

A conjoint analysis of mutton purchase preferences of urban consumers in Punjab and Islamabad regions, Pakistan

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Abstract

Purpose – Understanding urban consumers' purchase preferences for goat meat or “mutton”, in major cities of Pakistan.

Design/methodology/approach – A qualitative pre-testing pilot survey was conducted among 15 butchers and 15 customers, focusing on mutton attributes that influence purchase. Afterwards, an online choice-based conjoint (CBC) survey was carried out between 2021 and 2023, where 576 purchasers were asked to preferentially pick options among combinations of attributes, including place of purchase, price, choice of cut,

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visual texture, colour of meat and aspects of hygiene. Their purchasing preferences were analysed using the Hierarchical Bayesian algorithm.

Findings – Among 576 consumers with widely different geographic, demographic, sociocultural and behavioural profiles, it was found that “hygiene”, followed by “place of purchase”, were the most important. “Price” was next.

Research limitations/implications – Given the survey focused on mutton purchasers in the fast-growing cities of urbanised Pakistan, the results may have limited generalisability to other areas. Insights into consumer preferences and behaviour in different market segments will interest global meat producers and merchants seeking to tailor their business strategies to cater to consumers’ varying demands.

Originality/value – This study provides new insights into the diversity in the mutton market in urban Pakistan and demonstrates the usefulness of the CBC method.

Keywords Pakistan, Halal, Goat meat/mutton, Consumer survey, Preference segmentation, Consumer attributes, CBC method

Paper type Research paper

Introduction

With 241.5 million people in 2023, Pakistan is the fifth most populous nation in the world. Thirty-nine percent of the population is urban, and 53% of these reside in Punjab Province (Government of Pakistan, 2023a). Ullah (2021, p. 3) reported that “most urban areas in Pakistan are sprawling at an unprecedented rate. This urban sprawl means new areas are being added to the urban agglomeration”.

Food security is an enormous challenge in Pakistan, and the lack of protein is one of the most common deficiencies (Government of Pakistan, 2023c). According to the Global Hunger Index 2023, Pakistan ranks 102 out of 125 countries, indicating a serious level of hunger (von Grebmer et al., 2023), with 40.2% of children under the age of five suffering from stunted growth and 29% being underweight (UNICEF, 2018). Amid these challenges, the country faces very high inflationary pressure, with 28.2% Consumer Price Index (CPI) inflation recorded for the fiscal year 2022–23 (July to April).

Meat is Pakistan’s third largest household food budget item after dairy products/eggs and cereals. An average Pakistani household spends 9% of their budget on meat (mutton 2.20%, beef 3.15%, and chicken 3.58%). Expenditure on meat falls to 6% for households in the lowest income quartile and up to 11.4% in the highest income quartile (Government of Pakistan, 2020). OECD and FAO (2023, p. 188) mention Pakistan as a country with overall growth in the volume of meat among low-income countries. Table 1 below shows that Pakistan’s overall per capita meat available for consumption is around 20 kg per annum. Of note, Pakistan’s per capita consumption of mutton is above the global average (2.5 kg/annum).

On the production value side, the livestock sector has a share of 62.7% in agriculture and 14.4% in the national GDP. Meat is the second most valuable output from livestock, following milk. Pakistan’s estimated beef, mutton and poultry meat production for the fiscal year 2022–23 was 5.5 million tonnes (Government of Pakistan, 2023b, pp. 34–35), whereas the

Table 1. Per capita meat consumption (kg/year) by type in US, World and Pakistan, 2020

	Poultry	Beef	Sheep and goat	Pork	Other meats	Fish and seafood	Total kg
United States	57.8	37.3	0.6	30.2	0.8	22.5	149.2
World	16.2	9.0	2.0	14.4	0.7	20.3	62.5
Pakistan	6.0	9.6	2.5	0.0	0.0	1.6	19.7

