
Consumers' Perceptions on Packaging of Processed Food Products in Dodoma Municipality, Tanzania

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Abstract: Packaging performs important functions of containing, promoting and facilitating the storage and use of products, and could be treated as one of the most important factors influencing consumer's purchase decision. However, packaging of processed food by small scale entrepreneurs is often insufficient to enhance competitiveness in the market. The objectives of this study were (i) to assess consumers' perceptions on packaging attributes and (ii) to examine the influence of packaging related attributes on purchase decision of processed cereal products. The study enrolled 300 randomly selected consumers of food processed by women groups in Dodoma Municipality in 2014. A four-point Likert scale was used to rate food packaging attributes and the factors influencing purchase decision. Data were analyzed using Statistical Package for Social Sciences program version 16. Results show that consumers acknowledge the benefits of packaging particularly in terms of product protection (mean score 3.4), hygiene (3.3), product information (3.1) and branding (3.1). These functions are considered important along with specific characteristics of packaging materials which include durability (3.0), good shape for grip (3.0), attractiveness (2.8), easy to open and close after use (2.6) and recyclability and degradability (1.8). On the other hand, the factors influencing buying decision span from the perceived value of the product to nutritional content and taste, product information and safety related attributes and appearance of the packaging materials. In conclusion, packaging affects preferences of food products and significantly influences purchase decision of the products. The findings from this study underscore the importance of packaging and packaging design for fulfilling the many functions related to logistics and marketing of food products. The main implication drawn from the study is that entrepreneurs need to be cognisant of consumers' specific packaging preferences for which they can use as a strategic marketing tool.

Keywords: Packaging Attributes, Perceived Value, Purchase Decisions

1. Introduction

Food processing industry is among the major components of the small and medium enterprises which present significant economic potential for Tanzania in terms of jobs, income, increased tax revenue and higher export earnings [30, 41]. Most of these enterprises are well embedded within the agri-food chain but the ability of entrepreneurs to market finished products is inadequate particularly due to poor packaging¹. However, packaging is considered as the fifth 'p' of marketing after product, price, promotion and place [16]. Evidence of the importance of product packaging in the

business environment has been indicated in numerous studies [cf 5, 15, 17, 21]. For instance, packaging is known to support competitiveness of the food product [6, 10, 33], extend its shelf life [13, 25, 29] and make it attractive and appealing to customers [27, 37]. Studies also show that packaging imparts unique value to products [34, 40] and works as a tool for product differentiation [46]. Indeed, packaging is considered as the buyer's first encounter with the brand (name, design, symbol or some combination which identifies the product of a particular organization) and a factor that influences consumer's purchase decision at the point of sale [31, 35, 36, 46]. On the other hand, consumers' perception of the product value is a critical determinant of firm's success in the market [39]. For this reason, consumer's response to packaging and to the value of the product forms a strategic driver for enhancing competitiveness of the products in the market [1, 4, 34]. Despite its importance,

¹ Packaging means all products made of any material of any nature to be used for the containment, protection, handling, delivery and presentation of goods, from raw materials to processed goods, from the producer to the user or the consumer [9]

consumer research in Tanzania is limited particularly on perception of packaging and how this affects purchase decisions. The scarcity of insights in this regard limits market opportunities and potential benefits from food processing industry. Besides, as the food processing industry is exposed to competition, inefficiency in marketing strategies cross the value chain pose a threat to the survival of many small businesses in the industry. The objectives of this study were (i) to assess consumers' perceptions on packaging attributes and (ii) to examine the influence of packaging related attributes on purchase decision of processed cereal products

2. Methodology

2.1. Study Area

The study was carried out in Dodoma urban district. This district has a total of 41 wards, 18 villages and 170 *mitaa*² which consist of 410,956 inhabitants of whom 211,469 (51.5%) are females and 199,487 (48.5%) are males [42]. The district lies between latitude -6° 9' 35.028"N and longitude 35° 47' 52.8"E. Within the villages surrounding the urban area, subsistence farming, is the main stay for most of the inhabitants. However, communities both in the rural and urban settings engage in various small businesses including enterprises of food products.

