

IMPACT OF QUALITY ATTRIBUTES ON HEDONIC PRICING OF CHICKEN MEAT

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ABSTRACT

Keywords:

*Quality attributes,
chicken meat,
hedonic prices,
retail market.*

Product pricing is vital for businesses and marketing managers as it affects consumer buying behavior and business performance. In a highly competitive market, it is essential to observe the factors that increase the profitability of a product. The available studies concentrated on estimating the shared aspects from the sellers' perspective instead of the end user. To fill the gap this study investigates the impact of different meat quality attributes on retail chicken prices from consumers' perspectives when they buy fresh chicken meat. The data was collected from household consumers of four major cities of Pakistan, i.e. Karachi, Lahore, Faisalabad, and Islamabad, using a well designed and pre-tested structured questionnaire. The present study applies revealed preference theory and estimates log-linear functional form to study the effects of fresh chicken meat attributes on its price. The findings shows that meat quality attributes such as place of purchase, hygiene, meat cuts (drumstick, chest piece, boneless and whole chicken), texture, juiciness, and organic (desi) chicken positively impact the price of fresh chicken meat. The results indicate that consumers are paying premium price for these quality attributes of chicken meat. The implications of the results have been discussed in the perspective of developing the business strategies for the chicken industry in Pakistan. Understanding product attributes communicate the consumer's preference, which is valuable for producers in developing production strategies, cost management strategies, investment decisions, marketing programs, and policy making regarding the development of the poultry industry.

INTRODUCTION

The demand of chicken meat has increased significantly because to the population growth. About 11% increase in global population is expected to increase 15% of global meat demand in 2031. The rising income, urbanization, labor participation, and out-of-home food expenditures had a positive impact on the demand of meat. The global consumption of meat

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has risen to 154 Mt. The per capita growth in meat consumption indicates international nutritional development (FAO, 2022). Pakistan is the 11th largest in global poultry production, with an investment of rupees 750 billion and a growth rate of 7.5 percent. Annually, it produces around 1,977 thousand tons of broilers and offers employment to 1.5 million individuals (GOP, 2022). The poultry business is one of the most structured and vibrant sectors of the agro-industries of Pakistan. It contributes 38 percent of the country's meat (beef, mutton, poultry) production of 5,219 thousand tons (GOP, 2022). Chicken meat is the most commonly consumed food item because of its dietary importance and lower percentage of carbohydrates (Shah et al., 2014). As a result, chicken meat stands out in man's diet as a valuable source of the vitamin B complex (Cui et al., 2011; Hygreeva et al., 2014).

The demand of chicken meat has gone up significantly in urban areas of Pakistan. In the major metropolitan cities of Pakistan, the population belongs to different backgrounds; therefore, it is expected to have diverse preferences. Consumers' preferences for meat attributes remain in interest from marketing perspective. The change in consumer behavior towards meat has influenced on the market demand. Consumers' inclinations for meat products are changing as the behaviour they exhibit advocates that they search for certain attributes in the products (Ogbeide, 2015). Understanding product attributes communicates the consumer's preference, which is valuable for administrators in assessing production, cost management strategies, investing decisions, market programs, and policy making regarding the development of the poultry industry (Amfo et al., 2021). In reality, the nonexistence of perfectly competitive market conditions denotes that the quality attributes perform a significant role in the price determination of a product. Subsequently, many studies were narrow regarding the latitude of characteristics examined and focused on the production side instead of the consumption of the product with given attributes. Additionally, the available studies concentrated on estimating the shared facets from the sellers' perspective instead of the end user. Analysis of chicken attributes utilizing consumers liking and disliking data to have facts and figures about product preferences is important for the growth of chicken meat businesses. Accordingly, this study filled the gap and assessed consumer preferences of fresh chicken meat at retail level in metropolitan cities of Pakistan and assessed consumer preferences of fresh chicken meat at retail level in metropolitan cities of Pakistan and also calculate the relative impact of independent variables in terms of average price consumers are paying.

In recent years, consumers have considered meat quality, which has been linked to a tendency to be pretentious by various factors. Producers can respond appropriately by providing

differentiated meat items in the market after knowing factors affecting the meat demand. As a result, the primary challenge is to detect quality indicators that customers currently use to assess meat quality. These quality indicators are classified as sensory factors as aroma, texture, freshness and color (Neima *et al.*, 2021; Lawal *et al.*, 2023). At the point of purchase, the fundamental difference between intrinsic aroma, texture, freshness, colour, fat content and desi(organic) whereas extrinsic place of purchase, hygienic condition and price attributes is detected as the color of the meat, fat content, cuts, aroma,organic and texture. Meat attributes for example texture, meat cut, weight and fat content were also found as valuable factors for the buyers consider at the time of purchase (Hamidu *et al.*, 2021; Realini *et al.*, 2023). This study analyzed the characteristics that are considered by the consumers at the point of purchase. The hedonic price of the quality attributes of chicken meat in emerging economies is rarely studied from consumer perspectives. The study of quality attributes of chicken meat is important for formulating the meat business strategies. Therefore, the current study is expected offer valuable insights for the marketing managers in chicken meat industry which can help the stakeholders to tailor their products according to the requirements and preferences of consumers.

LITERATURE REVIEW

Buying a food item for consumption comprises a combination of intrinsic and extrinsic attributes, not physicochemical characteristics. However, it depends on expectations and attitudes toward the product (Franchi, 2012). Moreover, healthiness and man`s development claim physical attributes are decisive factors in selecting food items (Verbeke, 2005; Urala & Lahteenmaki, 2004). Generally, literature has explored the essential and preferable fundamental quality attributes (Henchion *et al.*, 2019; Stranieri & Banterle, 2015; Zanoli *et al.*, 2012).

It has been identified that the elementary key attributes of meat are fat content, and cuts (Banović *et al.*, 2009). At the same time, other significant attributes are texture, freshness, juiciness, and tenderness (Testa *et al.*, 2021). The attributes are assessed at the buying place, for example, meat pigment, cut, fat content, etc. It was stated that aroma, texture, and juiciness were repeatedly evaluated by physical testing of fresh meat.

The effect of quality attributes on the market value of a product have been estimated by several authors (Waugh, 1928; Ethridge & Davis, 1982; Estes, 1986; Espinosa & Goodwin, 1991; Ahmadi-Esfahani & Stanmore, 1994; Oczkowski, 1994; Angulo *et al.*, 2000; Carew, 2000; Combris *et al.*, 1997; Nerlove, 1995). The hedonic methodological structure was used for

different studies on meat such as chicken (Ramatu et al., 2014), red meat (Topcu et al., 2015), beef (Fernández et al., 2019), tilapia fish (Hossain et al., 2021); processed chicken and fish (Ahmad & Anders, 2012); pangasius (Hossain et al., 2022), breakfast sausage (Vickner, 2015), meat (Thomas et al., 2017).

Chicken meat quality examined through fat contents (Aral et al., 2013). Moreover, tenderness and flavor were found to be significantly highly valued. Buyers considered the attributes as colour, aroma, and juiciness (Fernández et al., 2018). Texture is an important attribute of chicken meat considered by consumers (Anadon 2002; Hadi et al., 2013; Lee *et al.*, 2017). While many researchers found that chicken meat quality mentioned through sensory attributes as aroma and carcass weight (Aral et al., 2013; Imran et al., 2014; Pratama et al., 2015; Setyanovina et al., 2021). Juiciness is considered an important attributes of chicken meat which contributes the enhancement of attributes and have a substantial influence on the price (Damaziak et al., 2019). Consumers considered different cuts of chicken meat as whole carcass, breast fillet (Dennis, 2020), drumstick, breast and wings (Kwadzo et al., 2013; Mayulu et al., 2019). McCarthy and Henson (2005) concluded that buyers visit butchereries to buy meat, however Chamhuri & Batt were having a point of view that customers buy chicken from wet markets as they thought that meat is fresh in these markets and of good quality in traditional markets as compare to the modern super stores.

The hedonic pricing function has been extensively used in accommodation/housing, landscapes, and associated facilities (Brown & Mendelsohn, 1984). Later it was used to analyze the characteristics of eatables (Bimbo et al., 2016; Caracciolo et al., 2013; Gracia et al., 2007). Consequently, the hedonic methodological framework was used to estimate the impact of attributes on the various agricultural products like apples (Khan et al., 2019), vegetables (Waugh, 1928); pepper (Estes, 1986), partially-treated goods; wheat (Espinosa & Goodwin, 1991; Ahmadi-Esfahani & Stanmore, 1994); cotton (Ethridge & Davis, 1982; Haidar et al., 2012); treated goods; alcohol (wine) (Oczkowski, 1994; Nerlove, 1995; Combris et al., 1997; Angulo et al., 2000); goat meat (Rafique et al., 2018); goat characteristics (Ahmad et al., 2019). Based on the literature this study estimated the impact of various attributes i.e. meat cuts (drum stick, chest, boneless, whole chicken), aroma, hygiene, place of purchase, fat content, organic chicken, juiciness, texture, whole carcass (dressed chicken) and weight on the price of chicken. To the best of authors' information, there is no study that has examined the impact of various attributes i.e. dressed chicken, hygiene, weight of alive/slaughtred chicken and consideration of organic chicken on the price of chicken. Thus to fill this gap, the present study has an

objective to examine, which attributes are considered by the customers at the buying place in major metropolitan cities of Pakistan.

METHODOLOGY

The present study applies revealed preference theory and estimates log-linear functional form to study the effects of fresh chicken meat attributes on its price. Buyers' inclinations can be revealed through the goods the consumers' buy in diverse situations, especially in diverse income and price situations. Lancaster (1966) defines that a commodity does not provide utility to the user; it has some characteristics that deliver it to the user. The hedonic pricing model was initially introduced to define the price of product based on the attributes. Hedonic prices are the implicit prices of related qualities, shown by identifying the price of goods with changing characteristics. Accordingly, the model uses the commodity's price as the dependent factor, and all attributes of the product are perceived as independent factors. They take the individual derivative of the model regarding attributes to yield the implicit value of the attribute, which denotes the extra expenditure needed to get an additional quantity of the good having desired characteristic (Rosen, 1974).

The model

The hedonic function measures the market price of a good centered on the attributes of the product (Martinez-Garmendia, 2010). As Lancaster (1966) described, commodities are identified as a set of different attributes, and the peripheral prices of such attributes are the reason for the difference in prices of commodities. For a reliable econometric model, there is a need for a practical form (i.e., mathematical form or model configuration (Brown & Ethridge, 1995). For example, the economic notion of product pricing offers minute recommendations for the selection of a suitable functional form (Cropper et al., 1988; Haab & McConnell, 2002); thus, using a wrong functional form of pricing function may result in biased estimates that misrepresent the implicit prices of the attributes. A hedonic price function is considered to estimate the marginal values of attributes precisely. Prices are considered an independent variable.

In the model, if P_i is the price of a product bought by the i th buyer and let $X_i (X_{i1}, X_{i2}, \dots, X_{in})$ be the different attributes of the chicken meat. The hedonic price equation can be defined as

$$P_i = F(X_i) \text{ ----- Eq. (1)}$$

where F indicates a functional relationship. Consequently, the common functional form in matrix notation can be written as:

$$P_i = x_i' \beta + \varepsilon_i \text{ Eq. (2)}$$

Where ϵ_i is the vector of the error term, x_i is the vector of the attributes for the i th transaction, and β is the vector of parameters.

For chicken, hedonic price functions in linear form can be written as:

$$Ln-pr-chckn = \beta_1 pp + \beta_2 fc + \beta_3 hyg + \beta_4 dmstck + \beta_5 chst + \beta_6 bnls + \beta_7 wckckn + \beta_8 text + \beta_9 juici + \beta_{10} dc + \beta_{11} org + \beta_{12} wgt + \beta_{13} aroma + \epsilon_i \dots \dots \dots Eq. (3)$$

In present study all the independent attributes were taken as dummy variables excluding weight. Weight is taken in kg. Place of purchase(pp), fat content (FC), chicken meat cuts (DRMSTCK, CHST, BNLS, WCHCKN), hygiene(HYG), texture(TEXT), juiciness(JUICI), dressed chicken(DC), organic or desi(ORG) and aroma were dummy variables. All variables are included in estimated model except of the benchmark variable i.e. MKT4. See table 1. The continuous regressor is explained directly which illustrates that a unit variation in regressor is due to the percentage variation in dependent factor. It has been examined that few studies debate the importance of factor whereas some consider that by multiplying the dummy variable to find the percentage impact. The explanation defined by Kennedy (1981) was used to lessen the biases in the flexibility assesment of autonomous attributes on dependent attributes and to calculate the relative impact in terms of the price premium paying by the customers.

$$h = e^{[\hat{\beta} - 1/2 V(\hat{\beta})]} \dots \dots \dots Eq. (4)$$

Where $V(\hat{\beta})$ represents the variance of the coefficient $\hat{\beta}$.

To check the model specification Ramsey Reset Test was used in this study. The Ramsey Regression Equation Specification Error Test (RESET) is commonly used test for misspecification with addition of undetected omitted elements and hetroskedasticity. This test can not identify the omitted components. Moreover, RESET test cannot be helpful to identify hetrosckesticity if functional form is appropriately defined. To check the correlation between the variable i.e. dependent and independent variable VIF test was used. VIF can be calculated through the formula as:

$$V.I.F. = 1 / (1 - R^2).$$

To check the heteroscedasticity in the model Breusch-Pagan test is used. This test assumes that the error terms are normally distributed.

Sample

In this study, the target population comprised consumers of chicken meat from four major metropolitan cities in Pakistan i.e. Karachi, Lahore, Faisalabad and Islamabad. The reason for considering four metropolitan cities of Pakistan was to confirm the sample signified the major urban cities having diversified socio-economic groups. Data was collected from 768 chicken

meat consumers using a multistage sampling technique. First of all four major metropolitan cities were purposively selected, using purposive sampling method. After that a consumers were selected using convenience sampling technique. The sample size was determined based on the method: $n = z^2 pq/e^2$ (Cochran, 1963; Kothari 2004). Where n is the sample size, p is the population ratio, q is 1-p, z is the standard variation of 1.96, supposed to have a confidence level of 95%, i.e., $\alpha = 0.05$, and e is the adequate margin of error for proportion being estimated.

Measures

Primary data were collected using a well-designed and pre-tested structured questionnaire. The data were collected using dichotomous scale which is extensively used in literature (Boyle et al., 1996; Moon & Balasubramanian, 2003). The dichotomous format questions discuss occurrence or absence of particular attribute (Hanemann et al., 1991). The independent variables were coded as dummy variables except weight while the dependent variable taken as continuous.

RESULTS

Different diagnostic tests are used in this study for model specification and their values are reported in this section. The present study estimated various functional forms like linear, log linear and applied (RESET) test. The test statistics of RESET test P-Value is 0.1668 for a log linear functional form, which is insignificant and indicates that there was no issue of functional form for log linear mode as clear from the table 2 given below. Multicollinearity is a significant concern, with regressions having huge sets of binary factors (Costanigro & McCluskey, 2011). The variance inflation factor (VIF) was calculated to examine the existence of multicollinearity. The estimated mean value of VIF was 1.90 for all attributes, i.e., less than 10 (Gujarati et al., 2009) So, there was no issue of multicollinearity in the assessed model. To address the problem of heteroscedasticity, the study used the Breusch-Pagan/Cook-Weisberg test. The results of the Breusch-Pagan/Cook-Weisberg test showed that there was no issue of heteroscedasticity. For the robustness of the results, the present study estimated standard error using the error term covariance matrix of ordinary least squares (OLS), HC0 (heteroscedasticity consistent -0), HC2 (heteroscedasticity consistent -2) and HC3 (heteroscedasticity consistent -3). Long and Ervin (2000) stated that HC3 is a better covariance matrix to calculate the parameters. Hence, the present study estimated the significance value using HC3.

Table 1 shows the descriptive statistics for the variables employed in this study. The customers who are buying from modern store they were having a view that they can purchase all the

grocery from super store. Therefore, it was more convenient for them to purchase meat from there as well. As 63% customers considered butcher shops, the main reason was the availability of butcher shops near home, further they can assess the health of live chicken before purchase. 70% buyers consider hygienic environment at the place of purchase. Therefore, butchers and sellers should make sure the cleanliness of the environment of the selling point. Customers also considered less fat content in the chicken meat i.e. 49% consider less fat content whereas 12% customers think about aroma as depicted from the table 1. Customers also like to buy different chicken cuts like drumstick 10%, chest piece 23%, bone less 12% and the whole chicken 45%. From the different chicken cuts consumers prefer the whole chicken. Consumers used the whole chicken for different objectives. Whereas, chest piece is second most considered cut because meat of chest is considered the best quality meat relative to the other cuts. The average weight of fresh chicken in the sampled data is 2.32 kg.

Table 1. Descriptive Statistics of chicken meat quality attributes

| Variable | Description of variable | Mean | Std. Dev. |
|----------|---|---------|-----------|
| Price | Price of chicken | 293.819 | 55.035 |
| PP | For butcher shop=1; otherwise=0 | 0.63 | 0.484 |
| | For modern store=1; otherwise=0 | 0.37 | 0.483 |
| FC | For less fat content=1; otherwise=0 | 0.49 | 0.500 |
| HYG | For hygiene=1; otherwise=0 | 0.70 | 0.297 |
| DRMSK | For drumsticks=1; otherwise=0 | 0.10 | 0.419 |
| CHST | For chest piece=1; otherwise=0 | 0.23 | 0.323 |
| BNLS | For boneless chicken=1; otherwise=0 | 0.12 | 0.497 |
| WCHCN | For whole chicken=1; otherwise=0 | 0.45 | 0.448 |
| TEXT | For texture/freshness=1; otherwise=0 | 0.28 | 0.260 |
| JUICI | For juiciness=1; otherwise=0 | 0.07 | 0.466 |
| DC | For dressed chicken=1; otherwise=0 | 0.68 | 0.191 |
| ORG | For organic chicken=1; otherwise=0 | 0.17 | 0.380 |
| WGHT | For required weight=1; otherwise=0 | 2.32 | 1.035 |
| AROMA | For good aroma=1; otherwise=0 | 0.12 | 0.331 |
| MTK1 | For respondent belongs to Faisalabad=1; otherwise=0 | 0.26 | 0.441 |
| KTK2 | For respondent belongs to Lahore=1; otherwise=0 | 0.05 | 0.222 |
| MKT3 | For respondent belongs to Islamabad=1; otherwise=0 | 0.12 | 0.331 |
| MKT4 | For respondent belongs to Karachi=1; otherwise=0 | 0.56 | 0.497 |

Note: n=768

Table 2 shows the relative impact of different chicken meat quality attributes. Results of the present study indicate that the value of R^2 is 0.3647, which means that 36.47 percent variation in chicken price is due to independent variables (place of purchase, fat content, hygiene, drumstick, chest piece, boneless, aroma, taste, whole chicken, texture, juiciness, dressed chicken, weight and markets). The F test statistics shows that overall model is significant at 5% level of significance. The coefficient on hygienic condition is positive as expected and is

statistically significant at 5% level of significance. It shows that the hygienic condition plays an important role in the price determination. The relative impact of hygienic condition shows that customers are paying 22.36 rupees price premium for the chicken if the conditions are hygienic at the place of purchase relative to the not hygienic conditions. Therefore, retail meat sellers should focus on hygienic conditions to capture the premium price from customers. Weight of the chicken has a negative impact on the price. The elasticity value of weight is -0.023, it shows that if the weight of chicken increases by one percent, the price of chicken will decrease by 0.023 percent. Sodjinou et al., (2011) and Franco et al. (1995) have found the similar behavior of weight on meat. The nature of the market was one more imperative element having a meaningful impact on prices expected. According to the results of current study, result of place of purchase is positive and significant at 5% level of significance as expected.

The results indicate that 63% customers purchase chicken meat from butcher shops and 37% purchase from modern retail stores. Price in modern stores is high relative to the traditional butcher shops. The price of chicken meat differentiated in modern superstores as consumers are paying a premium price of rupees 34.31 than the traditional butcher shops. It may be due to convenience and environment of the modern stores. The outcomes of the current study are consistent with the literature (Emuron et al., 2010; Mlozi et al., 2003; Moges et al., 2010; Williams et al., 2006). The coefficients of chicken cuts i.e. drumstick, chest piece, boneless and whole chicken are positive and significant at 5% level of significance as expected. Customers consider different chicken cuts i.e. drumstick, chest piece, boneless, and whole chicken, and are paying premium price by 197.25 rupees, 138.85 rupees, 120.52 rupees and 131.10 rupees respectively relative to the chicken wings. Consumers buy different chicken meat cuts instead of whole chicken according to their choice.

The results of present study shows that consumers are paying a significantly higher price for the meat cuts such as chest piece, boneless meat and drum sticks in major metropolitan cities of Pakistan. The results are in line with the studies (Vinothraj et al., 2020; Amfo et al., 2021). In our estimated model the result of dressed chicken is positive and significant at 5% level and shows that the customers are paying premium price of rupees 35.27 rupees for dressed chicken relative to the chicken is not dressed. Dressed chicken (live chicken) is purchased and slaughtered considering freshness and quality of meat. Whereas, the coefficient of aroma is negative but significant at 5% level of significance as expected on the bases of theory. Regarding the aroma, people are paying 23.67 rupees less for a bad aroma. The coefficient of fat content is negative and significant at 5% level of significance. The negative sign of fat

content shows the consumers are paying less price for meat having more fat content. For having more fat content in meat, consumers are paying 22.64 rupees less as depicted in the results table 2. The outcomes are consistent with (O'Sullivan et al., 2021; Realini et al., 2023). Customers are paying 52.11 premium price for juicy chicken meat. Texture/Tenderness is the key influential attribute for meat adequacy. The coefficient of texture is positive and significant at 5% level of significance. The positive sign for texture/freshness indicates the importance as consumers are paying 46.25 rupees relatively higher price than non-fresh. The information of consumers` prefernces are very important for the different stakeholders.It will help to improve the operations and business strategies to increase the market share. Breeders should focus on the production procedure to develop the different attributes desired by the customers, so that the profitability can be enhanced. As markets are concerned, chicken meat prices are considerably different in Faisalabad, Lahore, Islamabad, and Karachi markets. Chicken meat gets a premium of 36.04 rupees in Lahore, 6.59 rupees in Islamabad and 33.52 rupees in Karachi relative to Faisalabad. The contribution of attributes of the chicken meat toward price is elaborated in the figure given below.

