

*[Dr. Nazrul Islam, Naziah Tahsin, Nowshin Tarrannum, Rumaisa Zahara Salihee, Sumaiya Tarannum Sujana, Jarin Tasnim Mishma. (2019). Factors Influencing the Consumers' Perceptions Towards Frozen and Ready-to-Cook Food Products in Bangladesh. Presented at the "1st Global International Conference 2019" held during 13-14 December 2019 in Kathmandu, Nepal]*

## **Factors Influencing the Consumers' Perceptions Towards Frozen and Ready-to-Cook Food Products in Bangladesh**

**Professor Dr. Nazrul Islam**  
Canadian University of Bangladesh  
Dhaka, Bangladesh  
Email. nazrulku@gmail.com

&

**Naziah Tahsin, Nowshin Tarrannum, Rumaisa Zahara Salihee, Sumaiya Tarannum  
Sujana, Jarin Tasnim Mishma**  
Bangladesh University of Professionals  
Dhaka, Bangladesh  
Email. naziah1998tahsin@gmail.com

### **Abstract**

Recently in Bangladesh, frozen and ready-to-cook food industry is growing very fast due to high demand of these products by the city dwellers. These processed frozen and ready-to-cook food products are mainly related to fruits and vegetables, fish and meat-based products and wheat-based food products, etc. With the increase of population in the urban areas of Bangladesh, the citizens are becoming busy, families are becoming smaller, and the parents are getting associated with the jobs. As a result, people demand easy and "ready-to-cook" processed frozen food items. Families living in the cities are adopting their food habits towards frozen foods such as, processed meat, half boiled meat, processed fish, vegetables, fruits, porotah, samosa, shingara, pizza, etc. as these foods are easy to cook in a very short time. The reason for increased demand of these processed foods can also be attributed by the increased engagement of women at work and increased purchasing power of the people. Hence, this study aims at identifying the factors influencing the consumers' perception about the frozen and ready-to-cook food products on Bangladeshi people. A survey was conducted among 211 frozen and ready-to-cook food consumers of Dhaka city with a structured questionnaire. Both descriptive and inferential statistics were used to analyze the data. Factor analysis was conducted to identify the influencing factors related to the consumers' perception about frozen and ready-to-cook food products. Regression analysis was accomplished to examine the impact of the factors on the overall consumers' preferences of the processed frozen and ready-to-cook food products. Results show that the factors which influence the perception of the consumers about frozen and ready-to-cook food products are concerned with saving time, helpful and economic, low price, variety and good for health, brand image and quality, availability of the frozen foods, taste of the food, and attractive packaging of the food. Individual factor relationships show that the factors such as, saving time, the foods are helpful and economic, low price, variety and good for health, brand image and quality, and availability of the foods are significant and the factors such as, good taste of the food and attractive packaging of the food are not significant in this study. This study suggests that the policymakers of the processed frozen and ready-to-cook food product manufacturers should give importance on these factors for increasing the demand of the products among the city dwellers of Bangladesh.

**Keywords:** *Consumers' Perception about Fish, Meat and Wheat-Based Frozen Foods, Life Style and Taste Preferences, Income of the People, Availability of the Products, Easy to Cook.*

# Factors Influencing the Consumers' Perceptions Towards Frozen and Ready-to-Cook Food Products in Bangladesh

## 1. Background

Frozen food and ready-to-cook food market is expanding very fast among the city dwellers of Bangladesh. Frozen and ready-to-cook food products are mainly related to fruits and vegetables, fish and meat-based products, wheat-based food products, and snacks products. Frozen fruits and vegetables related products are different fruits, Bean Seeds, Kakrol, Patol, Ladies Finger, Jack Fruit Seeds, etc. while snacks foods include both meat and fish based snacks like chicken nuggets, meat ball, strips, fish ball, fish cakes and vegetable based snacks like Aloo Puri, Dal Puri, Samosa, Shingara and Spring Roll (Arifeen, 2012). Frozen Ready to Cook Meat products include frosted whole chickens, lambs, mutton and beef. These are currently available at super markets and order based by institutional buyers like restaurants and fast food shops and fish products are Hilsha, Koi, Pabda, Keski, Mola, Foli, Baila, Batashi and Ayer.

A rapidly growing consumer market is observed in Bangladesh in recent years. It is perceived that this growth is due to a large population base that has increased demand for food products in Bangladesh (Ferdous, & Hossain, 2015). The market and the product range have evolved significantly over the last decade and many companies have entered the food business. Frozen food and ready-to-cook foods market is also increasing in Bangladesh very fast. According to some industry analysts, the food processing sector in Bangladesh is a 4.5 billion US Dollar industry. In 2010, Bangladesh exported over \$700 million worth of processed food and beverages, over 60 percent of them were shrimp and fish products<sup>1</sup>.

