

Economic and Econometric Analysis of the Demand for Al-Rayan Chicken in Tikrit District, with Estimation of Price, Income, and Cross Elasticities

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Abstract:

This study aims to conduct an economic and econometric analysis of the demand for Al-Rayan chicken in Tikrit District by estimating the effects of own price, household income, prices of competing substitutes, and selected behavioral factors on the quantity demanded. The study relied on cross-sectional data collected from a random sample of 300 households in 2024 through a structured questionnaire. The data were analyzed using EViews software, and the demand function was estimated using the Ordinary Least Squares (OLS) method after comparing several functional forms. The double-logarithmic model was selected as the most appropriate specification according to statistical, economic, and econometric criteria. The results showed that the demand for Al-Rayan chicken is relatively price inelastic, with an own-price elasticity of (-0.34), indicating that consumers consider it an essential food commodity within the household consumption basket. The income elasticity reached (0.67), confirming that Al-Rayan chicken represents a normal necessity good rather than a luxury product. The positive cross-price elasticities with imported chicken and Al-Bawadi chicken confirmed the existence of substitution relationships among poultry products in the local market. The findings also revealed that product quality and consumer trust play an important role in influencing consumer demand and strengthening the competitive position of Al-Rayan chicken in Tikrit market. The econometric model demonstrated acceptable statistical and econometric efficiency according to the diagnostic test results. The study concludes that Al-Rayan chicken plays an important role in

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supporting domestic poultry production and reducing dependence on imported products. The study recommends improving product quality standards, adopting moderate pricing policies, and supporting domestic poultry production to enhance the competitiveness of local poultry products and contribute to food security.

Keywords: Al-Rayan Chicken, Cross-Price Elasticity, Demand Analysis, Food Security, Household Income, Poultry Market, Price Elasticity, Tikrit District

Introduction

he poultry sector is considered one of the key components of the food system in the Iraqi economy, as it provides a major source of animal protein at relatively lower cost compared to alternative sources such as red meat and fish. In addition, it plays a significant role in enhancing food security and achieving a degree of self-sufficiency. In recent years, this sector has experienced a noticeable expansion in domestic production; however, this growth has not been sufficient to meet the increasing demand, resulting in a continued reliance on imports to bridge part of the food gap. This situation reflects an imbalance between supply and demand in the poultry market.

Within the context of developing domestic production, modern production systems based on integrated approaches have emerged, among which Al-Rayan chicken represents a prominent example of organized local production in Salah al-Din Governorate, particularly in Tikrit District. This product has

achieved a notable presence in the local market due to factors related to quality, hygiene, packaging, and brand trust, in addition to its wide availability across various marketing outlets.

Despite the development on the supply side, there remains a limited understanding of the nature of demand for this product. Consumer demand is not determined solely by price; rather,

it is influenced by a range of interrelated economic factors, including household income and the prices of substitute goods. Moreover, the presence of competing alternatives, such as imported chicken and Al-Bawadi chicken, further complicates consumer behavior, making it difficult to interpret through descriptive analysis alone.

The economic importance of analyzing the demand for Al-Rayan chicken stems from its role as a locally produced food commodity that contributes to supporting domestic

poultry production and reducing dependence on imported products. In addition, understanding consumer responsiveness to price and income changes helps producers and policymakers formulate more efficient production and pricing policies, improve market stability, and enhance food security within the local market of Tikrit District. Furthermore, estimating economic elasticities provides a scientific basis for evaluating consumer behavior and identifying the competitive position of local poultry products in comparison with imported alternatives.

Hence, the importance of economic and econometric analysis emerges in estimating the demand function for **Research Problem**

The research problem lies in the lack of precise quantitative identification of the relative effects of price, household income, and the prices of substitute goods on the demand for Al-Rayan chicken. It also reflects the need to estimate an economic demand

Research Objectives

This study aims to analyze and quantify the demand for Al-Rayan chicken in Tikrit District by estimating the economic demand function and identifying the effects of key economic variables, namely the price of Al-Rayan chicken, household income, and the prices of competing