Note(s): In the present study, sheep and goat meat are considered together as “mutton”, although in Pakistani Punjab and Islamabad Capital Territory (ICT), more goat meat is consumed

Source(s): Our World in Data (2023b) using data from the Food and Agriculture Organization of the United Nations

FAO puts total meat production at 4.9 million tonnes for 2021 ([Our World in Data, 2023a](#)). Two points most relevant to mutton may be drawn from the Pakistan Economic Survey 2022–23 ([Government of Pakistan, 2023b](#)). Between 2020–21 and 2022–23, the sheep population in Pakistan grew from 31.6 to 32.3 million, while goat numbers grew from 80.3 to 84.7 million (Table 2.16, p. 34). In the same period, mutton meat production grew from 765,000 to 799,000 tons (Table 2.17, p. 35). Between April 2022 and April 2023, mutton prices increased by 20% (Table 7.5, p. 123). However, this was a lower rate of inflation than that of only five other food items among the 24 reported in that period.

Pakistan is experiencing rapid urbanisation, and densely populated cities provide a huge demand base for meat and markets that have economies of scale. Population growth is a direct driver promoting the demand for meat. In fact, several studies have forecasted the growing demand for different meats in Pakistan, highlighting their importance to the country's economy and consumers. For example, [Akram et al. \(2022\)](#) projected that Pakistan's red meat production would increase by 15.81% from 2019 to 2025.

Such growth in demand has promoted the development of Pakistan's sheep and goat industry, as reported in recent reviews by [Ghaffar and Ashfaq \(2017\)](#), [Ahmad et al. \(2024\)](#), and [Abdullah et al. \(2024\)](#). Goat meat is an essential component of local food and dishes, and its price is relatively high compared to cow, buffalo, or poultry meat, mainly due to less intensive production and a lack of competitive markets against high-demand ([Abdullah et al., 2024](#)). Goats are primarily raised for meat production, with milk a secondary product. Goats adapt to different agro-ecological zones in Pakistan and play a substantial role in red meat production ([Sarwar et al., 2010](#)). Pakistan's goat population has the highest growth rate of all livestock, mainly due to demand for sacrificial purposes and a greater preference for goat meat in some parts of the country ([Ghaffar and Ashfaq, 2017](#)). In fact, the growing demand for goat and sheep meat can be observed globally. For example, [Bhatti et al. \(2021\)](#), [Hill \(2013\)](#), and [Cela et al. \(2019\)](#) reported a growing demand for goat and sheep meat in Norway, the United States, and Albania.

[Nouman and Khan \(2014\)](#) used time series modelling and forecasted, among other meats, a gap between the demand and supply of mutton in Pakistan due to the lower productivity of small ruminants. The authors also pointed out some existing issues in the mutton market, including unhygienic slaughtering, poor handling of meat, and consumers not having their choice of meat due to a non-existent grading system in the country.

In their review of Pakistan's meat industry, [Sohaib and Jamil \(2017\)](#) discussed the industry's potential and the need for modernisation to be self-sufficient and export-competitive. The authors discussed the factors influencing consumer preferences for meat, such as freshness, texture, colour, flavour, tenderness, and juiciness. [Rafique et al. \(2018\)](#) found freshness, hygiene, fat content, and condition, i.e. sanitation and cleanliness at retail shops, to be the most significant variables affecting consumers' willingness to pay a higher price for mutton in the city of Faisalabad in Punjab Province. [Tariq et al. \(2022\)](#) highlighted basic sanitation and poor hygiene at meat shops and butchers' lack of professional training as some challenges the Pakistani meat industry faces. Typically, there is also no price premium for higher-quality cuts.

Consumer meat preferences can vary across individuals, societies, and cultures and are, therefore, complex to access. It is also important to recognise that meat attributes are not of equal value to all consumers, and the bundle of benefits sought when purchasing meat varies across the population. The present study aims to fill the gap in the literature relevant to consumers of Pakistan's goat meat, predominantly consumed in Punjab (though sheep are also classed as "mutton"), irrespective of animal age. Our research focuses on mutton consumer choices in Pakistan's urban Punjab Province and the capital, Islamabad. This paper aims to provide insights into consumer preferences and behaviour in different market segments for stakeholders within the Pakistani mutton industry, including consumers, agribusinesses, researchers, and policymakers.

