JOURNAL OF PEACE, SECURITY AND DEVELOPMENT STUDIES
JPSDS 2(1), 24-29, December (2023)
©JPSDS
Reprints and permissions:
https://jpsd.org.ng
OPEN ACCESS
ORGINAL ARTICLE

Determinants of Bread Consumption in Benin City

Gabriel Eromosele AKHIDUE[1]& Oseremen ThankGod EHISUORIA[2]
[1]Department of Economics, Anchor University, Ayobo Ipaja, Lagos State, Nigeria
[2]University of Benin, Benin City, Nigeria

Corresponding Author:
Oseremen ThankGod EHISUORIA
ehisuoriathankgod1@gmail.com

Abstract
This paper analyses the value that consumers from Benin City attach to certain determinants of bread choice, with the aim of pointing out some of the factors that can drive bread purchases. A questionnaire was administered to individuals from various backgrounds and environments. The logit model was selected in trying to evaluate the determinants of bread consumption in Benin City**.** The findings showed that three factors have a significant impact on bread consumption. They are family size, price, and income. Family size and income both had positive impacts on bread consumption in the study, revealing that larger family size, as well as higher income levels, will lead to a higher level of bread consumption, while price was discovered to have a negative relationship with bread consumption, which means that as the price of bread increases, bread consumption will fall. It is therefore imperative that effort is made by producers and sellers of bread to ensure that their prices are kept at moderate levels, as an increase in price will cause a fall in bread consumption. Producers and sellers are also advised to ensure that they are located close to homes with larger family sizes, as well as being close to wealthier families as these two factors are positively related to bread consumption.
Keywords: Benin City, Bread consumption, Income, Logit model, Price level

Introduction

Over the years, there has been a growing interest by scholars and researchers in consumers' choice of food, and the factors that determine their consumption patterns, various studies have been carried out to get more information about this. Most of these studies have been based on regions of the world and countries. Research on bread consumption at the state and city level is sparse; more specifically, research covering the determinants of bread consumption in Benin City is non-existent. Against this background, this study attempts to bring out some of the factors that help shape a consumer's decision to consume bread and segment those consumers into different categories.

Unlike research works from the pure sciences, which most of the time are concerned with observations with fixed behavioral patterns and characteristics, research work in the social sciences normally have to do with man, whose behavior is generally dynamic. Human behavior as regards choice of food is multi-dimensional. Several factors come into play when considering food choice. This article tries to assess the buying behavior of consumers, as well as their decision-making process when purchasing bread and to suggest ways of improving the consumption of bread in the market. The next section gives a brief overview of bread consumption in Nigeria, including the determinants of bread consumption. Thereafter, the steps taken towards survey administration and the data analysis procedure are explained. The study concludes by providing a summary of the findings of the study.

Determinants of Bread Consumption

Although the main motivation for eating is hunger, food is more than just a means of satisfying one's hunger, other factors may cause one to eat, which may include the desire for comfort, amongst others. There is a wide variety of food from which people can choose. People choose certain kinds of food for various reasons; either due to its price, nutritional value, or their income level, etc. As consumers become more affluent and more aware of how their food is produced, food safety, environmental sustainability, fair trade, and equity are becoming more important in the consumer's decision to purchase (Gomes, 2018).

The determinants of bread consumption can be broadly divided into economic, cultural, and social factors. The major economic determinants, which determine the patterns of consumption, are the level of household income, the price of bread, as well as the price of other staple foods. Sociological determinants include age, occupation, educational level, etc. while cultural determinants include ethnic beliefs as well as religious beliefs.

Income is one of the most important determinants of the level of bread consumption. This is because it is the determining factor as regards the ability of an individual or household to make purchases (Geurts et al., 2016). Without money, it is impossible to purchase as well as consume bread. Although it must be noted that bread is relatively cheap, which is a major reason for it becoming a major part of the daily meal of most households. In addition, bread is a highly differentiated commodity, that is, it comes in different shapes, sizes, as well as prices. This makes it easily accessible to both the rich, the middle class, as well as the poor, giving individuals the opportunity to make their choice of bread based on their income level.

