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## DETERMINANTS OF CONSUMERS' WILLINGNESS TO PAY FOR HONEY IN JOS, PLATEAU STATE, NIGERIA

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### ABSTRACT

The demand for honey and factors influencing consumers' willingness to pay for it are pivotal in shaping sustainable apiculture practices. In Jos Metropolis, Plateau State, Nigeria, understanding consumer preferences and constraints in honey purchase is critical for market development and fostering a vibrant beekeeping industry. A multi-stage sampling procedure was used to select a representative sample of honey consumers. A structured questionnaire was administered to 297 consumers across six selected marketplaces. Data collected were analysed using descriptive and multiple regression. The study revealed that the majority of honey consumers were male (65.6%), married (77.4%) and well-educated individuals with a mean age of about 42 years. The average household size was four persons, and most were employed (83.8%). The mean monthly income was ₦89,978.50. Consumers displayed a moderate awareness of the health benefits associated with quality honey consumption. Factors such as educational status ( $\beta = 0.600$ ;  $p < 0.05$ ), income ( $\beta = 0.036$ ,  $p < 0.05$ ), awareness of health benefits ( $\beta = 4.024$ ,  $p < 0.001$ ), and honey quality ( $\beta = 8.964$ ;  $p < 0.001$ ) significantly influenced consumers' willingness to pay for honey. Notably, honey availability (33.5%), quality (30.1%), seasonality (16.9%), substitutes (10.9%) and price (8.6%) were identified as major constraints affecting consumers' willingness to pay for honey. The study concluded with the vital importance of comprehending consumers' willingness to pay for honey in Jos, Plateau State. Insights into purchasing influences and market constraints are key for beekeepers and policy-makers. Addressing these factors through informed policies, quality assurance, and targeted strategies is crucial for sustainable apiculture and engaging consumers. Future research on consumer behaviour can further enrich this understanding, facilitating a prosperous honey market in the region.

**Keywords:** honey, willingness to pay, consumers' behaviour, market

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### Introduction

Honey is a natural sweet substance produced by bees using nectar from flowers. In Nigeria, honey has been a traditional food and medicinal product for centuries, renowned for its health benefits and natural sweetness. The demand for honey has been steadily increasing due to its perceived health benefits, cultural significance, and various culinary uses. Nigeria, with its diverse ecosystem and rich floral biodiversity, offers an ideal environment for honey production. However, there exists a significant gap in understanding consumers' willingness to pay for honey and

the factors that influence their preferences in the Nigerian market (Vapa-Tankosic *et al.*, 2020).

Despite the growing demand for honey in Nigeria, limited research has been conducted to assess consumers' willingness to pay and the factors that influence the valuation of honey. This knowledge gap hinders the effective development of marketing strategies and pricing mechanisms for honey products. Thus, understanding the factors that influence consumers' willingness to pay is crucial for setting appropriate price points that can sustain the honey industry while ensuring



affordability and accessibility for consumers (Jones *et al.*, 2019).

This study is essential for economic development, sustainable honey industry growth, health promotion and policy formulation. However, understanding consumers' willingness to pay for honey can contribute to the economic development of the honey industry in Nigeria which can inform pricing strategies that balance profitability for producers and affordability for consumers (Kallas *et al.*, 2021). Again, the findings from this study will guide beekeepers and honey producers in making informed decisions regarding production, marketing, and distribution to meet consumer preferences and ensure the sustainable growth of the honey industry. Nonetheless, analyzing consumers' awareness and perceptions of honey's health benefits can aid in health promotion strategies, encouraging the consumption of honey as a healthier alternative to artificial sweeteners (Di Vita *et al.*, 2021). To sum up, insights from this study can inform policymakers in crafting policies that support the honey industry, potentially leading to improved regulations, incentives, and market access for producers and consumers alike.