Al-Rayan chicken and measuring price, income, and cross-price elasticities. Such analysis contributes to a better understanding of consumer behavior and the degree of responsiveness to various economic changes, while providing a scientific basis for formulating production and marketing policies aimed at enhancing the competitiveness of domestic products and supporting market stability in the food sector in Tikrit District. The study relies on cross-sectional data collected from a sample of 300 households in Tikrit District for the year 2024, with the objective of obtaining precise quantitative estimates of the factors affecting demand for this product.

function that clarifies the nature of the relationship between these variables and the quantity demanded, and explains the degree of consumer responsiveness to economic changes within the context of the local market in Tikrit District.

substitutes, on the quantity demanded. The study also seeks to estimate price, income, and cross-price elasticities in order to determine the degree of demand responsiveness to changes in these variables, and to identify the nature of the product as either a necessity or a luxury good within the

household food basket. Furthermore, the research aims to assess the relative importance of each economic variable in explaining consumer behavior, thereby providing a scientific basis for

Research Hypotheses

Based on the economic theory of demand, particularly the Marshallian demand function, the following hypotheses are proposed:

1. There is a statistically significant inverse relationship between the price of Al-Rayan chicken and its demand; that is, an increase in its price leads to a decrease in the quantity demanded.
2. There is a statistically significant positive relationship between household income and the demand for Al-Rayan chicken, reflecting its status as a normal good within the household food consumption pattern.
3. There is a statistically significant positive relationship between the prices of

improving production and marketing decisions, and enhancing the competitiveness of domestic products in the Iraqi market.

competing substitutes (imported chicken and Al-Bawadi chicken) and the demand for Al-Rayan chicken, due to the existence of a substitution effect among these goods.

4. The demand for Al-Rayan chicken is expected to be relatively price inelastic, reflecting its nature as a necessary good within the household food consumption basket.
5. Income elasticity is considered an important indicator in determining the nature of the good, and it is expected to be positive and less than unity, indicating that Al-Rayan chicken is a necessity rather than a luxury good.

Data Collection Method and Sources

The study relies on two main sources of data, consistent with the nature of the applied economic and econometric analysis: secondary data

and primary (field) data. This approach aims to achieve integration between the descriptive and empirical aspects of the research.

First: Secondary Data

Secondary data were obtained from official and reliable sources, including:

- The Iraqi Ministry of Planning / Central Statistical Organization
- The Annual Statistical Abstract
- Foreign trade statistics
- Reports issued by the Iraqi Ministry of Agriculture
- Technical reports related to the poultry sector

Second: Primary (Field) Data

Primary data were collected through a structured questionnaire specifically designed for the purposes of this study. The questionnaire was distributed to a random sample of households in Tikrit District in order to obtain direct data reflecting the actual consumer behavior toward Al-Rayan chicken.

The questionnaire included a set of key economic variables related to the demand function, namely:

- The price of Al-Rayan chicken
- Annual household income

Population and Sample of the Study

The study population consists of households consuming Al-Rayan chicken in Tikrit District, as they represent the basic decision-making unit regarding the consumption and

These data were utilized to analyze the status of poultry production and consumption in Iraq, estimate the quantities available for consumption, and determine per capita consumption of poultry meat. In addition, they were used to highlight the gap between supply and demand over the study period, thereby providing a general framework for understanding the demand behavior for the product under study.

- The price of imported chicken
- The price of Al-Bawadi chicken

All questionnaires were carefully reviewed, and invalid responses were excluded. The data were then standardized on an annual basis to ensure consistency with the econometric model employed in estimating the demand function, thereby enhancing the accuracy of interpreting the economic relationships among the variables.

purchase of food products, particularly local poultry products.

Tikrit District was selected as the study area due to its importance as

one of the major population centers in Salah al-Din Governorate, in addition to the wide marketing activity of Al-Rayan chicken within the district. The presence of multiple retail outlets offering both local products and competing substitutes makes it an appropriate environment for analyzing demand behavior in a realistic context.

The study sample comprises a random sample of 300 households selected in a manner that ensures representation of different consumer groups within the district, thereby capturing

Previous Studies

Reviewing previous studies is considered an essential step in supporting the theoretical and applied framework of the research, as it helps identify the most important variables affecting the demand for poultry meat and the econometric methods used in estimating demand functions. It also clarifies the position of the current study within local, Arab, and international literature.