The completion among the manufacturers in this sector is also severe. Golden Harvest and Rich have a high assortment of products and are the largest players in food products market in Bangladesh. However, Aftab, BRAC and CP are also big players in the processed chicken market of the country. Kazi has recently entered into the market and is trying to grab some market share very fast. This sector is a promising sector of Bangladesh as the per capita income, family structure (nuclear), taste and fashion are changing in the country<sup>2</sup> (Figure 1). However, there is still some misconception about the frozen food and ready-to-cook foods in Bangladesh. Saying goes that frozen foods are not very good for health and it has low nutrition value. Hence, this study aims to identify the consumers' perception about the frozen food and ready-to-cook food products like fruits and vegetables, fish, meat and wheat-based frozen food products in Bangladesh.

---

<sup>1</sup>

[https://www.google.com.bd/search?sxsrf=ACYBGNRP00t0z6Ovri0IECrudH7A4\\_MD8A%3A1570531429727&lei=ZWicXZ3NK8n6vgTFjr\\_A CQ&q=food%20industry%20in%20bangladesh%202018&ved=2ahUKEwjunKTBvYzIAhVeinAKHRbyA4oQsKwBKAF6BAgAEAI&biw=1224&bih=745](https://www.google.com.bd/search?sxsrf=ACYBGNRP00t0z6Ovri0IECrudH7A4_MD8A%3A1570531429727&lei=ZWicXZ3NK8n6vgTFjr_A CQ&q=food%20industry%20in%20bangladesh%202018&ved=2ahUKEwjunKTBvYzIAhVeinAKHRbyA4oQsKwBKAF6BAgAEAI&biw=1224&bih=745)

<sup>2</sup> <https://www.lightcastlebd.com/insights/2015/07/14/market-insight-bangladesh-frozen-food-sector>

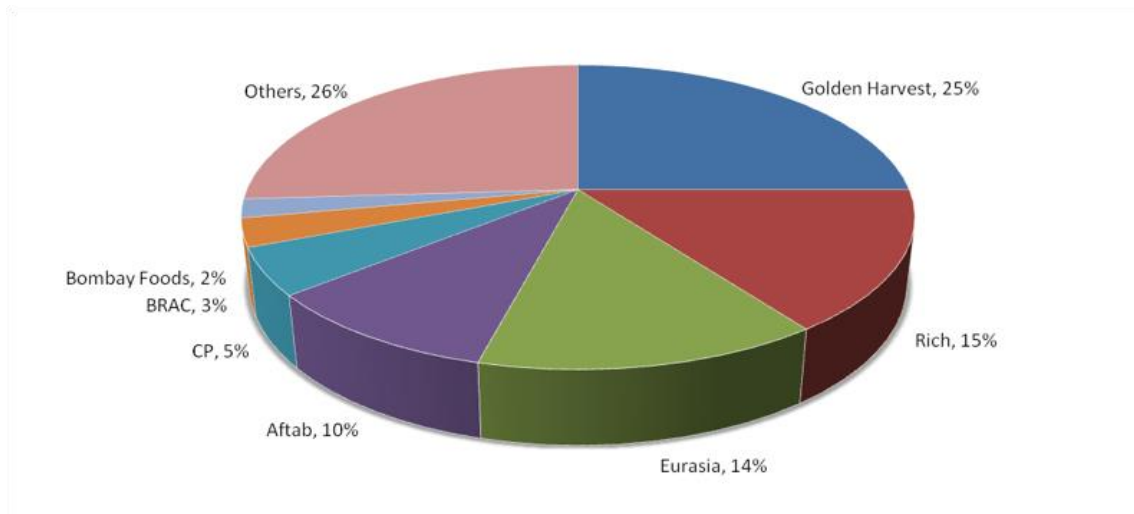


Figure 1 Competitive Situation of Bangladesh Frozen Foods Market<sup>3</sup>

## 2. Objectives of the Study

The main objective of this study is to identify the factors related to the consumers' perception about the frozen food and ready-to-cook food products in Bangladesh. The specific objectives are:

- (i) to identify the factors that influence consumers' perceptions about the frozen food and ready-to-cook food products in Bangladesh;
- (ii) to identify the significant factors which influence the selection of frozen foods in Bangladesh.

## 3. Literature Review

Processed frozen and ready-to-cook foods are important part of the daily foods of the day to day life of the people. This is also true in a developing country like Bangladesh. In this modern lifestyle, people have very small amount of time to prepare their foods by themselves. According to Becker, food preparation decisions are influenced by the worth of the homemaker's time (Becker 1965; Prochaska and Schrimper 1973). It's vital to think about convenience in the stages or methods of food consumption and to see the proportionate importance customers give to the factors like time, energy use in acquisition, consumption and disposal (Brown and McEnally, 1993). Therefore, convenience is outlined in terms of our time, physical energy and mental effort savings associated with food preparation and consumption. Another analysis shows that customers understand the Ready-made foods (RMFF) as nutrient, healthier and delicious. Therefore, they are switching frozen processed food and willing to pay the premium value. In the paper they investigated to understand the foremost moving factors that have an effect on purchasers to get Ready-made food (Sen, S., Antara, N., & Sen, S. 2019).

Pre-packed, processed meals like boxed entrees and frozen dinners decreases the investment of energy, time, or cookery skills required for food preparation (Capps O, Tedford J, Havlicek J., 1985). However, qualitative analysis findings have found out that older people feel conflicted about pre-packed, processed foods as they knew these foods weren't as nourishing. However, they

<sup>3</sup> <https://www.lightcastlebd.com/insights/2015/07/14/market-insight-bangladesh-frozen-food-sector>

valued time-saving advantages of frozen processed food. Other qualitative findings recommend that saving time isn't the exclusive reason for buying processed food (Carrigan, Szmigin and Leek, 2006). A comparison is drawn to point that the biggest factor tributary to purchasing behavior in grocery stores was the worth and convenience of frozen foods that were more popular over ancient types of grocery purchase. Even though the cost of natural food was lower in those neighborhoods, individuals would tend to shop for frozen foods for the benefit of cookery and handling of the product (Aamir, S., & Nawaz, A. 2019).

Income is one of the foremost relevant socio-demographic variables that mostly have an effect on consumers' food decisions, suggesting that the look of interventions geared toward dynamical dietary patters ought to take into thought the characteristics of specific target populations (Ares, G., Machín, L., Girona, A., Curutchet, M., & Giménez, A. 2019). Suvrasub unit, enclosed some factors in his study that influence consumers to require ready-made food (2019), he mentioned the influencing factors like expeditious, safety, easiness to cook, favorability, price, brand, tasty, advertising, appearance, quality, availableness& packaging.

A.K.M Shakil Mahmud (2018) in his study referred an amount of robust investment in technology, processes and regulation by which the frozen food sector has flourished and earned itself a strong name with mercantilism partners. Exporters have earned quality and trait within the international market and are committed to maintain a competitive advantage in product quality. Another aspect of the processed food product is it's perpetually making an attempt to beat consumers' negative perception concerning the health and well-being of frozen foods. (Sirazum Munira, 2017). Food products provide compelling blessings over raw merchandise, particularly once when it involves organic process price and flavor. Food products additionally lock in vitamins and a natural contemporary style. Price, quality, availableness, taste and freshness are a number of the factors influencing shoppers in consumption of frozen foods. (Mahmudul Hasan, 2019).

Now in a Bangladesh based research of Syed Robayet Ferdous, he showed the prospects and challenges of Bangladesh frozen food (2015). Challenges of Bangladesh frozen food include infrastructure development, currency devaluation, price collapse, application of labor law, finding foreign investors etc. He also mentioned ways to overcome these challenges such as introducing new policy, new exporting destination, self and government monitoring and many more. Consumers' purchase decisions of semi processed frozen food products are significantly affected by five factors such as quality, taste, price, availability, and competitive superiority of the product over other substitute or competitive brands. The study also reveals that the competitive superiority is also a great concern to the customers. (S.M. Monirul Islam 2018)

#### **4. Methodology**

This study was conducted to identify the factors related to the consumers' perception about frozen and ready-to-cook foods in Bangladesh. Both primary and secondary data were used to conduct this study. Primary data were collected from the different consumers of departmental and retail stores located in Dhaka city. The secondary data were collected from the books, magazines, and journals.

#### 4.1 Sample Design and Determination of Sample Size

In Dhaka city of Bangladesh, there are about 10 million customers who buy frozen and ready-to-cook foods. Hence, the sample size of this study was determined by using the following formula suggested by Yamane (1967).

$$n = \frac{N}{1 + N(e)^2}$$

Where,  $n$  is the sample size,  $N$  is the population size, and  $e$  is the level of precision. For this study, level of precision is presumed as 0.07 and the population size is 10 million. Putting these values in the above equation, the required number of sample size becomes approximately 204. This study interviewed 211 consumers from 10 departmental outlets under study. This figure is well above the critical sample size of 204 for employing multivariate analysis (Hair et al., 1998).

#### 4.2 Questionnaire Design

Through literature review, the questionnaire related to the factors influencing the consumers' perception about the frozen and ready-to-cook foods was developed. Responses to all the statements in the questionnaire were measured on a five-point scale ranging from 1 to 5 with 1 indicating strongly disagree and 5 indicating strongly agree. The collected data were statistically processed subsequently to come to the useful findings.

#### 4.3 Data Collection & Analysis

Primary data of this study were collected and used for the purpose of identifying the factors which influence the consumers' perception about the frozen f frozen and ready-to-cook foods in Bangladesh. The survey was conducted among the 211 consumers from 10 outlets (Table 1).