Methods

A preliminary qualitative pilot study was conducted involving 15 butchers and an equal number of participants drawn from friends, family, and social acquaintances from various locations within the twin cities of Islamabad Capital Territory (ICT) and Rawalpindi in Punjab Province. These participants/interviewees were asked open-ended questions about their preferences and concerns while buying goat meat/mutton. Informed by the in-depth insights from the qualitative data collected, six attributes of mutton demand, along with their reported levels, were identified (Table 2).

Table 1 in Oude Ophuis and Van Trijp (1995) provides a framework to learn about consumers’ food quality perspectives, which we used as a foundation to structure our study. Based on this framework, **quality cues** are observable product characteristics informed by the sensory experience before consumption, which can be intrinsic or extrinsic. Conversely, **quality attributes** are abstract, drawn from post-consumption experiences or perceived benefits of the product (Oude Ophuis and Van Trijp, 1995). Adapting the framework for our study, price, place of purchase, and hygiene were examined as **extrinsic quality** cues, while visual texture and meat colour were investigated as **intrinsic quality** cues. These diverse quality dimensions were integrated to construct a comprehensive understanding of consumer perceptions of quality and value.

Market segmentation provides insight into how consumer groups vary within a market during the purchase of a product. Eight market segmentation variables (see questionnaire in Appendix 1) were used in this study. These variables aimed to segment consumers based on geographic (type of residential area: metropolitan city, suburb of metro city, or small town), demographic (gender, age, education, and income), sociocultural (household size), and behavioural (place of purchase and usage rate) parameters.

The chosen ranges for age, education, income and household size were informed by Pakistan’s 2018–19 Household Integrated Economic Survey report (Government of Pakistan, 2020).

Survey data were collected online from 19th November 2021 to 30th June 2023. The elongated collection period was due to lower-than-anticipated response rates. The link to the survey was disseminated through personal contacts, with three authors being from the Punjab Province. Social media platforms, specifically Facebook and WhatsApp social groups, were used to connect with friends, friends of friends, family, and professional networks. When

Table 2. List of mutton attributes and levels used in choice-based survey attribute

Attribute	Levels
Price (Rs/kg)	1,350
Note: Rs = PKR, Pakistan rupee	1,400
	1,500
Place of purchase	Traditional butcher shop
	Speciality meat retail store
	High-end supermarket
Choice of cut	Mixed meat (<i>all cuts</i>)
	Leg or shoulder (<i>raan or dasti</i>)
Visual texture of meat	Moist without wrinkles
	Dry with wrinkles
Colour of meat	Pinkish
	Reddish
Hygiene	No Exposure to dust, flies and microbial activity
	Possible Exposure to dust, flies and microbial activity

Note(s): 1USD = 175.2 PKR, Official exchange rate from State Bank of Pakistan on 19 November 2021 when the online survey was launched online (State Bank of Pakistan, 2021)

Source(s): Authors’ own work

possible, these networks were asked to distribute the survey link further, thereby maximising our reach to potential respondents.

Moreover, two technologically adept staff members were employed for a month in September 2022 to collect data from meat consumers across various sales outlets in parts of the ICT and the cities of Rawalpindi and Lahore. This face-to-face approach supplemented our online efforts, providing a more diversified and representative dataset. This project has received clearance from the COMSATS University ethics committee (reference number: CUI-ISB/MS/2021/15).