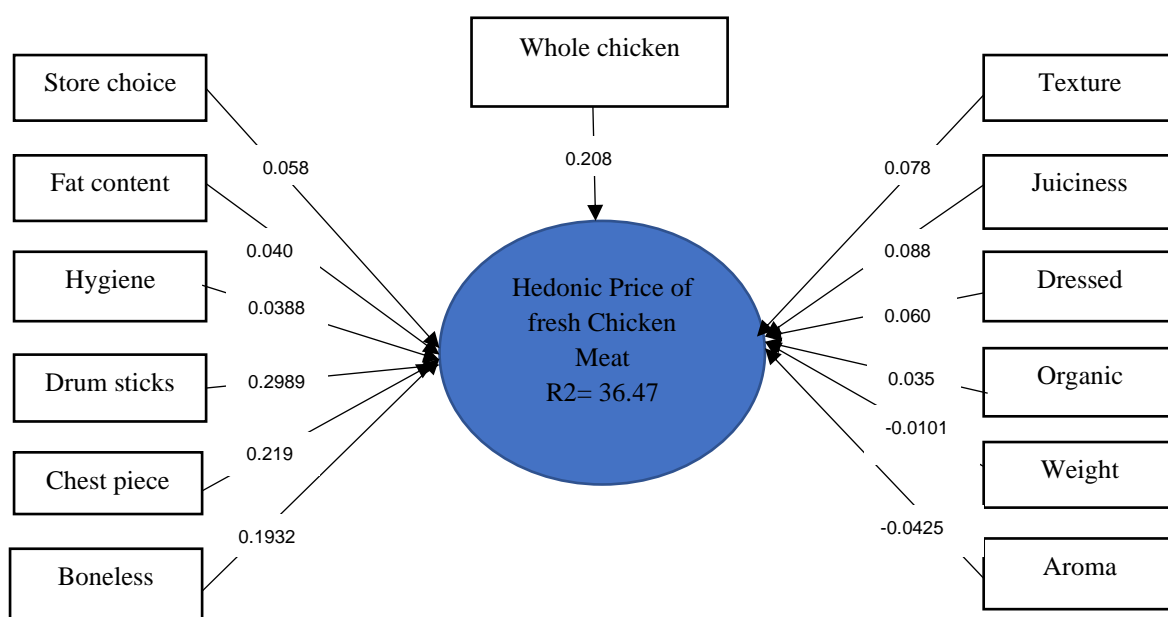


Figure 1. Outcome model showing the contribution of quality attributes toward price.

Table 2. Relative impact of different quality attributes on prices of fresh chicken meat

| ln-pr-chkn | Coefficien t | S.E HC3 | P-value | S.E OLS | S.E HC1 | S.E HC2 | % | PKR |
|------------|--------------|---------|---------|---------|---------|---------|-------|--------|
| PP | 0.0588* | 0.0119 | 0.000 | 0.0115 | 0.0117 | 0.0117 | 6.05 | 34.31 |
| FC | -0.0407* | 0.0114 | 0.001 | 0.0113 | 0.0113 | 0.0113 | -3.99 | -22.64 |
| HYG | 0.0388* | 0.0177 | 0.036 | 0.0156 | 0.0175 | 0.0174 | 3.94 | 22.36 |
| DMSTCK | 0.2989* | 0.0268 | 0.000 | 0.0249 | 0.0261 | 0.0263 | 34.78 | 197.25 |
| CHST | 0.2195* | 0.0314 | 0.000 | 0.0250 | 0.0308 | 0.0311 | 24.48 | 138.85 |

| | | | | | | | | |
|--------|-----------|--------|-------|--------|--------|--------|-------|--------|
| BNLS | 0.1932* | 0.0302 | 0.000 | 0.0264 | 0.0295 | 0.0297 | 21.25 | 120.52 |
| WCHCN | 0.2082* | 0.0196 | 0.000 | 0.0189 | 0.0192 | 0.0193 | 23.12 | 131.10 |
| TEXTUE | 0.0785* | 0.0123 | 0.000 | 0.0123 | 0.0122 | 0.0122 | 8.151 | 46.25 |
| JUICI | 0.0882* | 0.0234 | 0.000 | 0.0213 | 0.0229 | 0.0231 | 9.19 | 52.11 |
| DC | 0.0605* | 0.0171 | 0.000 | 0.0151 | 0.0167 | 0.0171 | 6.22 | 35.27 |
| ORG | 0.0353* | 0.0152 | 0.020 | 0.0145 | 0.0149 | 0.0150 | 3.58 | 20.30 |
| WGHT | -0.0101** | 0.0054 | 0.063 | 0.0053 | 0.0053 | 0.0053 | - | - |
| AROMA | -0.0425* | 0.0169 | 0.012 | 0.0166 | 0.0166 | 0.0166 | -4.17 | -23.67 |
| MKT1 | - | | | | | | | |
| MKT2 | 0.0621* | 0.0304 | 0.041 | 0.0217 | 0.0297 | 0.0299 | 6.35 | 36.04 |
| MKT3 | 0.0121 | 0.0328 | 0.712 | 0.0229 | 0.0319 | 0.0322 | 1.16 | 6.59 |
| MKT4 | 0.0579** | 0.0303 | 0.056 | 0.0221 | 0.0296 | 0.0298 | 5.91 | 33.52 |