Study One

[1]

This study addressed the econometric analysis of some economic variables affecting poultry meat consumption in Iraq. It relied on time-series data covering the period

variation in income levels and household consumption patterns.

The sample size was determined to achieve a balance between the explanatory power of the econometric model and the feasibility of accurate field data collection, allowing for reliable estimation of the demand function and the derivation of economic elasticities with an acceptable level of statistical confidence.

Most previous studies have shown a general agreement on the importance of conventional economic variables—such as price, income, and prices of substitute goods—in explaining the demand for poultry products. However, they differ in terms of data types used and econometric techniques applied, in addition to the limited number of studies focusing on a specific local product such as Al-Rayan chicken.

(1983–2010), using the Ordinary Least Squares (OLS) method and comparing several functional forms.

The study found that the demand for poultry meat is price inelastic, and that income elasticity is positive and

less than unity, indicating that poultry meat represents a normal necessity good.

Points of Agreement with the Current Study

This study is consistent with the current research in its focus on key economic variables, particularly price, income, and prices of substitute

goods, as well as in its reliance on the estimation of the demand function and the derivation of economic elasticities.

Points of Difference

The current study differs from the aforementioned study in that it relies on cross-sectional field data at the household level, whereas Ibrahim and Abdul Qadir's study is based on

aggregate time-series data. Moreover, the current research specifically focuses on a single local product, Al-Rayhan chicken in Tikrit District, rather than poultry meat in general.

Study

[2]

Two

This study aimed to conduct an economic and econometric analysis of the demand for poultry meat in Iraq and Salah al-Din Governorate, with the estimation of price, income, and cross-price elasticities using a multiple linear regression model and the Ordinary Least Squares (OLS) method.

The results indicated that the demand for poultry meat is price inelastic, and that income elasticity is positive and less than unity, with a clear substitution relationship observed with other food alternatives.

Points of Agreement with the Current Study

The current research is consistent with this study in terms of geographical focus, as both concentrate on Salah al-Din

Governorate. They also agree in the use of econometric modeling and the estimation of economic elasticities.

Points of Difference

The current study differs in that it focuses on Al-Rayan chicken as a specific product within Tikrit District, whereas the previous study examined poultry meat in general. Additionally,

the present study relies on recent field data from 2024, which provides a more specific and up-to-date representation of actual household consumption behavior.

Theoretical Framework

First: The Concept of Economic Demand

Demand is considered one of the fundamental concepts in microeconomic theory. It refers to the various quantities of a given good that a consumer is willing and able to purchase at different price levels over a specific period of time, assuming that other factors affecting demand remain constant (*ceteris paribus*). Demand does not merely represent the desire to purchase; rather, this desire must be accompanied by effective purchasing power, as mere willingness without financial ability does not constitute economic demand in the scientific sense.

Furthermore, demand reflects consumer behavior and preferences within the market and is influenced by several factors, most notably the price

of the good itself, consumer income, prices of substitute and complementary goods, as well as tastes and consumption habits [3].

The importance of studying demand is particularly evident in food commodities, especially animal products, due to their direct link to food security and household welfare, as well as their significant share in daily consumption expenditure. The poultry sector is among the most sensitive food sectors to economic changes, given its strong association with income levels and prices of alternative food sources such as red meat and fish. This makes demand analysis an essential tool for designing production and marketing policies [4].

Second: The Demand Function

The demand function represents the mathematical relationship between the quantity demanded of a specific good and the variables affecting it. It is considered one of the key tools in economic and econometric analysis of

consumer behavior. Through this function, the direction of the relationship between the dependent variable and independent variables can be determined, as well as the

relative impact of each variable on the level of demand.

In general, the demand function can be expressed as follows:

$$Q_d = f(P, I, P_s, P_c, T, U)$$

Where:

Q_d = Quantity demanded

P = Price of the commodity itself

I = Consumer (household) income

P_s = Prices of substitute goods

P_c = Prices of complementary goods

T = Tastes and preferences

U = Other unobserved factors

This specification represents the fundamental theoretical framework

Third: The Law of Demand

The law of demand states that there is an inverse relationship between the price of a good and the quantity demanded, assuming that all other factors remain constant (*ceteris paribus*). In other words, an increase in price leads to a decrease in quantity demanded, while a decrease in price leads to an increase in demand. This law is considered one of the most stable economic principles, as it is directly linked to the natural behavior of consumers in the market.