The survey was designed, pretested, and conducted using Sawtooth software (Sawtooth, 2023). Choice-based conjoint (CBC), a widely used method for marketing research that quantifies the value consumers place on product attributes, was applied to study respondents' choices (Orme, 2014; Orme and Chrzan, 2017). Previous successes at using CBC for meat markets include Bhatti *et al.* (2021), Hill (2013) and Cela *et al.* (2019). In brief, CBC exercises present respondents with contrasting scenarios (Figure 1) where they are asked to make choices among different product concepts. The method is used to learn about respondents' preferences for the combinations of attributes and levels that make up a product or service, like those in Table 2 for goat meat/mutton. In making choices, the respondents face trade-offs similar to those encountered in the real world, indicating their personal preferences.

The software used a balanced overlap experimental design, generating six random CBC choice questions (referred to as "tasks") and three products (referred to as "concepts") per task. A "None" option was included that allowed respondents to express their lack of interest in a choice question (Figure 1). The software created 300 unique product concepts for the survey questionnaire, and the respondents chose among sets of three randomly drawn concepts. The

Assuming you are buying goat meat/mutton for your regular household consumption and these are your only options, which would you choose?

1/6

Place of purchase	Traditional butcher shop	Specialty meat retail store	High-end supermarket	NONE: I wouldn't choose any of these.
Price (Rs/kg)	1,350	1,500	1,400	
Choice of cut	Leg or Shoulder (raan or dasti)	Mixed meat (all cuts)	Leg or Shoulder (raan or dasti)	
Visual texture of meat	Moist without wrinkles	Dry with wrinkles	Moist without wrinkles	
Colour of meat	Pinkish	Reddish	Pinkish	
Hygiene	No Exposure to dust, flies & microbial activity	Possible Exposure to dust, flies & microbial activity	Possible Exposure to dust, flies & microbial activity	
	Select	Select	Select	Select

Figure 1. An example of a choice set used in the online choice-based conjoint survey. Source: Authors' own work

attributes that make up each concept are carefully chosen by the software in the experimental design so that the independent effect of each attribute level of a product concept's likelihood of choice can be estimated.

Based on choice scenarios answered by survey respondents, individual-level utilities, also called preference scores, were estimated by the software using the Hierarchical Bayesian (HB) model (Allenby *et al.*, 1995; Allenby and Ginter, 1995; Lenk *et al.*, 1996), which is briefly described below. See Orme (2016) for further details on the estimation procedure.

For a particular choice task, let $\mathbf{x}_j$ be the vector of values that characterise the j -th alternative. The values within $\mathbf{x}_j$ are indicator variables representing different levels of the attributes. For the i -th individual, it is assumed that the choices follow a multinomial distribution with logistic link functions. Mathematically, the probability of the i -th individual choosing the j -th alternative can be written as

$$p_{ij} = \frac{\exp(\mathbf{x}'_j \boldsymbol{\beta}_i)}{\sum_{j=1}^J \exp(\mathbf{x}'_j \boldsymbol{\beta}_i)}, \quad (1)$$

where $\boldsymbol{\beta}_i$ denotes the vector of utilities for the i -th individual and J represents the total number of alternatives available within a choice task. A higher utility indicates a higher preference. The utilities within an attribute were zero-centred. In the HB model, the vector $\boldsymbol{\beta}_i$ is assumed to follow a prior distribution, which is multivariate normal (MVN), that is,

$$\boldsymbol{\beta}_i \sim MVN(\boldsymbol{\alpha}, \mathbf{S}), \quad (2)$$

where $\boldsymbol{\alpha}$ and $\mathbf{S}$ are the mean vector and variance-covariance matrix, respectively, based on some prior belief. The prior distribution based on Eq. (2) and the likelihood function based on Eq. (1) yield the posterior distribution of $\boldsymbol{\beta}_i$ given the data collected. The estimation of $\boldsymbol{\beta}_i$ is done by maximising the posterior distribution using the Monte Carlo Markov Chain, an iterative procedure.

In Sawtooth, the initial values for $\boldsymbol{\alpha}$ and $\mathbf{S}$ are a zero vector and an identity matrix, respectively. In other words, a non-informative prior was used. