

# **CRITICALLY EXAMINE THE ROLE OF BANGLADESH STANDARDS AND TESTING INSTITUTION (BSTI) IN THE QUALITY ASSESSMENT OF PACKAGED FOOD PRODUCTS IN BANGLADESH**

**Abu Sayed Md. Shahiduzzaman**

*Lecturer & Head, Department of Marketing, Uttar Bangla College  
Mobile: +88 01730180238, E-Mail: shahiduzzaman.mkt@gmail.com*

## **Abstract**

Bangladesh Standards and Testing Institution (BSTI) is an authentic regulatory body working in its various capacities for looking after the quality of finished food products ready for sale. Examining the quality of the food product is the first and foremost duty of the BSTI as assigned by the Gov't of Bangladesh. This authority is working to identify the safety level of the food products in addition to assessing the BD Standard as regulated by the authority. BSTI also certifies the international standard organizations certification like ISO, FDA, HALAL, etc. However, these are not mandatory at the national level but may work as a boost for the customer's perspective. Further, the BSTI checks whether the manufacturers strictly follow the packaged food labeling act or not. Now the question is, whether the BSTI is doing well in performing its mandatory functions. The purpose of this study is to examine the role of BSTI regarding the quality assessment of packaged food products in Bangladesh. Primary data has been used for analyzing consumer perceptions using descriptive statistics and regression. SPSS has been used for statistical analysis, and micro soft Excel has been used for data tabulation and graphical presentation. The study concludes that BSTI is competent enough in product quality assessment but has poor performance in respect of other functionalities.

***Key Words:*** Food quality, BSTI, packaged food, quality assessment, consumers' perception

## **INTRODUCTION**

The quality of food is determined mainly by two factors, one from the customer's perspectives regarding their acceptability and the other one may be called external factors like size, shape, color, gloss, consistency, texture, etc. at the present age, customers are very aware of their health and choose the quality product according to their needs. majority of the customers check the manufacturing process written outside the packets before selecting desirable items. Therefore, maintaining the quality of packaged food is a challenging task for the manufacturer in this competitive market. Consumers also rely on manufactured and processed standards, particularly when it comes to knowing what ingredients are present due to dietary and nutritional requirements. Ingredient quality is not the only requirement; hygiene is also important. To ensure the safety of food for consumers, the food processing environment should be as clean as possible. As part of food quality, a product's traceability is also taken into account, for instance, the supplier of the ingredients and packaging, in case a recall is necessary.

It is generally agreed that quality has both objective and subjective dimensions. In terms of objective quality, engineers and food technologists evaluate the physical characteristics of the product. The subjective quality of a product is what consumers perceive as being of high quality. The relationship between the two is at the heart of quality's economic importance. Quality will be a competitive parameter if producers can translate consumer desires into physical characteristics of products, and consumers can infer desired qualities from how a product is built. In the subjective realm, we can, as a gross simplification, distinguish between two schools of thought about quality. The first one, which we can call the holistic approach, equates quality with all the desirable properties a product is perceived to have. The second, which we can call the excellence approach, suggests that products can have desirable properties that consumers, in their own language, may not view as part of quality. In food, consumers may say that 'convenience goods are generally of low quality, even though they regard convenience as a desirable property of food products (Olsen, 2002). In the following, we will use the holistic approach. It follows from the holistic approach that food safety is part of food quality, at least to the extent that consumers believe food safety to be a desirable property. We can usually assume that this is the case, at least up to a point. Safety may, however, be different from other quality aspects in the way in which it affects consumer decisions, a question to which we will return.

Packaged food includes any type of food or beverage found in retail markets worldwide, whether it's a raw ingredient such as spices or convenience food like ready meals. A variety of packaging formats can be used to package shelf-stable, refrigerated, and frozen foods and can include bags, bowls, bottles, boxes, cans, cartons, crates, jugs, packets or tins, tubes, and tubs. Major shelf-stable packaged foods categories include baby and infant foods, beans and legumes, bread, cereals, condiments (such as mayonnaise, mustard, ketchup, steak sauce, and soy sauce), crackers, dessert and pudding mixes, canned fish or meat, flour, canned or jarred fruits, and vegetables, prepared cooking sauces, nuts and nut butter, oils and vinegar, pasta, rice, canned soups, spices, sugar, tomato products, coffee and tea products, soft drinks, and alcoholic beverages.

There are several major categories of refrigerated packaged foods, such as dairy products (such as milk, yogurt, and cheese), fresh juice products, meat, sausages, poultry, and fish/seafood. Frozen packaged food categories include frozen ready meals, frozen breakfast bread and baked goods, frozen vegetables and sides, frozen microwaveable snack products, and ice cream and other frozen desserts.