The law of demand is based on several economic explanations, the

upon which econometric demand models are built, as it allows the transformation of theoretical economic relationships into a quantitative model that is empirically testable. Consequently, it enables the estimation of different elasticities and the scientific analysis of consumer behavior [5].

In the case of food commodities, particularly poultry products, the demand function becomes more complex due to the multiplicity of food substitutes and variations in household income levels. Therefore, econometric analysis is required instead of purely descriptive approaches in order to obtain more accurate and realistic results [4].

most important of which is the law of diminishing marginal utility, which assumes that the additional satisfaction (utility) obtained from each extra unit of a good decreases progressively. As a result, consumers become less willing to pay the same price for additional units. The substitution effect also explains this law, as consumers tend to replace relatively more expensive goods with cheaper substitutes. In addition, the income effect reflects the reduction in real purchasing power due to an increase in price, which leads to a

decrease in the quantity demanded [5].

In the poultry market, the law of demand is clearly observable due to the presence of multiple substitutes such as imported chicken, red meat,

Fourth: Demand Elasticities

Elasticity is considered one of the most important tools in economic analysis, as it measures the degree of responsiveness of the quantity demanded to changes in one of its determinants. It provides a precise indicator for understanding consumer

1. Price Elasticity of Demand

Price elasticity measures the responsiveness of the quantity demanded of a good to changes in its own price. It is calculated as follows:

$$E_p = \frac{\% \Delta Q}{\% \Delta P}$$

If the elasticity value is greater than one, demand is considered elastic, meaning that consumers respond

2. Income Elasticity of Demand

Income elasticity measures the responsiveness of quantity demanded to changes in consumer income. It is expressed as:

$$E_y = \frac{\% \Delta Q}{\% \Delta I}$$

If the elasticity value is positive, the good is classified as a normal good, whereas a negative value

and fish. Consumer decisions are significantly influenced by relative price changes among these goods, making the inverse relationship between price and demand more evident in local markets.

behavior and the nature of the product under study. Through elasticities, it is possible to determine whether a good is a necessity or a luxury, as well as to identify the nature of its relationship with competing or complementary goods [5].

strongly to price changes. If it is less than one, demand is inelastic, indicating that changes in price have a relatively small effect on the quantity demanded. Generally, demand for basic food commodities such as poultry meat is inelastic due to its essential nature within the household food basket [6].

indicates an inferior good. When income elasticity is positive but less than one, the good is considered a necessity, while values greater than one indicate a luxury good. Poultry meat is typically classified as a necessity in developing economies due to its role as a relatively low-cost protein source for households [4].

3. Cross-Price Elasticity of Demand

Cross-price elasticity measures the responsiveness of the demand for one good to changes in the price of another good. It is calculated as:

$$E_{xy} = \frac{\% \Delta Q_x}{\% \Delta P_y}$$

A positive value indicates a substitution relationship between the two goods, meaning that an increase in the price of one leads to an increase in the demand for the other. A

negative value indicates a complementary relationship. In the poultry market, the relationship between locally produced chicken and imported chicken or red meat is generally substitutive, as consumers tend to shift toward cheaper or higher-quality alternatives depending on their purchasing power and income level [5].

Fifth: The Importance of Demand Analysis for Poultry

The importance of analyzing demand for poultry products stems from their role as one of the most important and relatively low-cost sources of animal protein compared to red meat and fish. In addition, poultry products play a vital role in ensuring food security and maintaining household living standards, particularly in developing countries characterized by income volatility and continuously rising food prices.

Moreover, demand analysis contributes to guiding production and

marketing decisions, identifying the gap between supply and demand, and formulating appropriate pricing policies. It also supports domestic production and reduces dependence on imports. In the case of Al-Rayan chicken, demand analysis is particularly important as it represents a local product characterized by quality attributes and brand trust, making it a suitable case for examining consumer behavior in the Iraqi market, especially in Salah al-Din Governorate and Tikrit District.

Applied Econometric Framework

First: The Proposed Economic Model

Based on the theoretical framework of the demand function and the nature of the field data collected from households consuming Al-Rayan

chicken in Tikrit District, an econometric model has been specified to explain the quantity demanded of Al-Rayan chicken in relation to a set

of key economic variables, namely the product's own price, household income, and prices of competing substitutes in the local market.