Another major determinant of bread consumption is the price of bread, which is a factor that is carefully considered before the decision to purchase is made. As already noted, bread is relatively cheap when compared with other food items, making it a good value for money. A higher price will ceteris paribus reduce the level of bread consumption (Skořepa & Pícha, 2016).

The price of alternatives also influences purchasing decisions of individuals. This is because an astronomical increase in the price of bread for example may cause consumers to switch from bread to other alternative food items, and vice versa (Kilby, 1965).This situation however is more likely to occur in low-income households, than in the homes of those who are high earners. The ease of consuming it also makes it appealing, as little or no preparation is required before it can be eaten. We can also point out age as a potential determinant of bread consumption; this is because younger people (children, teenagers, and youths) tend to consume bread more than those who are elderly. Family size is also another determinant of bread consumption. By assumption, a larger family will consume more bread than a family with a smaller number. This is because the number of people that need to be fed will increase with an increase in family size, leading to a higher amount of purchases and consumption.

Another potential determinant of bread consumption is advertisement. Advertising a product tends to make that product well known and it is done to attract more customers by highlighting its advantage over others. We see therefore that when bread producers or sellers advertise their products, there is a tendency for there to be an increase in the consumption of bread, due to the awareness created (Belitz et al., 2010). The quality of a product, in this case, bread, also goes a long way in determining the extent to which it is consumed. Consumers will generally seek quality products, hence the higher the quality of bread, the more people are likely to consume it. We also see that the packaging and attractiveness of a product go a long way in determining its acceptability and demand. A well-packaged product will tend to attract more patronage than a product which is not well-packaged (Gava et al., 2016).

Research Methodology

This study was carried out in Benin City, which is the state capital of Edo state in Nigeria. It made use of primary data, which was gotten through the administration of a questionnaire; the questionnaire was anonymized and self-administered. It was administered to 130 individuals of different ages and social levels in order to evaluate the factors determining bread consumption in Benin City.

The questionnaire included items related to convenience, affordability, sensory and nutritional quality. It records socio-demographic characteristics, with closed-ended questions (e.g., age, gender, religion, marital status, job type, etc.). The study also tried to find eating and purchasing patterns by making use of closed-ended questions about preferred times of consumption (breakfast, lunch, dinner), and frequency of consumption on a daily and weekly basis (zero, once, twice, three times). The respondents were asked about the criteria, which they consider when purchasing bread, and the relative importance that they place on these attributes.

The dependent variable was dichotomous that took two values, 1 if the event occurred and 0 if it did not. This necessitated the use of a qualitative response model. This presented us with the options of using either the

logit, probit, or linear probability models. Although Ordinary Least Squares (OLS) regression estimates can be computed for binary models, the error terms are likely to be heteroscedastic leading to inefficient parameter estimates. Consequently, hypothesis testing and the construction of confidence intervals become imprecise and confusing (*Gujarati&Porter, 2013).*

Likewise, a linear probability model may produce predicted values outside the acceptable 0-1 value, which abuses the basic belief of probability. To alleviate these problems and produce relevant empirical outcomes, the most widely used qualitative response models are logit and probit models (*Gujarati&Porter, 2013).* In this study, the logit model based on the cumulative logistic probability function was employed. According to Gujarati and Porter (2013), the choice between logit and probit models is largely a matter of convenience. Disregarding the minor differences between logit and probit models, the probit and logit models are quite similar, so they usually produce predicted probabilities that are almost similar. The logit model is computationally easier to use and lends itself to a meaningful interpretation than the other types (*Gujarati&Porter, 2013*).

Binary Logistic Regression Model

The binary logistic regression analytical framework is appropriate for modelling dichotomous endogenous variables. For this paper, the dependent variable (bread consumption) was classified into individuals who consume bread (assigned a numeric value of 1) and individuals who do not consume bread (assigned a numeric value of 0). The binary logistic regression model then helps us in detecting the likelihood of being a bread consumer or non-consumer of bread. The determinants were chosen based on the determinants highlighted in the previous section, as well as the works of various researchers. The equation below portrays the general specification of the binary logistic regression modelling:

$L_i = \text{In}\ (P_i/(1 - P_i)) = Z_i$

$= \beta_0 + \beta iXj$

Where,

Xi represents a set of parameters that determine bread consumption in Benin City

Zi is the odds of a household consuming bread or not, a dichotomous dependent variable (coded with 1 if they consume bread and 0 if otherwise)

β_0 represents the model intercept and β_1 to βi represents the coefficients of the explanatory variables, X_1 to Xj

Bringing in our determinants, we specify our model, thus;

$Li = \beta_0 + \beta_1 AGE + \beta_2 EDU + \beta_3 FAM + \beta_4 ADV + \beta_5 QLY + \beta_6 PRI + \beta_7 P\text{-}ALT + \beta_8 PAC + B_9 INC + Ui$

Where,

Li is the logit, β0 is the intercept, while AGE represents age, FAM represents family size, INC represents income, ADV represents advertising, QLY represents quality of bread, PRI represents price of bread, P-ALT represents price of alternatives, PAC represents packaging, and EDU represents educational level and μi denotes the error term. This study will interpret the result of the regression analysis using the odds ratio as it gives a more meaningful interpretation.

Presentation and Discussion of Results

Although there is much credence to the theoretical discussions about the determinants of bread consumption in Benin City, there is however the need for empirical analysis in order to provide stronger evidence. This section will therefore discuss and evaluate the empirical findings.

Descriptive Statistics

This section provides details of this analysis, which are necessary for further understanding of the study. From the questionnaire administered, 28 percent of the respondents revealed that they will buy more bread if the price of bread falls while 72 percent of the respondents revealed that a fall in the price of bread will not make them buy more bread. As regards advertising, 42 percent of the respondents revealed that they will buy more bread if it is always advertised; while 58 percent of them revealed that constant advertisement will not make them increase the quantity of bread purchased.

As regards the quality of bread, 77 percent of the respondents agreed that they will be willing to pay a higher price to get bread of higher quality, while 23 percent of the respondents revealed a higher quality of bread will not make them increase the money paid to obtain bread. As regards price of alternatives, 43 percent of the respondents claimed that a fall in the price of alternative food items will make them purchase more bread, while 57 percent claimed that they will not consume more bread, even when there is a fall in the price of alternatives.

As regards packaging, 85 percent of the respondents revealed a preference for well-packaged bread, compared to less attractive-looking bread, while 15 percent of the respondents claimed indifference to the attractiveness of the bread. For income, only 39 percent of the respondents agreed that they will purchase more bread if their income increases, while 61 percent of the respondents claimed that they will not increase their level of bread consumption even when their income increases.

Logit Regression Result

The Logit regression can be seen in the appendix. From the regression result, we see that three out of the nine variables are statistically significant as determinants of bread consumption in Benin City; they are family size, price of bread and income. In addition, we see that one of the regressors (price of bread) has a negative impact on bread consumption while the other eight regressors have positive impacts. This study will interpret the results using the log of odds ratio of bread consumption. To do this, it is necessary to take the antilog of the various slope coefficients.

Taking the antilog of the intercept of -0.8432, we get 0.4303 ($e^{-0.8432}$), which means that in the absence of the regressors, bread consumption will rise by 0.4303 or about 43 percent.

Taking the antilog of the AGE coefficient of 0.5200, we have 1.6820. This means that for a unit increase in age, the odds of consuming bread increases by 1.6820. This means that an increase in age leads to an increase in bread consumption. From the result, however, age is seen as not being a significant factor in explaining bread consumption.

