

## **CONSUMER EXPECTATIONS ON MAIZE FLOUR BRANDS FOODS IN CENTRE BENIN**

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### **ABSTRACT**

The increasing of turnovers and earnings of maize flour brands food companies depends on how to suit offer on consumer's expectation and location. This paper has assessed consumer expectations on attributes of maize flour food, and help to locate consumers on consumption chain. The study is based on data collected from 250 respondents in the city of Djidja, Benin. Descriptive statistics, vector error correction model (VECM), Likert scale (LS) and average propensity to consumption (APC) have been used in data analysis. Women were most (70%) involved in the flour consumption chain in the study area. The VECM revealed relevant attributes which were ranking with the LS from the most importance as availability, flour cleanness, price, storage time, and the dryness stage. The APC shows that wealthiest respondents were very exigents on attributes, referred to supermarkets as retail outlets and belonged to low consumption segment; while the low and intermediate income respondents were less exigents, purchased flour brands food in small retail shops, flour kiosks/vendors and road side outlets and were respectively identified on high and intermediate consumption segments. Findings contribute to improvement of marketing strategies including quality, supply level and appropriate policy of maize flour brands distribution for consumer expectation satisfaction.

**Keywords:** consumer, consumption chain, segment, attribute, expectation, flour, retails outlets.

### **1. INTRODUCTION**

Cereals are one of the important food families in the agricultural sector. Cereals generally wheat, rice, millet, oatmeal and maize should be eaten in large quantities since they are sources of carbohydrates and starch according to Agricultural, Breeding and Fishing Ministry (ABFM, 2008). According to the world organization, chronic diseases are currently the major cause of morbidity worldwide, and will become one of the major causes of mortality by the next decade (World Health Organization, 2017). In recent years, the consistent consumption of cereals and cereals-derived food products has been linked with a reduced risk of cancer and other chronic degenerative diseases (Jorge & all, 2017). Several reports indicated that diets rich in whole-grain cereals are associated with lower cancer mortality rates, particularly colon, breast, and prostate cancers (Chaturvedi & all, 2011). Cereals, principally maize, are crops always present in the balanced diet of consumers. The corn "*Zea mize*" belong to the main food crops in the West African region. Indeed, the maize occupied important place within cereal sectors which is the main priorities to be promoted through agricultural development policies in subregion as well as in the detailed action programmes for priority sectors within the Union of West African Member States zone (UWAMS, 2019).

Currently, maize is presented as a crop with dual purpose in the region, It's a subsistence food and cash crop to satisfy the increasing demand of corn flour from urban consumers and derivated products. Corn is a great source for many essential nutrients, vitamins, and minerals such as vitamin C, vitamin B1, vitamin B9, Magnesium, and Potassium, among others. Most people greatly benefit from including maize as part of a balanced diet because of its remarkable nutrition profile. Maize is a source of oil which is highly regarded for human consumption as it reduces the blood cholesterol concentration. Many value-added products as well as fermented foods have been produced from maize which is consumed in different form worldwide (Chaudhary, 2013). Maize flour has many health and dietary benefits and is a great source of essential nutrients. Associated to common bean and approved by consumers, flour is responsible of reducing glycemic response and increase satiety perception (Mecha & all., 2021). Maize flour is used to make nutritious bread which is highly palatable, and is easily broken down in the body. When taken at intervals, bread helps to clean the colon and the dextrose produced is commonly used for medicinal purposes. With its high fiber, fat, and starch content, maize flour helps with digestion and absorption in the body and reduces symptoms of cramping, bloating, and constipation. Compared to wheat flour which has 2.7 mg of fiber per 100 mg, maize flour has 4 mg per 100 mg, so it is a great option for increasing fiber intake while consuming carbs. The high content level of lutein and zeaxanthin as antioxidants improve body ability to fight eye infections and degeneration in old age (Giovanna & all., 2007). Maize is low in cholesterol and fat content. Cereal or whole grains are great sources of vitamins and minerals, magnesium, fiber and complex carbohydrates. The fiber in whole grains helps to prevent the risk of heart diseases and diabetes, and all its nutrients boost the immune system (Watson, 2014; Brunilda 2020).