The selection of these variables is consistent with economic demand theory, which assumes an inverse relationship between price and quantity demanded, a positive relationship between income and demand for normal goods, as well as a substitution relationship between the studied commodity and competing alternatives such as imported chicken and Al-Bawadi chicken.

Accordingly, the general economic model was specified as follows:

$$Q=f(P_1,P_2,P_3,I,F)Q$$

Where:

Q = Quantity demanded of Al-Rayan chicken (kg/household/year)

P1 = Price of Al-Rayan chicken (IQD/kg)

P2 = Price of imported chicken (IQD/kg)

P3 = Price of Al-Bawadi chicken (IQD/kg)

I = Annual household income (IQD/year)

F = Household size (number of individuals)

Although red meat may theoretically be considered a

substitute for poultry products in general, it was not included in the estimated demand model because it does not represent a direct or close substitute for Al-Rayan chicken in the study area. The selection of substitute variables in this study was based on products that are similar in nature, use, consumption pattern, and compatibility with household income levels. Therefore, the study focused on poultry products belonging to the same product category, namely imported chicken and Al-Bawadi chicken, as they provide a more realistic and economically meaningful basis for comparison. In Tikrit District, the price difference between red meat and chicken is very large, as the value of one kilogram of red meat is approximately equivalent to about seven kilograms of chicken. This substantial price gap makes the substitution relationship between red meat and Al-Rayan chicken weak and economically limited. Accordingly, excluding red meat from the estimated model is scientifically justified, since the study aims to measure actual consumer substitution behavior among close and affordable alternatives within the local poultry market.

Several functional forms of the model were tested, including the linear, double-logarithmic, semi-logarithmic, and inverse semi-logarithmic specifications. This was

undertaken to select the most appropriate functional form based on statistical, economic, and econometric

criteria, rather than relying on an a priori assumption regarding the model's structure [5].

Second: Selection of the Optimal Functional Form

The demand function for Al-Rayan chicken was estimated using several functional forms, including the linear, double-logarithmic, semi-logarithmic, and inverse semi-logarithmic specifications. This was undertaken in order to select the most appropriate functional form consistent with both the nature of the field data and the economic theory of demand. No a priori assumption was imposed regarding the functional form; instead, model selection was based on a comparison among alternative specifications using a set of statistical, economic, and econometric criteria.

These criteria included the consistency of parameter signs with economic theory, a higher adjusted coefficient of determination (Adjusted R^2), the overall significance of the model as indicated by the F-test, the statistical significance of individual coefficients based on the t-test, as well as the absence of major

econometric problems such as heteroscedasticity and multicollinearity.

The results of the model comparison indicated that the double-logarithmic specification is the most appropriate functional form for estimating the demand for Al-Rayan chicken. This specification achieved the best overall balance between statistical and economic criteria, and the estimated coefficients were consistent with the law of demand and the expected relationships between the commodity and its substitutes. Moreover, this functional form has the advantage of allowing the estimated coefficients to be directly interpreted as elasticities, making it particularly suitable for measuring own-price, income, and cross-price elasticities.

Accordingly, the double-logarithmic form was adopted as the final functional specification for estimating the demand function in this study.

Third: Final Specification of the Adopted Model

Based on the econometric estimation results, the double-logarithmic functional form was adopted as follows:

$$\ln Q = B_0 + B_1 \ln P_1 + B_2 \ln P_2 + B_3 \ln P_3 + B_4 \ln I + B_5 \ln F + u_i$$

Where:

B_0 = Constant term

$B_1 \dots B_5$ = Estimated regression coefficients

u_i = Stochastic error term

This functional form is characterized by the ease of interpreting the estimated parameters as direct

elasticities, where each coefficient represents the percentage change in quantity demanded resulting from a 1% change in the corresponding explanatory variable, holding other factors constant.