2.2. Data Collection

A cross-sectional study design was conducted in Dodoma Municipality in 2014. The study involved 300 consumers of cereal products including blended flour (compounded from rice, maize, soybeans and cowpeas) and flour processed from maize, sorghum, cassava and millet. Data were collected from four women owned centres using a semi-structured questionnaire. To attain a fair representation of consumers' perceptions on the subject matter, customers who came to the shopping centres were accidentally intercepted and administered with a semi-structured questionnaire. The questionnaire covered demographic characteristics and a list of packaging attributes which consumers were asked to give scores on basis of their functions and importance using a 4-point Likert scale (1 = not at all; 2 = very little; 3 = somewhat; 4 = a lot).

2.3. Data Analysis

Quantitative data were analyzed using Statistical Package for Social Sciences program version 16. Descriptive statistics mainly frequencies and mean scores were computed to explore the nature of responses for each packaging attribute. High scores on a packaging attribute indicated high level of importance of the attribute. Principal Component Analysis was performed on 12 factors (Table 3) to reduce the multidimensionality of buying decision, and identify the

underlying cluster of variables or explanatory constructs. This technique decomposes the original data into a set of linear variates or components [8] and estimates how a particular variable might contribute to a component. The Kaiser-Meyer-Okin measure of sampling adequacy (0.745) and Bartlett's test of sphericity ($p = 0.00$) confirmed the suitability of the data for Principal Component Analysis [11]. Based on Kaiser's criterion, four components with eigenvalues >1 were retained as separate factors and variables with factor loadings > 0.5 were considered as important attributes in a given factor.

3. Results and Discussion

3.1. Socio-Demographic Characteristics

Respondents who participated in this study came from a wide range of socio-demographic characteristics (Table 1). These include age, sex, education and main occupation. The majority of consumers (72.3 %) were in the age of 35 and 54. The sample comprised of a larger proportion of females (67.3%) than males (32.7%) which is not surprising given the higher tendency of women involvement in food preparation in the households. With respect to occupation, consumers enrolled in this study were farmers (33.7%), salaried workers (26.3%), people involved in business (31.1%) and students (9%). About one tenth (12.7%) had not formal education and 19% had completed primary education. The rest had attained secondary education or higher.

Table 1. Socio-demographic characteristics of respondents (n=300)

Variable name	Options	n (%)
Age (years)	25-34	76 (25.3)
	35-44	86 (28.7)
	45-54	55 (18.3)
	55+	83 (27.7)
Sex	Male	98(32.7)
	Female	163(67.3)
Education	No formal	38 (12.7)
	Primary	57 (19.0)
	Secondary	88 (29.3)
	Tertiary	117(39.0)
Main occupation	Farmers	101(33.7)
	Salaried worker	79 (26.3)
	Small business	93 (31.0)
	Student	27 (9.0)

Figures in brackets are percents

3.2. Consumers' Perceptions on Important Packaging Attributes

The study assessed important packaging attributes as perceived by consumers. Results in Table 2 show that consumers acknowledge the benefits of packaging particularly in terms of product protection (mean score 3.4), hygiene (3.3), product information (3.1) and branding (3.1). These functions are considered important along with specific characteristics of packaging materials which include durability(3.0), good shape for grip (3.0), attractiveness (2.8), easy to open and close after use (2.6) and recyclability and

²The *mtaa* (plural *mitaa*) is the lowest unit of government in urban areas in Tanzania. Each urban ward is divided into *mitaa* or neighbourhoods consisting of a number of households, which the urban council may determine.

degradability (1.8). These results suggest limited awareness on "environmental friendly" packaging and concern for environment. During the interview, customers showed dissatisfaction with the use of polythene bags as packaging materials for some of the cereal products especially blended flour stating that such materials reduced the shelf life of the products. Usually paper based materials are recommended for packaging such products as they extend the shelf life of the products [23], besides having desirable characteristics of biodegradability and recyclability. The short shelf life of products described above implies direct losses to consumers, and in the long run, entrepreneurs too lose an important sales strategy as poor packaging often lowers sales of the product [3]. Thus, designing of packaging materials should take into account specific characteristics of a product in question in order to prevent undesirable conditions throughout the product's life cycle [14]. Packaging design should also adhere to recommended standards because these materials relate to security, safety and health of consumers [22].

Table 2. Means scores (\pm SD) for the importance of different attributes of packaging of cereal products ($n=300$)

Variable	Mean	SD
Product protection	3.4	0.9
Hygiene	3.3	0.8
Product information	3.1	0.6
Branding	3.1	0.8
Durability of the material	3.0	0.9
Good shape for grip	3.0	0.7
Attractiveness	2.8	0.6
Easy to open and close	2.6	0.9
Recyclability and degradability of materials	1.8	0.8

Results are the means based on a four point scale, where 1 indicates "not at all" and 4 indicates "a lot"

3.3. The Influence of Packaging Attributes on Consumer's Purchase Decision on Packaged Food

In order to gain insights of the underlying factors on consumer decision-making towards packaged food products,

factor analysis (principal component analysis) was performed based on the importance scores of each attribute. The results of the factor analysis with determination based on Eigenvalues >1 are shown in Table 3. A total of 12 variables were grouped into four factors which explained 60.5% of the cumulative variance and, thus, representing the buying decisions reasonably well. The first factor (component 1), *perceived value*, explained the most variance (27.9%). This factor consisted of low price (factor loading of 0.886), quality (0.650) and shelf life (0.522). These results are in line with the observation that consumers take product quality foremost and would not compromise quality for anything else [7, 19]. Because quality attributes vary from product to product, entrepreneurs need to identify specific quality attributes for a given product. The second factor, *nutritional content and taste*, explained 13.6% of the total variance (Table 3). The factor has high loadings for ingredient (0.770), nutritional information (0.64) and flavour/taste (0.542). Discussion with customers showed that these elements give them confidence on the product particularly in relation to the value for money and quality of the product for which, therefore, firms would be able to stay in business.

The third factor, explaining 9.7% of the total variance, loaded with *product information and safety related attributes*. The attributes include precaution, manufacturer's address, expiry date and brand. All of these require labeling for communicating important information to consumers. It is believed for example that branding has a stronger impact on consumer's purchase decisions than advertising [26]. Generally, proper information makes markets work more efficiently as competition among firms, often awards products with the most preferred attributes [15]. Elsewhere, such attributes have been considered as the evidence of higher quality of a product [24, 38]. Because consumers' perceptions of food safety is related to trust and confidence in the food industry, only packaging materials that can protect the product and conserve its quality during handling, transportation, storage and distribution to consumers would be able to promote the product successfully [12, 18, 32].

Table 3. Rotated component matrix for consumer's purchase decision on packaged cereal products

Attribute	Factor loadings			
	Component 1	Component 2	Component 3	Component 4
Low price	0.886	-0.101	0.137	
Quality of produce	0.650	0.316	-0.309	0.134
Shelf life	0.522	0.150	-0.447	0.447
Ingredients	0.109	0.770		0.368
Nutritional information	0.127	0.640	0.127	0.149
Flavour/taste		0.542	0.384	0.461
Security			0.842	
Precaution	0.137	-0.206	0.785	
Manufacturer address	-0.179	-0.206	0.785	-0.179
Expiry date			0.583	
Brand	-0.165	0.471	0.583	
Visual attribute/colour				0.729
Variance (%)	27.9	13.6	9.7	9.3

Attributes with factor loading >0.5 (also shown in bold) are considered as variables of substantive importance in a given variate (component); variance explained = 60.5%

Appearance (graphics/pictures) of packaging materials formed the fourth factor with variance of 9.3%. These findings provide further evidence that an appealing packaging with relevant design, pictures and decorations is more successful in attracting customers' attention as observed in [33]. Packaging appearance particularly the colour of the package is essential because it communicates, reflects and exhibits some salient features and intangible attributes of the brand [2]. Visual attribute/colour does not only make a product more presentable but also induces impulse buying of a product as it conveys information that affects how a consumer feels at conscious and subconscious levels [28, 43,44, 45]. Previous studies showed that as high as 73 percent of consumers in the UK [46] and 79 percent in Nigeria [19] relied on packaging to aid their decision making process at the point of purchase. It is worth noting that appropriate package design has been shown to stimulate consumers to repeatedly purchase products [2, 20]. Thus strategies are needed among entrepreneurs to design packaging materials that meet the needs of consumers.

4. Conclusion and Recommendations

This study has illustrated that packaging affects preferences and purchase decision of food products. Scores of most attributes of packaging materials suggest that food packaging is below consumers' expectations which is a clear indication that packaging is not effectively used as a tool for product promotion. The factors influencing purchase decision span from perceived value of the product to nutritional content and taste, product information and safety related attributes and appearance of packaging materials. The observation that consumers showed less concern on the use of recyclable and biodegradable packaging materials calls for awareness creation to the general public regarding responsible use and disposal of such materials. Further, the results underscore the need for package designers and entrepreneurs in food industry to reconsider consumer preference of packaging attributes as a strategy to improve the competitive edge of their products in the market.

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