This study therefore examined the consumers' willingness to pay for honey in Jos Metropolis, Plateau State, Nigeria to describe the characteristics of honey consumers, their willingness to pay for honey, determine the factors influencing consumers' willingness to pay for honey and identify the constraints that influence consumers' willingness to pay for honey in the study area.

## Methodology

### Study Area

This study was conducted in the vibrant and dynamic urban city of Jos, located in Plateau State, Nigeria. Situated within the latitudinal coordinates of 9°45'N to 09°57'N and longitudinal coordinates of 8°48'E to 8°58'E,

Jos encompasses an area spanning 249.7 square kilometres. The city is known for its moderate climate, with mean annual temperatures ranging between approximately 20°C and 26°C (Eludoyin and Adelekan, 2013).

The study area, Jos metropolis, is inhabited by a diverse population, estimated to be around 1,387,785 individuals based on the 2021 Population projection. This demographic diversity contributes to the dynamic socio-economic landscape of the region (Madueke, 2018). Jos is recognized for its diverse agricultural activities, notably cattle, goats, poultry, and fish farming on a smaller scale. These agricultural ventures play a significant role in the local economy, showcasing the agricultural richness of the region. The presence of these farming activities underscores the importance of understanding consumer perspectives and willingness to pay for honey, which is an additional facet of the agricultural domain.

### Sampling Approach

To ensure a representative sample, a multi-stage sampling process was employed. The first stage involved the identification of consumers of honey, focusing on locations where packaged honey was available for purchase. Subsequently, six marketplaces were selected from a total of ten identified ones, utilizing a simple random sampling method. Implementing a simple random sampling method ensured an unbiased and fair chance for each marketplace to be part of the study, thereby enhancing sample representativeness and facilitating broader generalization to all marketplaces offering packaged honey for purchase.

### Marketplace Selection

Out of the ten identified marketplaces where packaged honey was being sold, six were randomly chosen to be part of the study. What informed the choice of the six marketplaces where packaged honey was being sold was



that the selected marketplaces showed higher demand for packaged honey compared to the other four i.e. the sales data, customer footfall and market analysis had indicated these selected marketplaces as the most profitable or responsive to honey sales. Also, the suppliers of the packaged honey have established stronger relationships and contracts with vendors in these selected marketplaces, making it easier to prioritize these locations for distribution. The utilization of a simple random sampling method aimed to guarantee an impartial and equal opportunity for every marketplace to be included in the study. This approach was instrumental in improving the sample's representativeness and bolstering the ability to extend findings to the entirety of marketplaces where packaged honey was accessible for purchase. This strategic selection aimed to encompass a variety of market dynamics within the Jos Metropolis.

### **Participant Selection**

Due to constraints in time, resources and accessibility, the consumers who were most readily available or accessible in the selected marketplaces were chosen for the interview. The convenience sampling method was adopted to interview a total of 297 honey consumers from a pool of 331 honey consumers as presented by the honey marketers in the selected honey marketplaces. The proportion of samples drawn from each of the selected markets was between the ranges of 87.8% to 90%. This constituted an overall 89.73% of the sample frame of the honey consumers in the study area. The disproportionate selection of the sample size in the selected marketplaces was because some consumers were unwilling to participate in the study thereby reducing the number of interviews conducted despite attempts to reach them.

### **Data Collection**

Primary data were collected using a set of structured questionnaires, comprising both open and closed-ended questions. This was administered to the selected participants. This set of structured questionnaires was distributed in the chosen marketplaces where packaged honey was available, ensuring the relevance and accuracy of the data gathered.

To facilitate the analysis of the respondents, values were assigned to the responses on their level of awareness of the health benefits of quality honey consumption and their perceived quality level of packaged honey bought. Respondents rated their level of awareness of the health benefits of quality honey consumption on a five-point Likert-type rating scale: 1 (not at all aware), 2 (slightly aware), 3 (somewhat aware), 4 (moderately aware) and 5 (extremely aware) while they rated their perceived quality level of packaged honey bought on a five-point Likert type rating scale: 1 (Poor), 2 (Fair), 3 (Good), 4 (Very good) and 5 (Excellent). The value (weighted) attracted to scales helped to indicate the average respondents' ratings respectively.

### **Data Analysis**

The data collected were subjected to methodical analysis. Descriptive statistics, including frequency counts, percentages, and mean values, were computed to provide a comprehensive understanding of the gathered information. Additionally, inferential statistics, specifically multiple regression analysis, was applied to explore deeper insights and relationships within the data set. Thus, this robust analytical approach enriched the interpretation of the study's findings.

Multiple regression was used to determine the factors influencing consumers' willingness to pay for honey in the study area. The model used is given below;

Implicit form:



$$Y = (X_1, X_2, \dots, X_9, X_{10}, e) \dots(1)$$

Linear function:

$$Y = b_0 + b_1X_1 + b_2X_2 + \dots + b_9X_9 + b_{10}X_{10} + e \dots(2)$$

Where, Y = Amount willing to be paid by respondents (Naira)

X<sub>1</sub> = Sex (Male =1, Female=0)

X<sub>2</sub> = Age (Years)

X<sub>3</sub> = Marital status (Married =1, Not married=0)

X<sub>4</sub> = Household size (Number of persons)

X<sub>5</sub> = Educational status (Formal=1, No formal=0)

X<sub>6</sub> = Consumers' monthly income (Naira)

X<sub>7</sub> = Occupational status (Employed=1, Unemployed=0)

X<sub>8</sub> = Current market price of purchased packaged honey per litre (Naira)

X<sub>9</sub> = Awareness of health benefits of quality honey consumption

(Not at all aware=1 to Extremely aware=5)

X<sub>10</sub> = Perceived respondents' quality level of packaged honey bought (Poor=1 to Excellent=5)

b<sub>0</sub> = Constant term

e = Error term

## Results and Discussion

### Characteristics of the respondents

The results in Table 1 provide a comprehensive description of various characteristics of honey consumers in Jos Metropolis. These characteristics shed light on the demographic, economic, and perceptual factors that influence consumers' preferences and their willingness to pay for honey in the region.

**Sex:** The result indicates that the majority of honey consumers in Jos Metropolis are male (65.6%). This could imply that there might be specific preferences, cultural inclinations, or health perceptions among males that drive their consumption of honey. Therefore, an

understanding of these gender-based differences is vital for targeted marketing and product development strategies that appeal to both genders effectively (Pocol *et al.*, 2022).

**Age (Years):** The age range of honey consumers, spanning from 26 to 72 years old, indicates a diverse demographic engaging with honey-based products. The mean age of 41.5 years suggests a distribution skewed towards older consumers (middle-aged individuals), potentially indicating a higher affinity or purchasing power within that age group. However, understanding this demographic composition is vital for marketing strategies, product development, and targeted advertising campaigns to cater to the preferences and needs of the diverse age ranges within the consumer base (Cui, 1997).

**Marital status:** A significant majority of honey consumers are married (77.4%). This may suggest that married individuals, perhaps due to family-oriented consumption or shared household decisions about purchasing or health awareness, are more inclined to incorporate honey into their diets. As a result, an understanding of the marital status trend helps in shaping advertising strategies and emphasizing the benefits of honey for families and household consumption (Bissinger *et al.*, 2019). Marketing strategies could be adapted to target families or couples.

**Household size (Number of persons):** The average household size for honey consumers is four persons. This information is crucial for packaging and marketing strategies i.e. a larger household size might imply that honey consumption is for the entire family, influencing packaging sizes or marketing campaigns aimed at families. Products in sizes suitable for a family could be highlighted, appealing to the typical household size in the area (Testa *et al.*, 2019).

**Educational status:** A high percentage (96.8%) of honey consumers have formal education. This implies that educational





campaigns and informative marketing strategies could be effective in reaching and influencing the majority of the consumer base. Consequently, highlighting the benefits of honey with scientific evidence could resonate well with this educated segment (Testa *et al.*, 2019).

**Consumers' monthly income (Naira):** The mean monthly income of consumers is ₦89,978.50. Understanding the income levels of consumers is vital for pricing strategies and product positioning which gives insights into the affordability and pricing range that would be suitable for this market segment (Ancha *et al.*, 2021).

**Occupational status:** A large proportion (83.8%) of honey consumers is employed. This indicates that the purchasing power of employed individuals significantly contributes to the honey market. For that reason, tailoring promotions or loyalty programs targeting working professionals could be beneficial (Bissinger, 2019).

**Current market price of purchased packaged honey per litre (Naira):** The average current market price of 3873 Naira per litre suggests a stable pricing trend in the honey market, potentially indicating a balance between affordability and perceived value for consumers. This figure serves as a benchmark for businesses to assess their pricing strategies, ensuring they remain competitive while maintaining profit margins. Fluctuations significantly deviating from this average might signal shifts in consumer

demand or changes in production costs, necessitating careful market analysis for strategic adjustments. This provides essential information for pricing strategies and helps in positioning honey products in the market effectively, considering the willingness of consumers to pay within this price range (Bissinger, 2019).

**Awareness of health benefits of quality honey consumption:** Consumers have a moderate awareness (mean of 3.8) of the health benefits associated with quality honey consumption. This provides essential information for strengthening education and marketing efforts to increase awareness which could potentially lead to a higher demand for honey (Bissinger and Herrmann, 2021).

**The perceived quality level of packaged honey bought:** The perceived quality level of honey by consumers is good (mean of 3.1). This indicates that consumers have a positive perception of the honey available in the market. Therefore, maintaining and improving this perceived quality is crucial for sustaining consumer trust and demand (Wu *et al.*, 2015).

**Willingness to pay per litre (Naira):** Consumers, on average, are willing to pay an average of ₦ 3,558 per litre for honey. So, understanding this willingness to pay would help in setting appropriate pricing strategies, ensuring that honey remains accessible while maintaining profitability for producers (Vapa-Tankosic *et al.*, 2020).

**Table 1: Socio-Economic Characteristics of Honey Consumers**

Characteristics of honey consumers	Description
Sex	Male (65.6%)
Age (Years) [Minimum: 26; Maximum: 72]	Mean = 41.5 Years
Marital status	Married (77.4%)
Household size (Number of persons) [Minimum: 1; Maximum: 9]	Mean = 4 persons
Educational status	Formal education (96.8%)
Consumers monthly income (Naira) [Minimum: 25,000; Maximum.: 270,000]	Mean = 89978.5 Naira
Occupational status	Employed (83.8%)
Current market price of purchased packaged honey per litre (Naira)	Mean = 3873 Naira
Awareness of health benefits of quality honey consumption	Mean = 3.8 (Moderately aware)



(Not at all aware=1, Extremely aware=5)

The perceived quality level of packaged honey bought (Poor=1, Excellent=5)

Mean = 3.1 (Good)

Willingness to pay per litre (Naira)

Mean = 3558 Naira

### Factors influencing consumers' willingness to pay for honey

The result in Table 2 provides a detailed view of the results from the analysis of factors influencing consumers' willingness to pay for honey in Jos Metropolis, along with the corresponding t-values and significance levels. Thus, the significant variables and their implications are discussed below.

**Awareness of health benefits of quality honey consumption ( $\beta = 4.024$ , t-value = 7.851,  $p < 0.001$ ):** Consumers' awareness of the health benefits of honey, as represented by a categorical variable (ordinal), significantly influences their willingness to pay. The level of consumers' awareness positively impacts their willingness to pay for honey. This indicates that when consumers are informed about the health advantages of honey, they exhibit a higher willingness to invest in the product. This underscores the importance of health-focused marketing and educational campaigns to enhance consumer knowledge about honey's advantages (Kallas *et al.*, 2021).

**Perceived quality level of packaged honey bought ( $\beta = 8.964$ , t-value = 4.888,  $p < 0.001$ ):** Perceived quality of honey has a substantial positive influence on willingness to pay. Consumers are willing to pay more for honey perceived to be of higher quality. This emphasizes the significance of maintaining and communicating high-quality standards in honey production and marketing. Producers should focus on delivering premium quality honey to meet consumer expectations and drive higher price points (Cosmina *et al.*, 2016).

**Consumers' monthly income ( $\beta = 0.036$ , t-value = 2.460,  $p < 0.05$ ):** Consumers' monthly income also plays a significant role in determining willingness to pay. A higher income positively correlates with a greater

willingness to pay for honey. This suggests that honey is seen as an affordable luxury, and consumers with higher incomes are willing to allocate a larger portion of their budget to high-quality honey (Arvanitoyannis and Krystallis 2006).

**The current market price of purchased packaged honey per litre ( $\beta = -0.231$ , t-value = -2.187,  $p < 0.05$ ):** The price of honey has a significant negative influence on consumers' willingness to pay. As the price of honey increases, the willingness to pay decreases. This emphasizes the price sensitivity of consumers and the need for appropriate pricing strategies to ensure that honey remains accessible and attractive to consumers while also being profitable for producers (Arvanitoyannis and Krystallis 2006).

**Educational Status ( $\beta = 0.601$ , t-value = 1.997,  $p < 0.05$ ):** Consumers with a form of formal education show a slightly higher willingness to pay for honey. This signifies the role of education in influencing consumer preferences and understanding the value of honey. Targeted educational campaigns could further enhance this effect and positively impact the market (Ureña *et al.*, 2008).

The overall F-value of 7.174 ( $p < 0.001$ ) indicates that the model is statistically significant. The R-squared value of 0.577 implies that the variables in the model explain approximately 57.7% of the variation in consumers' willingness to pay for honey. The adjusted R-squared value of 0.516 suggests a good fit of the model.

As a result, understanding the factors that significantly influence consumers' willingness to pay for honey, such as awareness of health benefits, quality of honey, consumers' income, and price of honey, is pivotal for honey producers and marketers. These insights enable the development of targeted



strategies to enhance product quality, price competitively, and educate consumers about

the health benefits of honey, ultimately boosting market demand and profitability.

**Table 2: Factors influencing consumers' willingness to pay for honey**

Variables	B	t-value
Constant	3.537	1.771
Gender	-3.000	-0.763
Age	2.532	0.827
Marital status	-0.400	-0.208
Household size	2.523	0.258
Educational status	0.601*	1.997
Consumers monthly income	0.036**	2.460
Occupational status	0.940	0.252
The current market price of purchased packaged honey per litre	-0.231**	-2.187
Awareness of health benefits	4.024***	7.851
Perceived quality level of packaged honey bought	8.964***	4.888

**Note:** F-value = 7.174\*\*\*; Prob > f = 0.000; R-squared = 0.577; Adjusted R-squared = 0.516

\*\*\*, \*\*, and \* represent significance at the 1%, 5%, and 10% levels, respectively.

### Constraints influencing consumers' willingness to pay for honey

The result in Table 3 presents the identified constraints that influence consumers' willingness to pay for honey in Jos Metropolis, along with their respective percentages, and rankings. The results and implications of these constraints are discussed in detail below.

**Availability (Percentage: 33.5%, Ranking: 1<sup>st</sup>):** The highest-ranked constraint, as indicated by consumers, was the availability of honey. More than a third of the respondents identified this as a major factor affecting their willingness to pay. This suggests that a significant portion of consumers in Jos Metropolis may face challenges in finding honey when they want to purchase it. For producers and marketers, ensuring a consistent and sufficient supply of honey throughout the year is critical to meet consumer demand and potentially increase their willingness to pay ( Ritten *et al.*, 2019).