Table 1 Distribution of the Respondent Frozen Foods Consumers

| Sl. No. | Name of Departmental Outlet(s) | Number Consumers Interviewed | Percentage | Cumulative Percentage |
|---------|--------------------------------|------------------------------|------------|-----------------------|
| 1.      | Agora                          | 23                           | 10.90      | 10.90                 |
| 2.      | Almas General Stores           | 18                           | 08.53      | 19.43                 |
| 3.      | Al-Amin                        | 14                           | 06.65      | 26.08                 |
| 4.      | Golden Harvest                 | 23                           | 10.90      | 36.98                 |
| 5.      | H.N.P. Family Mart             | 14                           | 06.65      | 43.63                 |
| 6.      | Shopno                         | 27                           | 12.79      | 56.42                 |
| 7.      | Mina Bazar                     | 16                           | 07.58      | 64.00                 |
| 8.      | Nahar Departmental Store       | 20                           | 09.47      | 73.47                 |
| 9.      | Pick & Pay Supermarket         | 30                           | 14.21      | 87.68                 |
| 10.     | Kazi Farms Kitchen             | 26                           | 12.32      | 100                   |
|         | Total                          | 211                          | 100.00     |                       |

The survey was conducted in 2019. The interviewers were properly trained on the items included in the questionnaire for data collection before commencing the interview. Along with descriptive

statistics<sup>4</sup>, inferential statistical<sup>5</sup> techniques such as, Factor Analysis and Multiple Regression Analysis were used to analyze the data. A Principal Component Analysis (PCA) with an Orthogonal Rotation (Varimax)<sup>6</sup> using the SPSS (Statistical Package for Social Sciences) was performed on the survey data. Multiple Regression Analysis<sup>7</sup> such as, Multiple Regression was conducted by using SPSS to identify the relationships between the dependent and independent variables and the significant factors.

## 5. Analysis and Interpretations

In the analysis part, descriptive and inferential statistics were used. Multivariate analysis like factor analysis and multiple regression analysis were performed to identify the factors and the relationships between the overall consumers' perceptions and the factors that influence the perception of the frozen and ready-to-cook foods consumers in Bangladesh. This study covered the factors influencing the perceptions of the frozen and ready-to-cook food consumers in Dhaka city.

### 5.1 Respondents Profiles

Table 2 shows that 46.20% of the respondents were male and 53.80% respondents were female consumers of frozen foods.

Table 2 Gender Distribution of the Respondents

|         |        | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------|--------|-----------|---------|---------------|--------------------|
| Valid   | Male   | 97        | 46.0    | 46.2          | 46.2               |
|         | Female | 113       | 53.6    | 53.8          | 100.0              |
|         | Total  | 210       | 99.5    | 100.0         |                    |
| Missing | System | 1         | .5      |               |                    |
| Total   |        | 211       | 100.0   |               |                    |

Age distribution of the sample respondents shows that 88.10% respondents were at the age of 18-24 years followed by 6.20% at the age of 25-30 years, 1.40% at the age of 31-37 years, and 4.30% at the age of above 38 years (Table 3).

<sup>4</sup> Descriptive statistics includes statistical procedures that we use to describe the population we are studying. The data could be collected from either a sample or a population, but the results help us organize and describe data. Descriptive statistics can only be used to describe the group that is being studying. That is, the results cannot be generalized to any larger group.

<sup>5</sup> Inferential statistics is concerned with making predictions or inferences about a population from observations and analyses of a sample. That is, we can take the results of an analysis using a sample and can generalize it to the larger population that the sample represents.

<sup>6</sup> Varimax rotation is an orthogonal rotation of the factor axes to maximize the variance of the squared loadings of a factor (column) on all the variables (rows) in a factor matrix, which has the effect of differentiating the original variables by extracted factor. Each factor will tend to have either large or small loadings of any particular variable. A varimax solution yields results which make it as easy as possible to identify each variable with a single factor. This is the most common rotation option.

<sup>7</sup> In statistics, regression analysis is a statistical process for estimating the relationships among variables. It includes many techniques for modeling and analyzing several variables, when the focus is on the relationship between a dependent variable and one or more independent variables. More specifically, regression analysis helps one understand how the typical value of the dependent variable (or 'Criterion Variable') changes when any one of the independent variables is varied, while the other independent variables are held fixed.

Table 3 Age Distribution of the Respondents

|         | Age of the Respondents | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------|------------------------|-----------|---------|---------------|--------------------|
| Valid   | 18-24                  | 185       | 87.7    | 88.1          | 88.1               |
|         | 25-30                  | 13        | 6.2     | 6.2           | 94.3               |
|         | 31-37                  | 3         | 1.4     | 1.4           | 95.7               |
|         | Above 38               | 9         | 4.3     | 4.3           | 100.0              |
|         | Total                  | 210       | 99.5    | 100.0         |                    |
| Missing | System                 | 1         | .5      |               |                    |
| Total   |                        | 211       | 100.0   |               |                    |

Table 4 shows that most of the respondents (73.80) have honors degree who prefer to go departmental stores.