$R^2=0.3647$ Ramsey RESET Test $F(3,748) = 1.69$ P-value = 0.1668

Mean VIF=1.90 Breusch-Pagan / Cook-Weisberg test for heteroscedasticity:

$F(16, 751)=28.52^*$ $\chi^2(1)=0.01$ P-value = 0.9069

P-value = 0.0000

OLS = Ordinary Least Square, SE = Standard Error; HC0 = Heteroscedasticity consistent -0; HC2 = Heteroscedasticity consistent -2; HC3 = Heteroscedasticity consistent -3.

2 Acronyms are described in Table 1.

3 Significance levels at 5%*, 10%**constructed on HC3 SE.

4 The relative effect calculated the individual attribute coefficient assessment's percentage effect on the chicken meat price estimated at the sample mean. Calculations are done using Equation (4).

NOTE: MKT1 is taken as base market. The MKT1 is omitted so no value of base market is explained. Weight is a continuous variable.

CONCLUSION

The demand of chicken meat has gone up significantly in metropolitan cities of Pakistan. Understanding product attributes communicate the consumer's preference, which is valuable for producers in developing production strategies, cost management strategies, investment decisions, marketing programs, and policy making regarding the development of the poultry industry. In fact, the products' quality attributes perform a significant role in the price determination. Subsequently, many studies were narrow regarding the characteristics studied and focused on the production side instead of the consumption of the product with given attributes. Hence, this study filled the gap and assessed consumer preferences of fresh chicken meat at retail level in metropolitan cities of Pakistan. The current study is based on revealed preference, it concludes that several attributes of chicken meat at retail level effect the price. The link between price and various attributes of chicken meat was investigated using hedonic price model. The results of the hedonic price function indicate that sign of various attributes are conferring to the study's expectations. The positive coefficients for the place of purchase, hygienic condition, different chicken cuts (drumstick, chest piece, boneless, whole chicken), texture, juiciness, dressed chicken, and desi chicken attributes indicate that consumers are paying price premium for these attributes. Therefore to capture more customers and to enhance profit, retail sale strategies need to be developed and improved on the basis of empirical data.

Government should make and implement strict policies for the hygienic conditions at retail market. Also strategies should be adopted to eliminate the supply of dead chicken in the market to ensure the good health of the people. On the other side breeders should introduce new varieties of chicken to fulfill the needs of the chicken meat in the country with the desired attributes.

Practical implications

The results of this study are projected to enhance retailers' profits in the county. The study indicates that what are the different attributes or factors considered by the consumers while purchasing chicken meat which generate information related for different stakeholders directly or indirectly in chicken production and sale and will help to improve the operations and business strategies. The study implies that Pakistani customers are willing to pay more for different different attributes, which is essential to enhance the information to grow the chicken meat industry in emerging economies. The study's outcomes will direct the policymakers, administrative institutes, and poultry firms' marketing managers in developing a profitable chicken meat retail market.

Theoretical implications

As Lancaster (1966) described, commodities are identified as a set of different attributes, and the peripheral values of such attributes are the reason for the difference in prices of commodities. Consumer decision for the purchase of a good centers on the choice of set of characteristics given the consumption experience, budget, and prices of products to maximize the utility. The level of utility obtained can be determined through prices of the products. Whereas, hedonic prices are the implicit prices of related characteristics, shown by identifying the prices of goods with changing characteristics. Thus hedonic pricing model can be used to detect the consumer behavior and preference about the products and direct the organizational assets in quality product and formation of effective business strategies. Meat business organizations can use hedonic pricing model for understanding of consumer inclination while setting the business strategies and can get market competitive advantage.

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