Flour is the basic processing carried out from maize in Benin, because it is essential for the preparation of dough, the main form of maize consumption in the country. Most other forms of transformation start from flour. Thus flour is main form of processing that generates additional added value to the maize. So there is therefore market potential for maize flour, due to great urbanization in Benin, and the involvement of many women in professional occupations outside the household. For efficacy, interventions that support the processing of corn into flour must be upheld by a study on assessing consumer expectations. So Understanding consumer behaviour is one of the largest challenges a business can face. At present, the competitive market has forced companies to produce goods based on their target customers needs (Tafler, 2004). Companies should know and study their customers buying behaviours all the time (Kotler, 2009). According to Kotler (2005), consumer buying behaviour is the purchasing behaviour of people and households who buy goods and services for personal consumption and there are many factors that influence the process of purchasing decision. Key factors that influence consumer buying behaviour include culture, values, social class, individual influences and psychographics. Factors are linked to many attributes as color, maize variety, price, availability, grain cleanliness, dryness stage, bio treatment, and storage time. People need is to fulfill personal, seeks, the next one, and so on. In addition, the need to fulfil such needs will become stronger the longer the duration they are denied. One must satisfy lower level basic needs before progressing on to meet higher-level growth needs (Mooij, 1998), cited by Karanja (2016). Maslow grouped these different consumers need in five major categories (Hoyer, 2004), Physiological (Need for food, water and sleep), Safety (Need for shelter, protection and security Social (need for affection, friendship and acceptance), Egoistic (need for prestige, success, accomplishment and self esteem) and Self actualization (need for self fulfilment and enriching experiences).

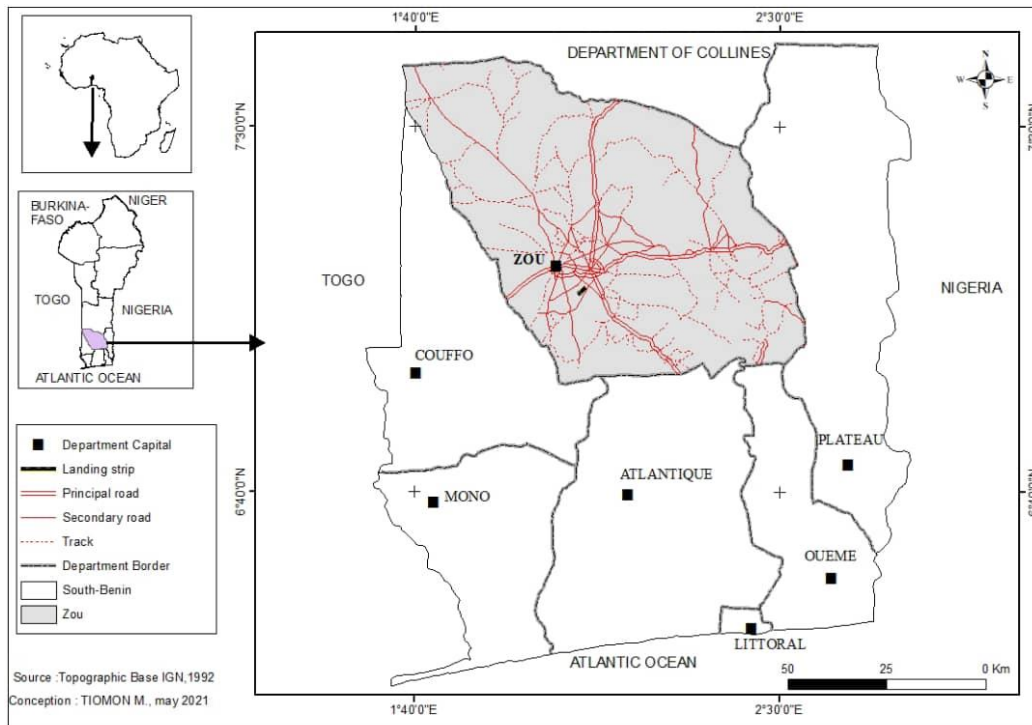
The level of competition that exists within the maize milling industry is high. The success of each individual company is hinged on satisfaction of consumers needs, ability to gain market share and this has made the industry players to go through various lengths to increase capacity and to manage their costs. This has encouraged the actors in the industry to adopt strategic management in their management system (Karanja, 2016). The aim of marketing management is to discover what goes on in the mind of the customer. The buyers characteristics influence how they perceives the stimuli; the decision-making process determines what buying behaviour is undertaken. Consumer behaviour is the study of when, why, how, and where people do or do not buy a product (Khosla, 2010). It blends elements from psychology, sociology, social anthropology and economics (Kotler, 2006). It help to study characteristics of individual consumers such as demographics and behavioural variables in an attempt to understand people's wants (Armstrong, 2012). The first step in understanding buyer behaviour is to focus on the factors that determine the buyer's characteristics and product attributes. These factors are identified to discover the impacts they have on consumer behaviour and assist marketers with