## **LITERATURE REVIEW**

Huda et.al (2008) observed that Higher educated individuals are more likely to maintain food quality. Also, the study found little confidence in government agencies' ability to test food standards. The issue of food safety is becoming more important as buyers become more concerned about processed foods. In the future, food safety will be improved through the introduction of new technology and the development of mass markets.

Testa,et.al (2019) stated that Consumer behavior is influenced primarily by honey's therapeutic properties, followed by income, variety, and taste. consumers seek food products that not only provide nutrition, but also promote health, improve general health, and reduce the risk of certain diseases. The variety, taste, natural origin, and organic certification of honey are all important factors in its consumption. In addition, environmental, social, and ethical attributes play an important role in consumer behavior.

De Silva & Sandika, (2011) argued that the general public's awareness and adoption of food certification standards and factors associated with Halal, SLS, ISO, and HACCP meat purchase intentions was conducted. Consumers' awareness of food certification logos, as well as their preference for international certified products.

Nasreen & Ahmed (2014) investigated that, during 1995-2011, 40-54% of daily consumed food was adulterated. Most of the food items were commonly adulterated. A very low percentage of respondents thought that approval by regulatory authorities was the best criteria for purchasing packaged food items; they considered expiry date and quality as the best criteria when purchasing open food items. Consumers, the government, and the industry should take action in more than half of the cases.

Haxor et.al (2014) observed that respondents to the attitude survey are highly aware. The quality of food should be maintained at a higher level of awareness among people with higher educational backgrounds. Also, the study shows a lack of confidence in government regulatory agencies' ability to test food standards.

### **OBJECTIVES OF THE STUDY**

Based on the literature review and identified research gap, following research objectives have been finalized for this study -

1. To discuss the functions of BSTI regarding the quality assessment of packaged food products.
2. To examine the role of BSTI in the quality assessment of packaged food products.

### **HYPOTHESIS**

Based on the identified research objectives following research hypothesis has been framed for the study -

H1: BSTI plays a positive role in the quality assessment of packaged food products

### **RESEARCH METHODOLOGY**

The following methodology has been adopted for completing this study through the use of various statistical tools and analysis techniques.

#### **Study Area**

The sample population consists of all adults aged eighteen and older who purchase packaged foods from different markets and shops in the Lalmonirhat district in Bangladesh.

#### **Selection of Sample**

In Bangladesh, Lalmonirhat is comparatively known as a poor economic district. There are large numbers of below the poverty line people in this zone. For the field survey, the

Lalmonirhat district has been selected purposely. The district will be separated into five separate blocks according to five Upazilas. From five Upazila, case study areas will be convenient by multi-stage sampling. Primary data regarding consumer perception of role of BSTI has been collected using a structured questionnaire in a five-point likert scale. Out of 200 responses, 120 responses have been selected randomly for further analysis in this study.

### **Types of Data Collections**

Both primary and secondary data have been used in this study. Field surveys in rural regions of the Lalmonirhat district have been carried out in a number of different locations. Primary data have been collected from the people regarding their opinions, perceptions, and experiences, which must be supported by statistical evidence. Secondary sources, which include relevant published information, magazines, articles, studies report, government circulars, and some of the ones that may be found on the internet, will also be thoroughly investigated. The BSTI laws and regulations documents will be examined extensively in order to provide a comprehensive explanation of the government's role in quality assessment.

### **Statistical Methods Used**

Statistical analyses such as descriptive statistics, cross-tabulation, frequency distribution, and regression are used to show the most important characteristics of the people for testing the relationship between the variables using SPSS (Statistical Package for Social Sciences).