Fourth: Econometric Estimation Results

The estimated econometric model is expressed as follows:

$$\ln Q = 2.041 - 0.34 \ln P_1 + 0.41 \ln P_2 + 0.29 \ln P_3 + 0.67 \ln I + 0.52 \ln F$$

$$t = \begin{matrix} (5.87) & (-7.96) & (3.64) & (2.41) \\ (5.48) & (4.69) & & \end{matrix}$$

The coefficient of determination is:

$$R^2 = 0.741$$

while the adjusted coefficient of determination is:

$$\text{Adjusted } R^2 = 0.733$$

These results indicate that the independent variables included in the model explain approximately 73.3% of the variation in the quantity demanded of Al-Rayan chicken. This represents a relatively good explanatory power, reflecting the model's adequacy in capturing the

Econometric Tests of the Model

After estimating the economic model and selecting the double-logarithmic specification as the most appropriate

underlying economic relationships in the studied market.

The F-statistic value was estimated at:

$$F = 32.91$$

This value is statistically significant, indicating the overall significance of the model and its adequacy in explaining the relationship between the studied variables.

Regarding the Durbin-Watson statistic, its value was:

$$D.W = 1.94$$

This result suggests the absence of a significant autocorrelation problem in the residuals. Although the nature of the data is cross-sectional rather than time-series, the test nevertheless supports the econometric validity and robustness of the model.

functional form, it became necessary to subject the model to a set of econometric diagnostic tests. This is

to ensure the validity of the estimated results and to verify that the model is free from econometric problems that may affect the efficiency of estimation or the accuracy of economic interpretation.

1. Multicollinearity Test

Multicollinearity is one of the most common problems in multiple regression models. It occurs when there is a strong correlation among two or more independent variables, which leads to inflated standard errors, reduced precision of parameter estimates, and potential distortion in the statistical significance of regression coefficients.

To detect this problem, the Variance Inflation Factor (VIF) test was employed, as it is one of the most widely used diagnostic tools in applied econometric studies. The VIF

Variable

Price of Al-Rayan Chicken (P1)

Price of imported Chicken (P2)

Price of Al-Bawadi Chicken (P3)

Household income (I)

Household Size (F)

Prepared by the researcher based on the outputs of the EViews

These tests included multicollinearity among the independent variables, heteroscedasticity, and autocorrelation of residuals, in order to ensure the suitability of the model for explaining demand behavior and deriving economic elasticities.

measures the degree of multicollinearity among explanatory variables. A model is generally considered free from multicollinearity if the VIF values are less than 5.

The estimation results showed that all VIF values for the independent variables fell within the acceptable range, as presented in the following table:

Table (1): Results of the Variance Inflation Factor (VIF) Test for Detecting Multicollinearity Among Independent Variables

Variance inflation Factor (VIF)

2.11

1.84

2.43

1.97

1.55

software, using data obtained from the questionnaire form.

These results indicate the absence of a serious multicollinearity problem among the independent variables, and that each variable retains its independent explanatory power within the model.

To further reinforce the results of the VIF test, Klein's criterion was also employed as a supplementary diagnostic test. This approach is based on comparing the overall coefficient of determination (R^2) with the squared simple correlation coefficients between the independent variables.

2. Heteroskedasticity Test

Heteroskedasticity refers to the non-constant variance of the error term across observations. It is a common problem in cross-sectional data, particularly in field studies based on household-level data, due to differences in the economic and social characteristics of the sampled units. Such variation may affect the efficiency of Ordinary Least Squares (OLS) estimators.

To detect this issue, the White test was employed, which is one of the most widely used diagnostic tests in applied econometric studies. The test is based on comparing the calculated value of nR^2 with the tabulated chi-square (χ^2) value at the 5% significance level.

3. Autocorrelation Test

The results revealed that the overall R^2 of the model was higher than most of the squared correlation coefficients, confirming the absence of severe multicollinearity that could undermine the efficiency of the model.

Accordingly, it can be concluded that the model exhibits an acceptable degree of relative independence among the explanatory variables, which supports the validity of the estimated results and the soundness of their economic interpretation [3].

The results showed that the calculated nR^2 value was (8.41), which is lower than the tabulated chi-square value of (11.07) at the appropriate degrees of freedom and 5% significance level. This implies the acceptance of the null hypothesis of homoskedasticity, indicating the absence of a significant heteroskedasticity problem in the model.

