants of the Customers' Willingness to Pay for Orange

The product-related and socioeconomic factors of Bangladeshi consumers' willingness to pay for oranges were shown using a binary logit regression technique. Table 2 provides an illustration of the projected result of the consumers' willingness to pay for oranges. According to the chi-square value, the model had a decent fit to the data set and was statistically significant at a 1% level of probability. The findings demonstrated that consumers' willingness to pay (WTP) for oranges was highly impacted by product-related characteristics such as price, size, and freshness level, as well as socioeconomic aspects such as income and education.

At a one percent probability level, it was discovered that the coefficient of the price, which was -0.05, greatly influenced the consumers' willingness to pay for oranges. According to the results, the probability that a consumer is willing to pay more for oranges decreases by 0.05 for every unit of price rise. The

customer's disposable income often decreases as a result of rising commodity prices. Customers are reported to be less willing to spend more, which results in customers buying less often (Raki and Mehrara, 2021). The price of the orange had a negative impact on willingness to pay, according to the research, and this finding was corroborated by a small number of other studies (Ha Aryal et al., 2009; Brookshire and Norum, 2011; Boys et al., 2013; Sarma and Raha, 2016).

Furthermore, at a 1% level of significance, the orange's freshness level had a positive and significant impact on the willingness to pay. The outcome shows that if the orange's freshness level rises by 1%, there is a 0.171 percent chance that people will be prepared to pay more for it. The orange is also quite perishable, much like other fruits and vegetables. As a consequence, buyers strongly prefer fresh, higher-quality oranges. The outcome was in line with the results of the investigations by Boys et al. (2013) and Owusu and Anifori (2013).

Next, the family size coefficient was -0.367 and statistically significant at the level of 10% probability. The number of family members affected consumers' willingness to spend in the opposite direction, which indicates that for every additional family member, the likelihood of purchasing oranges reduces by 0.367. With a growth in the number of family members, the expense of living for the family often rises in terms of food, medication, housing, clothes, and education. Because they have fewer spare cash, customers with bigger families are less willing to pay extra for any goods or services. The results of this research (Muhammad et al., 2015; Nandi et al., 2017; Bhattarai, 2019; Buzdar et al., 2020) also show that family size has a detrimental effect on willingness to pay. In contrast, Sarma and Raha (2016) discovered that the size of the household had a favorable effect on willingness to pay. Although the larger household size has a much greater cost of living, it also includes a larger number of wage earners who may contribute to the family's overall revenue (Hoque et al., 2022). As a result, the size of the household might influence the willingness to pay favorably.

Moreover, it was discovered that the willingness to pay (WTP) for orange was influenced by the consumers' income at a significant level of 5%. This means that if the customer's income rises by one unit (Tk. 1000), the likelihood that they will pay more for oranges rises by 0.079. Typically, it is thought that consumers with greater earnings would be more willing to pay more for necessities like housing, clothes, food, and medicine. The investigations listed below [Boys et al., 2013; Sarma and Raha (2016); Nandi et al., 2017; Ullah et al., 2018; Kim et al., 2019; Suanmali, 2020; Vapa-Tankosi et al., 2020] revealed a similar conclusion.

At a 1% probability level, the coefficient of education was 0.387 and statistically significant. This shows that as consumers' education years rise by 1 unit (year), their likelihood of being willing to pay more for oranges improves by 0.387. Due to the orange's high food value and nutritional worth, clients with better educational backgrounds are more interested in buying it since they are concerned about living healthy and quality lifestyles. This research (Muhammad et al., 2015; Sarma and Raha (2016); Ullah et al., 2018; Kim et al., 2019; Vapa-Tankosi et al., 2020) has discovered that consumers' educational backgrounds have a favorable and substantial impact on their willingness to pay (WTP) for any good. On the other hand, Boccaletti and Nardella (2000) discovered that consumer education adversely impacted their willingness to spend. They said that customers who have completed more years of education are logical, aware of product quality, market conditions, and family budget.

Furthermore, it was discovered that a few elements, such as the orange's size and country of origin, as well as socioeconomic elements of the customer, like age and gender, had an impact on the customers' willingness to pay for oranges without reaching a statistically significant probability level.

Recommendation

Although it is important, the price affected the willingness to pay for sustainable food consumption within the consumers of middle-income nations. Since the annual production of fruits in Bangladesh is insignificant in terms of national demand, a huge amount of oranges and other fruits are being imported to fulfill the national demand. Due to the 89.32% import tax on fresh fruits, physical damage, and quality deterioration, traders in Bangladesh charge higher prices (The Business Standard News, 2021). As a result, a significant portion of the population of Bangladesh cannot afford sustainable food consumption because of the higher price. This issue can be solved in two ways. Firstly, the government can either reduce the import tax on fruits like oranges to keep the price within the customer's purchasing capacity.

Secondly, the government can incentivize local entrepreneurs to increase the production of fruits that ensure sustainable food consumption, because local production will encourage local consumption. Although the annual production of oranges has more than doubled in the last 15 years (BBS 2020-21), it is still far from meeting the total population of the country. If dependence on imports for fruits declines due to higher annual production, the price of sustainable food will

be within people's purchasing capacity. Lastly, it will improve the national balance of payments by saving foreign currency.

Conclusion

Due to the advancement of information communication technologies (ICTs) and globalization, power has shifted from marketers to consumers because consumers are well informed about market offerings (Schiffman and Kanuk, 2014; Kotler, 2016). Since customers are well informed about the product/service, its alternatives, and market situations, they are very careful about spending on the product/service. Consequently, marketers should analyze consumer preferences, purchasing behavior, socioeconomic features, and the marketing environment before making a product or service available. Otherwise, both the marketers and the consumers will be losers. This study showed that 51% of customers did not have any consumer surplus after purchasing oranges in Dhaka city and were not willing to pay more than the purchase price. Conversely, 49% of customers were interested in paying more than the purchase price for sustainable consumption because they understand the health benefits. So, the governments of middle-income countries should take initiatives to improve the demand for sustainable consumption through training and education. Finally, the study also found that customers' willingness to pay for sustainable consumption is influenced significantly by product-related factors (price and freshness) and socioeconomic factors of the customer (family size, income, and education).

Theoretical Contribution

A huge number of studies have been carried out to measure consumer willingness to pay for different product categories such as green electronics (Saphores et al., 2007), organic products (Aryal et al., 2009), beef (Sarma and Raha, 2016), pesticide-free fruit and vegetables (Hayati et al., 2017), smartphones (Kim et al., 2019), organic foods (Li et al., 2019), and honey (Vapa-Tankosić et al., 2020) across the world. Despite the fact that oranges are one of the most popular winter fruits in Bangladesh and around the world, there are a few studies on customers' willingness to pay for oranges. Therefore, this study can enhance the existing body of literature on consumer behavior by providing empirical evidence of consumer willingness to pay for oranges within the specific context of Bangladesh.

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