Taking the antilog of the EDU coefficient of 0.3541, we have 1.4249. This means that for a unit increase in educational attainment, the odds of consuming bread increases by 1.4249. This means that as individuals get more educated, they tend to consume more bread. From the result, however, educational level is seen as not being a significant factor in explaining bread consumption.

Taking the antilog of the FAM coefficient of 0.9221, we have 2.5146. There is a positive relationship between family size and bread consumption and it is significant. This means that for a unit increase in family size, the odds of consuming bread increases by 2.5146 holding other regressors constant. This means that as the family size increases, there is a greater chance of consuming bread in Benin City.

Taking the antilog of the ADV coefficient of 0.2099, we have 1.2336. This means that for a unit increase in advertisement, the odds of consuming bread increases by 1.2336. This means that investing in advertisements leads to an increase in bread consumption. From the result, however, advertising is seen as not being a significant factor in explaining bread consumption.

Taking the antilog of the QLY coefficient of 0.4879, we have 1.6289. This means that for a unit increase in the quality of bread, the odds of consuming bread increases by 1.6289. This means that increasing the quality of bread leads to an increase in bread consumption. From the result, however, the quality of bread is seen as not being a significant factor in explaining bread consumption.

Taking the antilog of the PRI coefficient of −2.4290, we have 0.0881. There is a negative relationship between the price of bread and the level of bread consumption, which is as expected. It means that for a unit increase in the price of bread, bread consumption decreases holding other regressors constant.

Taking the antilog of the P-ALT coefficient of 0.3791, we have 1.4610. This means that for a unit increase in the price of alternative food items, the odds of consuming bread increases by 1.4610. This means that an increase in the price of other food items leads to an increase in bread consumption. From the result, however, price of alternative food items is seen as not being a significant factor in explaining bread consumption.

Taking the antilog of the PAC coefficient of 0.9574, we have 2.6049. This means that for a unit increase in age, the odds of consuming bread increases by 2.6049. This means that an increase in the quality of packaging leads to an increase in bread consumption. From the result, however, packaging is seen as not being a significant factor in explaining bread consumption.

Taking the antilog of the INC coefficient of 2.3280, we have 10.2574. There is a positive relationship between income and bread consumption and it is significant. This means that for a unit increase in income, the odds of consuming bread increases by 10.2574, holding other regressors constant. This means that as income increases, there is a greater chance of consuming bread in Benin City.

However, together, all the regressors have a significant impact on bread consumption in Benin City, as the likelihood ratio statistic is 25.4548 with a *p-value* of about 0.0025, which is very small. The count R^2 is 92.3%, which shows the ratio of the correctly predicted cases over the total number of cases, which shows that our model is a good fit.

Conclusion

This study was carried out to examine the determinants of bread consumption in Benin City. The study tried to ascertain the factors that help influence the consumption of bread in Benin. It was discovered that there are three significant and key factors, which determine consumers' choice in bread consumption; they are family size, price of bread, and the income of the consumers. This means that as the family size increases, the quantity of bread consumed will tend to increase. This makes sense both logically and economically as the increase in the family size means a higher quantity of bread is required to satisfy the family members, leading to an increase in the purchase and consumption of bread.

In addition, the price of bread is negatively related to bread consumption, which conforms with the established law of demand which says that quantity reduces with a price increase. This means that if the producers increase the price of bread, the consumption of bread in Benin City will fall. Income is positively related to bread consumption, which means that as the income earned by the individuals increases, their level of consumption will increase, which means more money will be available to spend on consumption, hence increasing bread consumption.