Table 4 Education Level of the Respondents

|         |              | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------|--------------|-----------|---------|---------------|--------------------|
| Valid   | HSC/A levels | 36        | 17.1    | 17.1          | 17.1               |
|         | Honors       | 155       | 73.5    | 73.8          | 91.0               |
|         | Masters      | 13        | 6.2     | 6.2           | 97.1               |
|         | Others       | 6         | 2.8     | 2.9           | 100.0              |
|         | Total        | 210       | 99.5    | 100.0         |                    |
| Missing | System       | 1         | .5      |               |                    |
| Total   |              | 211       | 100.0   |               |                    |

Ninety-one point nine percent of the respondents were unmarried and 8.10% were married (Table 5).

Table 5 Marital Status of the Respondents

|         |           | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------|-----------|-----------|---------|---------------|--------------------|
| Valid   | Unmarried | 193       | 91.5    | 91.9          | 91.9               |
|         | Married   | 17        | 8.1     | 8.1           | 100.0              |
|         | Total     | 210       | 99.5    | 100.0         |                    |
| Missing | System    | 1         | .5      |               |                    |
| Total   |           | 211       | 100.0   |               |                    |

Most of the consumers (85.60%) of frozen foods were housewives (Table 6).

Table 6 Occupations of the Respondents

|         |                | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------|----------------|-----------|---------|---------------|--------------------|
| Valid   | Private Job    | 13        | 6.2     | 6.2           | 6.2                |
|         | Government Job | 1         | .5      | .5            | 6.7                |
|         | Entrepreneur   | 6         | 2.8     | 2.9           | 9.6                |
|         | Housewife      | 179       | 84.8    | 85.6          | 95.2               |
|         | Others         | 10        | 4.7     | 4.8           | 100.0              |
|         | Total          | 209       | 99.1    | 100.0         |                    |
| Missing | System         | 2         | .9      |               |                    |
| Total   |                | 211       | 100.0   |               |                    |

### 5.2 Buying Habits and Experience of the Respondents

This study shows that most of the consumers (36.20%) buy frozen food every month followed by often (31%), Never (19.50%), once in a week (11.40%) and daily (1.90%) (Table 7).

Table 7 Buying Patterns of the Respondents

|         |                | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------|----------------|-----------|---------|---------------|--------------------|
| Valid   | Daily          | 4         | 1.9     | 1.9           | 1.9                |
|         | Often          | 65        | 30.8    | 31.0          | 32.9               |
|         | Once in a week | 24        | 11.4    | 11.4          | 44.3               |
|         | Every Month    | 76        | 36.0    | 36.2          | 80.5               |
|         | Never          | 41        | 19.4    | 19.5          | 100.0              |
|         | Total          | 210       | 99.5    | 100.0         |                    |
| Missing | System         | 1         | .5      |               |                    |
| Total   |                | 211       | 100.0   |               |                    |

Most of the respondents (83.80%) have previous experience to buy frozen foods from the departmental stores (Table 8).

Table 8 Previous Experience of Buying

|         |        | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------|--------|-----------|---------|---------------|--------------------|
| Valid   | Yes    | 176       | 83.4    | 83.8          | 83.8               |
|         | No     | 34        | 16.1    | 16.2          | 100.0              |
|         | Total  | 210       | 99.5    | 100.0         |                    |
| Missing | System | 1         | .5      |               |                    |
| Total   |        | 211       | 100.0   |               |                    |



Most of the respondents (32.90%) would like to buy frozen ready meals followed by Frozen Meat and Poultry (18.10%), Milk & Milk Products (12.90%), Frozen Desserts (11.40%) etc. (Table 9).

Table 9 Preference to Buy Frozen Foods

|         |                              | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------|------------------------------|-----------|---------|---------------|--------------------|
| Valid   | Frozen Fruits and Vegetables | 11        | 5.2     | 5.2           | 5.2                |
|         | Frozen Meat and Poultry      | 38        | 18.0    | 18.1          | 23.3               |
|         | Frozen Fish                  | 6         | 2.8     | 2.9           | 26.2               |
|         | Frozen Bakery Item           | 16        | 7.6     | 7.6           | 33.8               |
|         | Frozen Seafood               | 11        | 5.2     | 5.2           | 39.0               |
|         | Frozen Desserts              | 24        | 11.4    | 11.4          | 50.5               |
|         | Frozen Ready Meals           | 69        | 32.7    | 32.9          | 83.3               |
|         | Milk & Milk Products         | 27        | 12.8    | 12.9          | 96.2               |
|         | Others                       | 8         | 3.8     | 3.8           | 100.0              |
|         | Total                        | 210       | 99.5    | 100.0         |                    |
| Missing | System                       | 1         | .5      |               |                    |
| Total   |                              | 211       | 100.0   |               |                    |

The highest number of respondents (34.30%) would like to buy frozen and ready-to-cook foods as natural food followed by positive (29.50%), moderate positive (22.90%), very positive (9%), and negative 4.30% (Table 10).