This result suggests that the OLS estimators are efficient and unbiased, and can be reliably used for interpreting the economic relationships among the studied variables and deriving elasticities with an acceptable degree of statistical accuracy [6].

Autocorrelation refers to the presence of a correlation between the error terms in a regression model. This problem is typically associated with time-series data; however, testing for it in cross-sectional studies is considered a supplementary procedure to ensure model robustness.

The Durbin–Watson statistic was used to detect autocorrelation, and the estimated value was:

D.W=1.94

Final Evaluation of the Model

In light of the results obtained from the previous econometric diagnostic tests, it can be concluded that the adopted model exhibits a satisfactory level of both statistical and economic efficiency. No major problems were detected related to multicollinearity, heteroskedasticity, or autocorrelation, which supports the reliability of the model for explaining the demand for Al-Rayan chicken and for deriving economic elasticities with an acceptable degree of accuracy.

This value falls within the acceptable range and indicates the absence of a significant autocorrelation problem in the residuals, thereby reinforcing the econometric validity of the model.

Although the data used in this study are cross-sectional rather than time-series, passing this test provides additional reassurance regarding the stability of the estimated results and confirms that they are not affected by major econometric problems.

Furthermore, the consistency of the estimated coefficients' signs with economic theory, the relatively high adjusted coefficient of determination, and the statistical significance of the F-test collectively confirm that the selected model represents the most appropriate specification for analyzing consumer behavior in the Al-Rayan chicken market in Tikrit District.

Sixth: Interpretation of Econometric Results

After estimating the economic model using EViews software and applying

the Ordinary Least Squares (OLS) method, and after confirming the

validity of the model through statistical and econometric diagnostic tests, the analysis proceeded to interpret the estimated coefficients and examine the economic elasticities. This was done in order to understand consumer behavior toward Al-Rayan chicken in the Tikrit market and to identify the degree of responsiveness to changes in prices, income, and substitute prices.

The estimated model is expressed as follows:

$$\ln Q = 2.041 - 0.34 \ln P_1 + 0.41 \ln P_2 + 0.29 \ln P_3 + 0.67 \ln I + 0.52 \ln F$$

These coefficients are interpreted as direct elasticities due to the adoption of the double-logarithmic specification, which enhances the model's explanatory power in analyzing demand behavior.

1. Effect of Own Price of Al-Rayan Chicken (P_1)

The estimated coefficient of the own price of Al-Rayan chicken is (-0.34), which carries a negative sign and is economically consistent with theoretical expectations, in line with the law of demand that assumes an inverse relationship between price and quantity demanded.

This implies that a 1% increase in the price of Al-Rayan chicken leads to a 0.34% decrease in the quantity demanded, *ceteris paribus*.

This result indicates that the demand for Al-Rayan chicken in Tikrit District is price inelastic, as the

absolute value of the elasticity is less than one. This reflects the essential nature of the product within the household food basket.

This outcome can be explained by the fact that consumers in Tikrit District consider Al-Rayan chicken a primary source of animal protein rather than a luxury good that can be easily substituted. Therefore, price increases do not lead to a substantial decline in demand, and consumption remains relatively stable despite price fluctuations.

2. Effect of Imported Chicken Price (P_2)

The estimated coefficient of the price of imported chicken is (0.41), which carries a positive and economically meaningful sign. This indicates a direct relationship between the price of imported chicken and the demand for Al-Rayan chicken, meaning that a

1% increase in the price of imported chicken leads to a 0.41% increase in the quantity demanded of Al-Rayan chicken, *ceteris paribus*.

This result reflects a clear substitution relationship between the two goods.

In the Tikrit market, consumers tend to shift toward Al-Rayan chicken when the price of imported chicken

increases, as it represents a locally available alternative that is acceptable in terms of both price and quality.

3. Effect of Al-Bawadi Chicken Price (P_3)

The estimated coefficient of the price of Al-Bawadi chicken is (0.29), which also has a positive and economically consistent sign. This indicates the presence of a substitution relationship between Al-Rayan chicken and Al-Bawadi chicken, where a 1% increase in the price of Al-Bawadi chicken leads to a 0.29% increase in the demand for Al-Rayan chicken.