## **Bangladesh Standards and Testing Institution (BSTI)**

This organization is regulated by the Bangladesh Standards and Testing Institution Ordinance (1985), the Bangladesh Standards and Testing Institution (Amendment) Act (2003), the Bangladesh Standard and Testing Institution Ain-2018, and the BSTI Regulations (1989 + 2009 + 2012). Standardization, testing, metrology, internal control, grading, and marking are all made possible thanks to this law's mandated centre. As part of this process, products and materials that will be exported or imported must be certified as to the quality. An icon designating the Bangladesh Standards and Testing Institution (BSTI) as the country's official NSB (National Standards Body) through the Ministry of Industries, Government of Bangladesh. Management System Certification (MSC), Metrology Service, and Product Certification (both mandatory and voluntary), Laboratory Testing (both mandatory and voluntary), and Certification of Laboratory Test Results (both mandatory and voluntary) fall under BSTI's purview as the core components of the National Quality Infrastructure (NQI). The institution's major goal is to increase the quality of domestic goods and services to the level of global competitors. It includes trying to cut, independently tested labs where a variety of items may be tested out. To far, BSTI has developed 4008 Bangladesh standards and implemented its mandatory certification system for 229 items. In an effort to boost exports, BSTI has begun issuing "Halal" certifications for domestic goods. Companies and service providers that meet the requirements of ISO 9001, ISO 14001, and ISO 22000 are receiving management system certifications from BSTI. Consumer protection measures (during the licensee's operational period) mentioned by the BSTI include (a) periodic surprise inspections of the licensee's factory by qualified inspecting officers of the institution and random samples taken and tested at the BSTI Laboratory, and (b) direct market collection and testing of products bearing the standard mark by the surveillance of the institution. However, the surveillance team is assisted in its mission by members of the Consumers Association of Bangladesh (CAB) and the appropriate chamber of commerce and industry. Bangladesh's standardisation efforts have evolved owing to the Bangladesh Standards and Testing Institution (BSTI). The major sources needed for producing standards are Codex and ISO. As an ISO member, BSTI strictly complies to these worldwide standards. ISO simply gives suggestions. In contrast, the WTO acknowledges Codex standards as global benchmarks due to their function as reference materials. Many of the standards have not kept up with the most recent scientific discoveries or are no longer applicable.

## The Function of BSTI

In Bangladesh, BSTI is responsible for determining and regulating the quality of goods and services. Moreover, BSTI is responsible for the national and international quality assurance of raw materials, commodities, buildings, and services, helping to shape and ensure their quality. Also ensures that minimum sizes, weights, and quantities are met for each product. It's useful for things like improving product quality, controlling quality, easing the flow of trade across countries, inspecting and testing manufactured goods, and so on. Through collaboration between producers and consumers, BSTI sought to improve the quality of inputs, outputs, and processes. It performs inspection, sampling, and testing at BSTI-grade product makers and pursues legal action against those who violate quality standards. Certification Marks from the Bangladesh Standards and Testing Institution will be placed on locally produced goods. assist those who identify with BSTI-related groups, agencies, and governments.

## ANALYSIS AND FINDINGS

### Data Reliability

This study is mostly based on primary data relating to the consumer's perception of the role of BSTI in the quality assessment of packaged food products in Bangladesh. Hence, data reliability is the most important thing for successfully analyzing the primary data and making drawing meaningful conclusions. In this study, the primary data which has been considered for the analysis has a Cronbach's Alpha value of 0.955, which implies that the collected data has significant reliability.

**Table 1: Data Reliability Test Results**

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
0.955	0.955	34

*Source: Developed by the Researchers*

### Descriptive statistics and correlation

Consumers have confined their strong views that BSTI is competent enough in controlling product quality through various functionalities, which can be evident from a mean response of 3.98 (Table :1). A mean response of 3.63 implies that most of the consumers identified BSTI approval for a product before purchasing the product. Consumers also have the opinion that products which have BSTI approval are healthy. On the other hand, consumers have the opinion that BSTI has a poor performance in respect of regular monitoring and regulatory

activities for controlling product and service quality. It is also observed that the majority of the consumers do not know about the functions, duties, and responsibilities of the BSTI and they think that the overall performance of BSTI is not satisfactory.

**Table 2: Descriptive Statistics and Correlations**

Variable	Mean	Std. Deviation	1	2	3
1. BSTI Satisfaction	3.59	0.815			
2. BSTI Reliability	3.58	0.752	0.592**		
3. BSTI Belief	3.52	0.733	0.441**	0.630**	
4. BSTI Scope	3.58	0.774	0.389**	0.596**	0.642**

*Source: Developed by the Researchers*

Note: \*\* Correlation is significant at the 0.01 level (2-tailed)