Table 10 Perception Towards Frozen Food

|         |                   | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------|-------------------|-----------|---------|---------------|--------------------|
| Valid   | Negative          | 9         | 4.3     | 4.3           | 4.3                |
|         | Neutral           | 72        | 34.1    | 34.3          | 38.6               |
|         | Positive          | 62        | 29.4    | 29.5          | 68.1               |
|         | Moderate Positive | 48        | 22.7    | 22.9          | 91.0               |
|         | Very Positive     | 19        | 9.0     | 9.0           | 100.0              |
|         | Total             | 210       | 99.5    | 100.0         |                    |
| Missing | System            | 1         | .5      |               |                    |
| Total   |                   | 211       | 100.0   |               |                    |

### 5.3 Results of Factor Analysis

The results of factor analysis show that all the variables concerning the consumer perception about the frozen and ready-to-cook foods have high communalities indicating the variables are important in this study (Table 11).

Table 11 Communalities of the Variables

| Variables  | Extraction |
|--|------------|
| 1. I am a regular buyer of processed food  | .903       |
| 2. Frozen food saves time.   | .825       |
| 3. Frozen food is as nutritious as fresh food.                                   | .863       |
| 4. Those who buy frozen food are not wasting money.                              | .875       |
| 5. Frozen food products are helpful form students/working women.                 | .795       |
| 6. Frozen food is economic in use.   | .930       |
| 7. Frozen food is a convenience food product.                                    | .981       |
| 8. Frozen food has a long shelf life than fresh food.                            | .932       |
| 9. The quality of frozen food is as good as fresh food.                          | .933       |
| 10. Price of frozen food is relatively low                                       | .893       |
| 11. Packaging of frozen food is attractive                                       | .944       |
| 12. Advertisement attracts me to buy frozen food                                 | .981       |
| 13. Variety of the frozen food is available                                      | .777       |
| 14. It is good for health  | .739       |
| 15. Frozen food is safe for me   | .692       |
| 16. Frozen food is easy to cook  | .687       |
| 17. Brand image of the product is good   | .747       |
| 18. Quality of the frozen food is good   | .930       |
| 19. Price of the frozen food is lower  | .981       |
| 20. The frozen food is availability  | .932       |
| 21. Taste of the frozen food is good   | .933       |
| 22. I believe in quality information printed on product package for frozen goods | .893       |
| 23. High price always ensures high quality of the food                           | .944       |
| 24. Packaging is very important to attract consumer in frozen food               | .981       |

Extraction Method: Principal Component Analysis.

This study identified eight factors related to the consumers' perception about the frozen and ready-to-cook foods in Bangladesh. This eight together explained 87.87% of the variance of the data set. The factors are: frozen foods save time, frozen foods are helpful and economic, low price, variety and good for health, brand image and quality, availability of the food, good taste of the food and attractive packaging of the food (Table 12).

Table 12 Total Variance Explained

| Component/Factor                         | Initial Eigenvalues |               |              |
|--|---------------------|---------------|--------------|
|  | Total               | % of Variance | Cumulative % |
| 1. Frozen Foods Save Time                | 5.263               | 21.929        | 21.929       |
| 2. Frozen Foods are Helpful and Economic | 3.732               | 15.551        | 37.480       |
| 3. Low Price                             | 3.053               | 12.721        | 50.201       |
| 4. Variety and Good for Health           | 2.546               | 10.607        | 60.808       |
| 5. Brand Image and Quality               | 2.386               | 9.941         | 70.748       |
| 6. Availability of the Food              | 1.665               | 6.937         | 77.685       |
| 7. Good Taste of the Food                | 1.415               | 5.898         | 83.583       |
| 8. Attractive Packaging of the Food      | 1.030               | 4.291         | 87.874       |

Extraction Method: Principal Component Analysis.

Table 13 shows the factor loadings of the variables constituted eight factors are very high. It shows that the factor loadings of all the variables are high indicating that the variables constituted the factor(s) have higher level of relationships with them.

Table 13 Rotated Component Matrix<sup>a</sup>

| Variables  | Component |       |      |       |      |      |      |   |
|--|-----------|-------|------|-------|------|------|------|---|
|  | 1         | 2     | 3    | 4     | 5    | 6    | 7    | 8 |
| <i>Factor 1 Frozen Foods Save Time</i>                                       |           |       |      |       |      |      |      |   |
| I am a regular buyer of processed food                                       | .939      |       |      |       |      |      |      |   |
| Frozen food saves time.  | .939      |       |      |       |      |      |      |   |
| Frozen food is as nutritious as fresh food.                                  | -.666     |       |      |       |      |      |      |   |
| Those who buy frozen food are not wasting money.                             | .583      |       |      |       |      |      |      |   |
| <i>Factor 2 Frozen Foods are Helpful and Economic</i>                        |           |       |      |       |      |      |      |   |
| Frozen food products are helpful for students/working women.                 |           | -.919 |      |       |      |      |      |   |
| Frozen food is economic in use.  |           | -.919 |      |       |      |      |      |   |
| Frozen food is a convenience food product.                                   |           | .643  |      |       |      |      |      |   |
| Frozen food has a long shelf life than fresh food.                           |           | .641  |      |       |      |      |      |   |
| The quality of frozen food is as good as fresh food.                         |           | .558  |      |       |      |      |      |   |
| <i>Factor 3 Low Price</i>  |           |       |      |       |      |      |      |   |
| Price of frozen food is relatively low                                       |           |       | .951 |       |      |      |      |   |
| Packaging of frozen food is attractive                                       |           |       | .951 |       |      |      |      |   |
| Advertisement attracts me to buy frozen food                                 |           |       | .643 |       |      |      |      |   |
| <i>Factor 4 Variety and Good for Health</i>                                  |           |       |      |       |      |      |      |   |
| Variety of the frozen food is available                                      |           |       |      | .743  |      |      |      |   |
| It is good for health  |           |       |      | .743  |      |      |      |   |
| Frozen food is safe for me   |           |       |      | -.742 |      |      |      |   |
| Frozen food is easy to cook  |           |       |      | .719  |      |      |      |   |
| <i>Factor 5 Brand Image and Quality</i>                                      |           |       |      |       |      |      |      |   |
| Brand image of the product is good   |           |       |      |       | .943 |      |      |   |
| Quality of the frozen food is good   |           |       |      |       | .943 |      |      |   |
| <i>Factor 6 Availability of the Food</i>                                     |           |       |      |       |      |      |      |   |
| Price of the frozen food is lower  |           |       |      |       |      | .984 |      |   |
| The frozen food is availability  |           |       |      |       |      | .984 |      |   |
| <i>Factor 7 Good Taste of the Food</i>                                       |           |       |      |       |      |      |      |   |
| Taste of the frozen food is good   |           |       |      |       |      |      | .964 |   |
| I believe in quality information printed on product package for frozen goods |           |       |      |       |      |      | .964 |   |
| <i>Factor 8 Attractive Packaging of the Food</i>                             |           |       |      |       |      |      |      |   |

|  |  |  |  |  |  |  |  |      |
|--|--|--|--|--|--|--|--|------|
| High price always ensures high quality of the food             |  |  |  |  |  |  |  | .685 |
| Packaging is very important to attract consumer in frozen food |  |  |  |  |  |  |  | .545 |

Extraction Method: Principal Component Analysis.  
 Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 7 iterations.

### 5.4 Results of Multiple Regression Analysis

Model summary shows that the R square value of the model is 0.531 (Table 14).

Table 14 Model Summary

| Model | R                 | R Square | Adjusted Square | R | Std. Error of the Estimate |
|-------|-------------------|----------|-----------------|---|----------------------------|
| 1     | .729 <sup>a</sup> | .531     | .512            |   | .364                       |

a. Predictors: (Constant), REGR factor score 8 for analysis 2, REGR factor score 7 for analysis 2, REGR factor score 6 for analysis 2, REGR factor score 5 for analysis 2, REGR factor score 4 for analysis 2, REGR factor score 3 for analysis 2, REGR factor score 2 for analysis 2, REGR factor score 1 for analysis 2

ANOVA shows that the factors together are significant as manpower planning techniques (Table 15).

Table 15 ANOVA<sup>b</sup>

| Model |            | Sum of Squares | df  | Mean Square | F      | Sig.              |
|-------|------------|----------------|-----|-------------|--------|-------------------|
| 1     | Regression | 30.238         | 8   | 3.780       | 28.586 | .000 <sup>a</sup> |
|       | Residual   | 26.710         | 202 | .132        |        |                   |
|       | Total      | 56.948         | 210 |             |        |                   |

a. Predictors: (Constant), REGR factor score 8 for analysis 2, REGR factor score 7 for analysis 2, REGR factor score 6 for analysis 2, REGR factor score 5 for analysis 2, REGR factor score 4 for analysis 2, REGR factor score 3 for analysis 2, REGR factor score 2 for analysis 2, REGR factor score 1 for analysis 2

b. Dependent Variable: Considering all the factors mentioned above, I like my job very much and I am proud of my job.

This study identified eight factors related to the perception of the consumers regarding frozen and ready-to-cook foods in Bangladesh such as, frozen foods save time, frozen foods are helpful and economic, low price, variety and good for health, brand image and quality, availability of the food, good taste of the food and attractive packaging of the food. Individual factor relationships show that the factor such as frozen foods save time, frozen foods are helpful and economic, low price, variety and good for health, brand image and quality, and availability of the food are significant and factors named good taste of the food and attractive packaging of the food are not significant in this study (Table 16).