selecting consumer targeting strategy. Therefore, these factors are used to segment the market and target specific consumer. Consumers are population refers to the entire group of people or things of interest that the researcher wishes to investigate (Solomon, 2009). The target population for this study comprised of consumers of maize flour brands in Djidja city and around. Industries need to identify socio-economics characteristics and location of consumers in society and consumption level. This requires top management involvement, advocating and supporting of the strategic decision (Keller, 2008). This study will allow the various consumers to use all available opportunities and then help maize milling companies to improve the quality and volume flour brands facing market demand. The questions addressed are: what are the socio-economic characteristics of consumers? what are the relevant attributes? do attributes of maize flour brands offered by companies satisfy consumers expectations?

## **2. METHODOLOGY**

### **2.1. Study area**

Djidja city lies between Longitude 1°40' and 2°30'E, between Latitudes 6°40' and 7°30'N. The city occupies an area of approximately 2,184 square kilometers. The location of Djidja city gives rise to a variety of climatic conditions which favour the growth of a number of agricultural crops such as cereals mainly maize. There are four rain seasons in the area, there are two dry and two wet seasons with an average, annual rainfall between of the 900-1200mm while temperature ranges from 28-35°C (Akomagni, 2006). Seventy percent of the targeted respondents reside in Djidja and the thirty percent in around the city.



**Figure 1: Map of Central Benin**

## 2.2. Sampling and data collection

The choice of a sample size is dependent on the research paradigm and research designs. Quantitative research aim to generalise results and therefore samples should be reasonably higher to warrant generalisation of results to the population studied (Muzata, 2020). In this case sample quotas, weighting schemes and mixed mode data collection methods are often used in an effort to reach representativeness. Thus, based on the above information, the targeted sample was a total of 250 respondents across fiveretail outlets. During this survey, respondents were asked to fulfil boxes for attributes. The questionnaires are addressed to consumers who frequent the fiveretail formats in the city. Consumers of maize flour food were surveyed in the Zou department which is a region of high consumption of flour. The literature reveals that no studies have been conducted on the assessment of the expectations of maize flour food consumers. These data concern the socio-economic situation, expectations of targeted groups, consumption segments and retail types. Data were collected through structured interviews based on questionnaires.

## 2.3. Data handling

The socio-economic characteristics of consumers have been defined as gender, age, education, income and number of children. The method of data analysis include both descriptive and

inferential statistics. Thus, the average scores of the different attributes submitted to consumers have been calculated according to the formula :

$$\bar{X} = \frac{1}{N} \sum_{i=0}^n xi \quad (1)$$

Where  $\bar{X}$  is the average score per attribute,  $xi$  is the distribution of score and  $N$  is the sample size. The inferential statistics involved the use of multiple regressions to determine the effect of attributes on flour consumption. Those same statistics were used by Gwandi (2014) to determine the effects of socio-economic characteristics on animal protein food consumption. Data were fitted into four functional form, linear, semi-log, exponential and double-log functions. The ordinary explicit form of regression model specified for this study is :

$$LnY_i = f(\alpha_i \ln X_i) + \varepsilon_i \text{ for } i=1, 2, \dots, 10 \quad (2)$$

where  $Y_i$  is the logarithm of total monthly expenditure on flour brands,  $X_i$  is the vector of explanatory variables (attributes),  $\alpha_i$  the vector of parameter estimates and  $\varepsilon_i$  the error term.