Based on the evidence from the regression result, producers of bread, as well as sellers should do well to ensure that the price of bread is kept at a minimal level, as increasing the price will lead to a fall in bread consumption. To maximize sales and revenue, the producers and sellers can also do well to pick locations where there exists large families, compared to areas where most residents are single, as the areas with larger family sizes tend to consume more bread. They should also pick locations where the income level of the residents is considerably high, as this will lead to higher bread purchases and consumption. For the consumers themselves, if they desire to consume more bread, then they must work hard to earn more income as this will help them in purchasing and consuming a higher quantity of bread.

The government should also ensure that policies should be made to provide a friendly environment for bread producers. Also, necessary infrastructure such as power, and good roads, amongst others which are very critical should be provided. The incessant power grid collapses should be made a thing of the past. The income level in the country should also be adequate for the citizens and where necessary, reviewed to provide more funds for the consumers

References

Belitz, K., Frank, A., & Van Voorhis, B. (2010). *The Influence of the Media on Food Consumption and Body Image*. Semantic Scholar. https://www.semanticscholar.org/paper/The-Influence-of-the-Media-on-Food-Consumption-and-Belitz-Frank/f65dcb9650f4ab36ec3987a868b4186b3f5d72a2

Gava, O., Godelieve, G., & Brunori, G. (2016). *Factors in bread choice*. *71*(1), 229–237. https://doi.org/10.13128/rea-18642

Geurts, M., Van Bakel, A. M., Van Rossum, C. T. M., De Boer, E., & Ocke, M. C. (2016). *Food Consumption in the Netherlands and its determinants*. https://www.rivm.nl/bibliotheek/rapporten/2016-0195.pdf

Gomes, A. M. (2018). Influencing Factors of Consumer Behaviour in Retail Shops. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.3151879

Gujarati, D. N., &*Porter, D. C. (2013). Basic econometrics.* New York: McGraw-Hill.

Kilby, P. (1965). *Patterns of Bread Consumption in Nigeria*. *5*(1), 3–18. https://doi.org/10.22004/ag.econ.136681

Skořepa, L., & Pícha, K. (2016). Factors of Purchase of Bread - Prospect to Regain the Market Share? *Acta Universitatis Agriculturae et Silviculturae Mendelianae Brunensis*, *64*(3), 1067–1072. https://doi.org/10.11118/actaun201664031067

Appendix: LOGIT REGRESSION RESULT

Model 1: Logit, using observations 1-130

Dependent variable: BC

Standard errors based on Hessian

	Coefficient	*Std. Error*	*Z*	*p-value*
Const	−0.8432	1.511	−0.5580	0.5769
AGE	0.5200	0.6965	0.7466	0.4553
EDU	0.3541	0.5979	0.5923	0.5537

FAM	0.9221	0.3445	2.677	0.0074	***
ADV	0.2099	0.8905	0.2357	0.8137	
QLY	0.4879	0.8715	0.5598	0.5756	
PRI	−2.429	0.9906	−2.452	0.0142	**
P-ALT	0.3791	0.8903	0.4258	0.6702	
PAC	0.9574	0.8853	1.081	0.2795	
INC	2.328	1.332	1.748	0.0805	*

Mean dependent var	0.915385	S.D. dependent var	0.279385
McFadden R-squared	0.337714	Adjusted R-squared	0.072370
Log-likelihood	−24.95953	Akaike criterion	69.91907
Schwarz criterion	98.59441	Hannan-Quinn	81.57082

Number of cases 'correctly predicted' = 120 (92.3%)
f (beta'x) at mean of independent vars = 0.279
Likelihood ratio test: Chi-square (9) = 25.4548 [0.0025]

Authors' Bio

Gabriel Eromosele AKHIDUE*Ph.D. (in view)*, is a Lecturer in the Department of Economics, Anchor University, Ayobo Ipaja, Lagos State, Nigeria.. Email: akhiduegabriel.09@gmail.com Tel: 08076103570(Main Author).

Oseremen ThankGod EHISUORIA *Ph.D. (in view)*, is a Doctoral student in the Department of Economics, University of Benin, Benin City, Nigeria. Email: ehisuoriathankgod1@gmail.com