**Quality (Percentage: 30.1%, Ranking: 2<sup>nd</sup>):** Quality was identified as the second most important constraint. Nearly one-third of the respondents were concerned about the quality of honey available in the market. This

underscores the need for producers to maintain high standards of quality in honey production, processing, and packaging. Assuring consumers of the quality and purity of the honey they purchase can positively influence their willingness to pay a premium for a superior product ((Vapa-Tankosic *et al.*, 2020).

**Seasonality (Percentage: 16.9%, Ranking: 3<sup>rd</sup>):** Seasonality was highlighted as the third constraint. Consumers expressed concern about the fluctuating availability of honey based on the seasons. This indicates a desire for a more consistent supply throughout the year. Addressing this constraint might involve employing strategies such as efficient storage, year-round production, or product diversification to mitigate the effects of seasonality and maintain a steady supply of honey (Ballco *et al.*, 2022).

**Substitutes (Percentage: 10.9%, Ranking: 4<sup>th</sup>):** Consumers recognize the presence of substitutes as a constraint. Approximately 11% of respondents identified this as a factor affecting their willingness to pay for honey. This suggests that consumers are considering alternatives to honey, potentially driven by factors like price or availability. To mitigate this constraint, honey producers and



marketers should focus on highlighting the unique qualities and benefits of honey that differentiate it from substitutes, positioning honey as the preferred choice (Pocol et al. 2022).

**Price (Percentage: 8.6%, Ranking: 5<sup>th</sup>):**

Price was identified as the least significant constraint according to the respondents, with 8.6% indicating it as a factor affecting their willingness to pay. However, while it ranks lowest in terms of frequency, price remains a relevant consideration for a portion of consumers. Effective pricing strategies that

balance affordability and reflect the value consumers perceive in honey could help address this constraint (Ureña *et al.*, 2008).

Ultimately, the identified constraints provide valuable insights for honey producers and marketers in Jos Metropolis. Addressing issues related to availability, quality, seasonality, substitutes, and price can enhance consumers' willingness to pay for honey. By strategically managing these constraints, producers can build consumer trust, increase market share, and encourage greater consumption of honey.

**Table 3: Constraints influencing consumers' willingness to pay for honey**

Constraints	Percentage	Ranking
Price	8.6	5 <sup>th</sup>
Availability	33.5	1 <sup>st</sup>
Quality	30.1	2 <sup>nd</sup>
Seasonality	16.9	3 <sup>rd</sup>
Substitutes	10.9	4 <sup>th</sup>

*\*Multiple response choices allowed*

**Conclusion**

The analysis of honey consumers' socio-economic characteristics, factors influencing their willingness to pay, and constraints affecting their purchasing decisions in Jos Metropolis provides valuable insights into the dynamics of the honey market. The findings suggest that consumer awareness of health benefits and the perceived quality of honey significantly influence their willingness to pay. Furthermore, factors such as age, educational status, income, and the price of honey also play significant roles in determining consumers' willingness to pay. Availability emerges as the most critical constraint affecting consumers' purchasing decisions, underscoring the importance of ensuring a consistent and reliable supply of honey in the market. The quality of honey and awareness of its health benefits also stand out as crucial factors. These insights are fundamental for producers, marketers, and policymakers to strategize and enhance the honey market in Jos Metropolis.

Based on this, to enhance the honey market in Jos Metropolis, strategic actions are essential. First, educating consumers about honey's health benefits is vital, boosting their willingness to pay by highlighting its nutritional and medicinal advantages. Second, ensuring a consistent supply of honey year-round through efficient production, storage, and distribution systems is critical. Third, maintaining and improving honey quality through stringent processes and certifications instils consumer trust, enabling higher price points. Fourth, understanding and managing price sensitivity by conducting market research is key to finding the right balance between affordability and profitability. Fifth, diversifying honey products in terms of packaging, flavours and varieties caters to diverse consumer preferences, expanding the market. Finally, fostering collaboration between the government and private sector through partnerships and streamlined regulations encourages growth and benefits both producers and consumers alike.





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