The importance of each attribute is assessed using a 7-point "Likert scale" ranging from 1 (not important) to 7 (most important), as suggested by Brett and Austoker (2004). According to the literature on "Likert scale", an attribute is important if its score reaches at least the middle of the scale (Kelley and Turley, 2001). The center point in the current context is 4. Student's t-compliance test at the 5% threshold has been used to classify attributes. The same approach has already been used in biometrics note as statistic technique by Glèlè-Kakai and Kokodé (2004), and in study for determining of teak wood consumers satisfaction by Aoudji (2011).

The average propensity to consume is the ratio of total consumption expenditure to the level of disposable income ; it measures the proportion of income that is spent on consumption.

$$C = aY_d + b \quad (3)$$

$$APC = \frac{C}{Y} = a \quad (4)$$

Where APC is average propensity to consum, C is consumption,  $Y_d$  is disposable income and b incompressible consumption.

### **3. RESULTS AND DISCUSSION**

#### **3.1. Consumer socio-economic characteristics**

The socio-economic characteristics of consumers are presented in Table 1. Most of the respondents are women (70%) against 30% of men. This implies that women are more involved

in consumption chain of maize flour brands in the study area. The table indicated that respondents ages range from 18 to 50 years old but overall were relatively young. Indeed, 75% of consumers were less than 42 years old and 31,67% had reached university education. The respondents with income less than 60000 were 38% and between 60000-200000, 32% and finally those that wage in upper than 200000 were 30% so result mentioned that the socio-economics characteristics were involved in maize flour brands food consumption. This join the findings of research on socio-economic characteristics of consumers on the intake of animal protein in Gombi local government area in Ngeria. Findings show that several socio-economics characteristics are linked to consumption function (Gwandi 2014). The gender, age, and income of consumers are relevant characteristics. This confirms that consumers generally are from several categories according to their needs (Bock and Uncles, 2002; Thompson and al., 2009)

**Table 1: Socio-economic characteristics of respondents**

Personality characteristics		Respondents	
<b>Gender (%)</b>	Male	30	
	Female	70	
<b>Age (year)</b>	Minimum	18	
	1 <sup>er</sup> quartile	27,25	
	2 <sup>nd</sup> quartile	36,5	
	3 <sup>rd</sup> quartile	41,75	
	Maximum	50	
<b>Education (%)</b>	No schooling	10	
	Primary	13,33	
	High school	45	
	University	31,67	
<b>Average number of children</b>			
<b>Income(%)</b>	≤60000	8	38
	60000≤X≤200000	5	32
	≥200000		30

### 3.2. Relevant attributes

The table 2 presents results of regression analysis model. Results indicate that five of explanatory variables were found to contribute significantly and positively to maize flour brands food consumption. These are price ( $X_3$ ), availability ( $X_4$ ), cleanness ( $X_5$ ), dryness ( $X_6$ ), storage ( $X_8$ ). This indicates that the improvement of one variable will increase flour consumption. The income has negative significative effect on flour brands. The coefficient of multiple determination ( $R^2$ ) indicates that 57,6% of the variation in maize flour food consumption is



explained by the variables include in the model. Consequently, the overall model is significant at 1% as shown by the F statistics.

In double logarithm function, the coefficient of the explanatory variable is the direct elasticity. Hence, a 1% increase in the significant variables would bring about increase of the flour food consumption rate. The coefficient of income suggests that an increase in household income will decrease household expenditure on flour food consumption.

Therefore, an increase in income would make the consumers eat less of flour. The coefficient of expenditure on other foods indicated that when expenditure on other food rises, less money will be expended on flour brands.