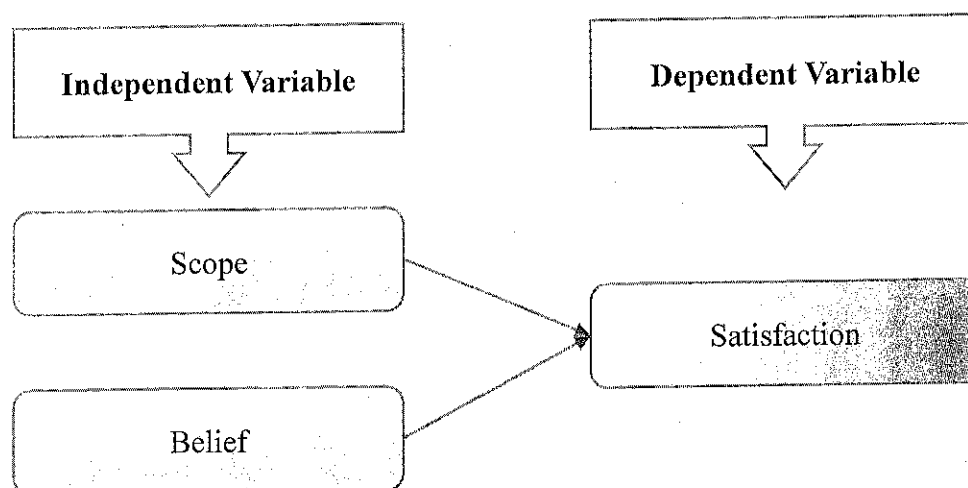
Consumers' perception of the role of BSTI on the quality assessment of packaged food products can be measured or analyzed from four important dimensions, which are satisfaction, reliability, belief, and scope. From the correlation matrix, it can be observed that there is a significant and positive correlation between the consumers' belief on the role of BSTI and their perception of the scope of the functionalities of BSTI (Table 2). Further, it can be observed that the correlation coefficient between the consumers' perception of the reliability of functions of BSTI and their belief on the role of BSTI has a correlation coefficient of 0.630, which is significant at 1% level of significance. It implies that there is a strong interdependency between the consumers' perception of reliability of functions of BSTI and their belief of the scope of role of BSTI. Moreover, a significant positive correlation can be found between scope, reliability and satisfaction. Hence, an interdependency and correlation can be observed for all the dimensions of consumers' perception of the role of BSTI in quality assessment of packaged food products in Bangladesh.

### **Regression Analysis**

Based on the descriptive statistics and correlation analysis, it can be observed that scope and belief are the two important dimensions that influence satisfaction which is a measure of the role performance of BSTI. Hence, for statistically analyzing the hypothesis, the regression model as shown in Figure 1 has been developed.



**Figure 1: Regression Model**



*Source: Developed by the Researchers*

**Table 3: Regression Model Summary**

Model	R	R Square	Adjusted R Square	Sig.F Change
1	0.462 <sup>a</sup>	0.213	0.200	0.000

a. Predictors:(Constant), BSTI Scope, BSTI Belief

*Source: Developed by the Researchers*

The regression model summary shows that the  $R^2$  is 0.213 and the adjusted  $R^2$  is 0.200 (Table 3), which implies consumers' perception of the scope of the role of BSTI and their belief about the role performance of BSTI represents around 20% of role performance of BSTI and resulting satisfaction to the consumers.

**Table 4: ANOVA Table, Showing P Value for Satisfaction**

Model	Sum of Squares	df	Mean Square	F	Sig.	
1	Regression	16.839	2	8.42	15.9	0.000 <sup>b</sup>
	Residual	62.152	117	0.531		
	Total	78.992	119			

a. Dependent Variable: BSTI Satisfaction

b. Predictors:(Constant), BSTI Scope, BSTI Belief

*Source: Developed by the Researchers*

Analysis in Table 4 shows that the observed F value is 15.850, which is greater than the critical value of F statistics, and also the P value is  $0.000 < 0.01$ . Therefore, the data support the alternative hypothesis, and it can be concluded that the BSTI plays a vital role in the quality assessment of packaged food products in Bangladesh.

## CONCLUSION

The role of BSTI in quality assessment and quality control of packaged food products in Bangladesh is important and essential in the modern age, as consumers are increasingly consuming packaged foods. This study analyzed the consumers' perception of the role performance of the BSTI in quality assessment from various dimensions and perspectives. The study concludes that there are significant inter-correlations among various dimensions of consumers; perception of role performance of BSTI in quality assessment and quality control of packaged food products in Bangladesh. Most importantly, consumers' perception of the scope of functionalities of BSTI is significantly correlated with their perception of belief for the role performance of BSTI in the quality assessment of packaged food products in Bangladesh. Overall it can be concluded that BSTI plays a positive and significant role in the quality assessment and quality control of packaged food products in Bangladesh through various functionalities. Further, it can be suggested that, besides initial assessment and one-time licensing for the packaged food products, more focus should be given in periodic and frequent sampling and testing of the packaged foods products to implement stringent control and ensure the quality of packaged food products in Bangladesh.

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