Table 16 Coefficients<sup>a</sup>

| Model/Factor                                    | Unstandardized Coefficients |            | Standardized Coefficients | t       | Sig. |
|---|-----------------------------|------------|---------------------------|---------|------|
|   | B                           | Std. Error | Beta                      |         |      |
| (Constant)                                      | 4.408                       | .025       |                           | 176.069 | .000 |
| 1. <i>Frozen Foods Save Time</i>                | .139                        | .025       | .267                      | 5.534   | .000 |
| 2. <i>Frozen Foods are Helpful and Economic</i> | .177                        | .025       | .339                      | 7.040   | .000 |
| 3. <i>Low Price</i>                             | .110                        | .025       | .212                      | 4.390   | .000 |
| 4. <i>Variety and Good for Health</i>           | .075                        | .025       | .143                      | 2.969   | .003 |
| 5. <i>Brand Image and Quality</i>               | -.237                       | .025       | -.455                     | -9.447  | .000 |
| 6. <i>Availability of the Food</i>              | -.136                       | .025       | -.260                     | -5.402  | .000 |
| 7. <i>Good Taste of the Food</i>                | -.035                       | .025       | -.066                     | -1.379  | .170 |
| 8. <i>Attractive Packaging of the Food</i>      | -.007                       | .025       | -.013                     | -.277   | .782 |

a. Dependent Variable: Considering all the factors mentioned above, I like my job very much and I am proud of my job.

## 6. Conclusions and Recommendations

This study has been performed to identify the factors influencing the frozen and ready-to-cook foods consumers' perception in Dhaka city. It identified eight factors related to the perception of the consumers regarding frozen and ready-to-cook foods in Bangladesh. The factors are: frozen foods save time, frozen foods are helpful and economic, low price, variety and good for health, brand image and quality, availability of the food, good taste of the food and attractive packaging of the food. Individual factor relationships show that the factor such as frozen foods save time, frozen foods are helpful and economic, low price, variety and good for health, brand image and quality, and availability of the food are significant. This means if there is a change in this area of the frozen foods there will be perceptual change in the consumers of Bangladesh. The factors such as, good taste of the food and attractive packaging of the frozen foods are not significant in this study. However, there is an ample scope to conduct further study on the factors that influence the perception of the frozen and ready-to-cook foods consumers in Dhaka city of Bangladesh by taking more samples in account which may lead to better results in this sector of industry.

## 7. References

1. Arifeen, S. R. (2012). *Frozen Food Products, Marketing and Distribution Challenges in a Developing Country, Case Study: Pakistan* (No. id: 4743).
2. Ares, G., Machín, L., Girona, A., Curutchet, M. R., & Giménez, A. (2017). Comparison of motives underlying food choice and barriers to healthy eating among low medium income consumers in Uruguay. *Cadernos de saudepublica*, 33, e00213315.
3. Ferdous, S. R. & Hossain, S. D. (2015). Prospect and Challenge of Bangladesh Frozen Food: A Way to Overcome. *Online International Interdisciplinary Research Journal*, {Bi-Monthly}, ISSN 2249-9598, Volume-V, May 2015 Special Issue
4. Hair Jr., J. F. et al. (1998). *Multivariate Data Analysis with Readings*. Englewood Cliffs, NJ: Prentice-Hall.
5. Hasan, M. (2019). An Examination of Consumer Attitude towards Frozen Foods in Bangladesh.
6. Islam, S. M., Kalam, A., & Fahmida, A. (2018). Factors Affecting Customers' Brand Choice Behavior of Semi Processed Frozen Food Products: A Study in Khulna City, Bangladesh. *Universal Journal of Management*, 6(8): 273-279.
7. Munira, S. (2017). Factors influencing Bangladeshi people to lean towards increased consumption of frozen food products.
8. Osman, I., Osman, S., Mokhtar, I., Setapa, F., Shukor, S. A. M., & Temyati, Z. (2014). Family food consumption: desire towards convenient food products. *Procedia-Social and Behavioral Sciences*, 121, 223-231.
9. Reasons parents buy prepackaged, processed meals: it is more complicated than “I Don't Have Time”. *Journal of nutrition education and behavior*, 49(1): 6066.
10. Reasons parents buy prepackaged, processed meals: it is more complicated than “I Don't Have Time”. *Journal of nutrition education and behavior*, 49(1), 6066.
11. Resurreccion, A. V. A. (2004). Sensory aspects of consumer choices for meat and meat products. *Meat Science*, 66(1): 11-20.
12. Saifullah, A., Ahmad, N., Ahmed, R., & Khalid, B. (2014). Frozen Food Revolution: Investigating How Availability of Frozen Food Affects Consumer Buying Behavior. *International Journal of Economics, Commerce and Management*, 2(8): 2348-0386.
13. Sen, S., Antara, N., & Sen, S. (2019). Factors influencing consumers to Take Ready-made Frozen Food. *Current Psychology*, 1-10.
14. Tashiro, S., & Lo, C. P. (2012). Gender Difference in the Allocation of Time: Preparing Food Cooked at Home Versus Purchasing Prepared Food. *Food, Culture & Society*, 15(3): 455-471.
15. Yamane, Taro. (1967). *Statistics: An Introductory Analysis*, 2nd Edition, New York: Harper and Row.