This relationship is relatively weaker compared to that with imported chicken. This can be explained by the

fact that Al-Bawadi chicken is closer to Al-Rayan chicken in terms of market segment and product characteristics, which makes the competition between them more direct but with a lower degree of substitutability. In contrast, imported chicken appears to have a stronger influence on consumer choice in the Tikrit market due to its higher price sensitivity and its role as a more prominent alternative in consumption decisions.

4. Effect of Household Income (I)

The estimated coefficient of household income is (0.67), which carries a positive and economically significant sign. This indicates a direct relationship between household income and the demand for Al-Rayan chicken, meaning that a 1% increase in household income leads to a 0.67% increase in the quantity demanded, *ceteris paribus*.

This result suggests that Al-Rayan chicken is classified as a normal and necessity good, as the income elasticity is positive but less than one. This implies that although demand increases with rising income, the

increase is proportionally smaller than the increase in income itself.

In the context of the Tikrit market, this can be explained by the fact that chicken meat represents a primary source of animal protein for middle-income households. Therefore, improvements in income levels tend to increase demand for Al-Rayan chicken, which is perceived as a local product characterized by higher quality and trust, without reaching the status of a luxury good associated exclusively with high-income consumers.

5. Effect of Household Size (F)

The estimated coefficient of household size is (0.52), which has a positive and economically consistent sign, indicating that an increase in the number of household members leads to an increase in the demand for Al-Rayan chicken. Specifically, a 1% increase in household size results in a 0.52% increase in the quantity demanded.

This finding is logically consistent, as larger households require greater

quantities of food to meet daily consumption needs, particularly for essential food commodities such as poultry meat.

Moreover, this result reflects the demographic structure of Tikrit District, where households tend to be of medium to large size, which contributes to a relatively stable and sustained demand for poultry within the local dietary pattern.

Conclusions

1. The econometric analysis showed that the demand for Al-Rayan chicken is influenced by several economic and behavioral variables, particularly household income, substitute prices, and product quality.

It can be concluded that consumer demand in Tikrit District is not determined by price alone, but also by factors related to consumer preferences, trust, and perceived quality.

2. The estimated own-price elasticity reached (-0.34), indicating that the demand for Al-Rayan chicken is relatively price inelastic. It can be concluded that Al-Rayan chicken represents an essential food commodity within the household

consumption basket, and consumers are less responsive to moderate price changes.

3. The estimated income elasticity reached (0.67), which is positive and less than unity. It can be concluded that Al-Rayan chicken is a normal necessity good, as increases in household income lead to increased demand, but at a proportionally lower rate than income growth.

4. The positive cross-price elasticities with imported chicken and Al-Bawadi chicken confirmed the existence of substitution relationships among poultry products in the local market. It can be concluded that consumers tend to shift toward Al-Rayan chicken when the

prices of competing poultry products increase.

5. The results showed that quality and consumer trust play an important role in influencing demand for Al-Rayan chicken. It can be concluded that non-price factors contribute significantly to strengthening the competitive position of Al-Rayan chicken in the Tikrit market.

Recommendations

1. Since the demand for Al-Rayan chicken was found to be relatively price inelastic, it is recommended to adopt moderate pricing policies that maintain consumer purchasing power without causing significant reductions in demand.
2. As product quality and consumer trust were among the most influential factors affecting demand, producers should focus on improving quality standards, packaging, hygiene, and product monitoring in order to strengthen consumer confidence in the local product.
3. In light of the positive substitution relationship with imported chicken and Al-Bawadi chicken, it is recommended to regulate poultry imports in a manner that maintains market balance and protects domestic production from unfair competition.

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6. □ The econometric model achieved acceptable statistical and econometric efficiency, as indicated by the adjusted coefficient of determination and the diagnostic test results. It can be concluded that the estimated model is reliable and suitable for explaining consumer demand behavior and deriving economic elasticities in the study area.

4. Given the positive relationship between household income and demand for Al-Rayan chicken, improving household purchasing power and supporting income stability may contribute to increasing consumption of locally produced poultry products.
5. The study recommends expanding the distribution and marketing outlets of Al-Rayan chicken within Tikrit District in order to improve product accessibility and increase market coverage.
6. It is also recommended to support domestic poultry producers through reducing production costs, particularly feed, transportation, and veterinary service costs, in order to enhance the competitiveness of local poultry products in the Iraqi market.

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