**Table 2: Result of regression analysis of attributes on flour brands consumption**

<b>Variable</b>	<b>Linear</b>	<b>Exponential</b>	<b>Semi-log</b>	<b>Double-log</b>
<b>Constant</b>	9764.28 (1.432)	4.213 (8.166)***	-4226.9 (-5.295)***	-0.332 (-1.431)
<b>Color</b>	3.203 (0.87)	0.005 (0.715)	854.52 (1.19)	0.124 (2.135)
<b>Variety</b>	-2.56 (-0.05)	-0.002 (-0.161)	1321.8 (0.389)	0.432 (3.073)
<b>Price</b>	-324.74 (-0.098)	0.064 (1.874)*	2216.22 (0.371)	0.027 (0.142)*
<b>Availability</b>	-132.7 (-0.806)	0.116 (1.351)	-13039.77 (-1.403)	0.329 (2.128)**
<b>Cleanness</b>	213 (0.57)	0.041 (0.365)	12123.65 (1.215)	0.233 (3.304)**
<b>dryness</b>	0.751 (0.12)	0.094 (0.112)	15789.4 (6.34)	0.293 (1,738)**
<b>Treatment</b>	31.6 (2.96)	0.732 (0.502)	-990.405 (-0.805)	-0.193 (-1.167)
<b>Storage</b>	484.12 (3.67)	0.472 (0.201)	7.53 (0.115)	0,278 (1.33)**
<b>Income/statut</b>	-0.340 (6.295)***	-3.462 (4.630)***	-485.075 (5.921)***	-0.424 (-6.228)***
<b>Expenditure on other foods</b>	-1.188 (-4.284)	0.33 (0.674)	420.31 (0.123)	0.150 (2.532)**
<b>R<sup>2</sup></b>	38.3%	36.9%	42.1%	57.6%
<b>F. ratio</b>	9.412	8.120	6.507	15.683***

\*\*\*Significant at 1%, \*\* significant at 5%, \* significant at 10%, t values in parenthesis



$$\begin{aligned}
 \ln Y = & 0.124 \ln X_1 + 0.432 \ln X_2 + 0.027 \ln X_3 + 0.329 \ln X_4 + 0.233 \ln X_5 + 0.293 \ln X_6 - 0.193 \ln X_7 + \\
 & (2.135) \quad (3.073) \quad (0.142)^* \quad (2.128)^{**} \quad (3.304)^{**} \quad (1.738)^{**} \quad (-1.167) \\
 & 0.278 \ln X_8 - 0.424 \ln X_9 + 0.150 \ln X_{10} - 0.332 \\
 & (1.33)^{**} \quad (-6.228)^{***} \quad (2.532)^{**}
 \end{aligned}$$

The scores of the attributes that have significant positive effect on expenditure in the model have been calculated and their algebraic average has been compared. Table 3 shows the attributes and their score. The availability, cleanness, price, long storage time and dryness reflected in order the relevant expectation on flour brands food consumption. Student's statistic still shows a significant difference. The study found out choice of flour brands by consumers varied greatly. Various attributes were found to influence the choice of maize flour brands by consumers as analyzed under this study have an efficient risk management. Then the same method was used by Subhash to investigate shampoo attributes for overall satisfaction and Rating Scale to measure customer perception. The assessment of expectations has helped to identify and to order the important attributes for consumer satisfaction and the main retail outlets by consumers. The analysis of these expectations is necessary to anticipate on the efforts which meet the expectations and purchasing place of consumers which are very important for the creation of value and improving marketing strategies. So the analysis is done at the beginning of the maize flour value chain. Indeed, the group of consumers of maize flour brands food constitutes the market that the supply chain aims to satisfy.

**Table 3: Attributes and average scores**

Attributes	Description	Average score
Price	Market value	5,06
Availability	Describes availability and proximity	6,24
Dryness stage	Describes the extent to which flour appears dry	4,17
Storage time	Describes the long to which flour can be stored	4,65
Cleanness	Describes the stage to which flour appears clean	5,58

Variables showing a high significant variation of frequency distribution (Student test; p=0.001)

### 3.3. Consumption segments

The approximate consumption of respondents indicated that the average propensity is low for respondents with income beyond 200000 but rise when income decreases. According to statistic significant of propensity, three segments were identified in the consumption chain. The same segments has been identified by Muriel (2012) through research on segments of sustainable food consumers. Consumers behaviour is the focus on the processes a consumer uses to make purchase decisions, as well to use and dispose of purchased goods or services (Karanja, 2016).

Incomes depend on consumers activities and consumption behaviour are linked to income so this help to locate consumers on different consumption segments.

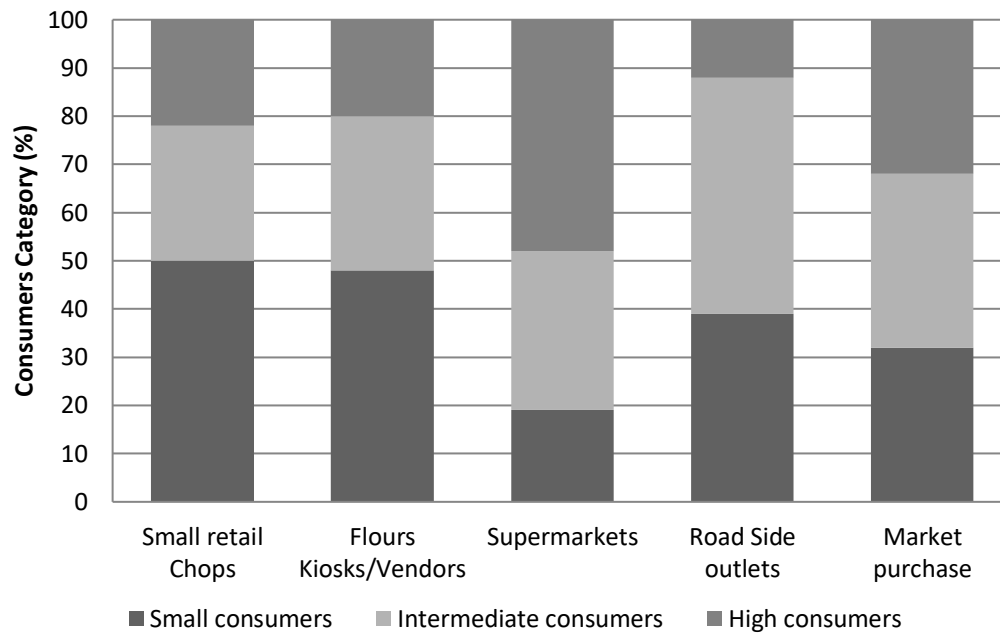
**Table 4: Approximate consumption of respondents per month**

<b>Monthly income (XOF)</b>	<b>Average propensity to consumption</b>
≤60000	0.78 <sup>a</sup>
60000-80000	0.38 <sup>b</sup>
80000-120000	0.36 <sup>b</sup>
120000-160000	0.35 <sup>b</sup>
160000-200000	0.32 <sup>b</sup>
≥200000	0.28 <sup>c</sup>

a, b, c: Variables showing significant variation of frequency distribution (Chi-Square test;  $p < 0.05$ )

### **3.4. Consumers and retail outlets**

Different category of consumers were found to purchase maize flour brands foodin all retail outlets. All of those consumers category purchased maize flour brands in open-air markets. High flour brands food consumers however, were more likely to purchase product at small retail shops and flours kiosks than others because of accessible price. Respondents in low consumption segment refered to supermarkets. This category of consumers varies their meal considerably and therefore had a higher purchasing power then that confirm their presence in supermarkets. Baker (2016) in sudy of consumers' preferences for animal-source foods and retail outlets: case of Tanzania got the same result; wealthier groups prefer supermarkets and less well-off consumers, however, were likely to purchase livestock products at roadside outlet and small retail shops. Cuma Akbay and Eugene Jones (2005) showed that the dominant income group for a given area makes purchase decisions that are so wide spread and prominent that the confounding effects of other income shoppers are completely overshad-owed. The respondents of intermediate consumption segment refered to road side outlets. The figure 2 shows consumer's repartition in retail outlets.

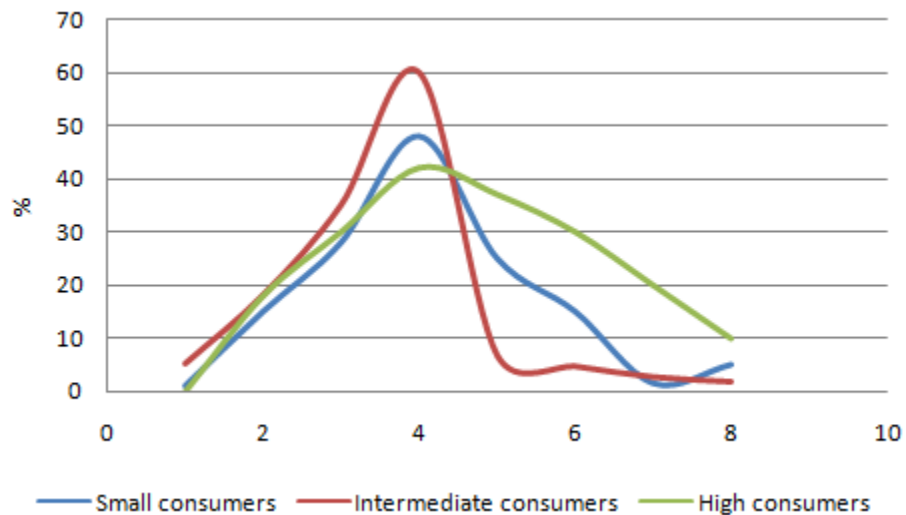


**Figure 2: Proportion of consumers purchasing flour brands food by retail outlets**

### 3.5. Consumers and attributes

Attribute score according consumers were aggregate as result and presented in figure 2. The distribution high frequency score varies between 38 and 62%. Around 4 points scale, low consumers frequency score distribution was 48% and intermediate reached 62%. High consumption segments attribute score curve was high around 5 points scale and hold upper until to 8 points. It should be noted that these results report behaviour as observed and recorded by enumerators. Attributes are very important for consumers when purchasing products. Consumer expectations differ according the attributes of the product. A consumer may be satisfied with one attribute but dissatisfied with another for the same product, that is revealed by the dissimilarity of frequency distribution attribute score.

Baker (2016) had used the same method to show how quality/safety scores vary by consumers income; so Subhash (2008) talks about positive and negative attribute preference and performance. That help to highlight important attributes for satisfaction of consumers.



**Figure 3: Frequency distribution of attribute scores**

#### 4. CONCLUSION

Consumer expectation in Djidja, Benin has been little studied in the context of wealth creation but helped to revitalize the value chain and improve companies turnovers and earnings. The findings have brought about some implications of the consumer socio-economic characteristics, expectation on maize flour brands food, consumption segments and retail outlets. Maize miller companies should consider greatly factors like, socio-professional category, consumption segments and retail outlets, and consumers expectation.

Consumers of corn flour has several characteristics and there are mainly three consumption segments spreaded on five types of retail outlets in maize flour chain. Only the category of income that is closely related to social rank help to locate consumers on segment and purchasing place. Consumer satisfaction is a necessary step for improving of maize flour chain management and business success. Facing overall expectations, the price, availability, cleanness, dryness stage and storage time of maize flour brands are decisive attributes which can influence consumers behaviour on maize flour trading place. Consumers are indifferent to bio treatment, variety, and color which could reflect the absence of a specific demand of maize flour brands food. Findings therefore recommends that to companies to well take into account socio-economics characteristics and expectation of consumers in order to adapt its product and its marketing strategy facing their influence on maize flour chain functioning. Thus, disparities resulting from the difference in their purchasing power, should be used properly to make various brands of the same product to suit different classes in the society. Further research on others factors influencing the

consumption pattern would provide extensive knowledge for firms management to enhance competitively in the markets.

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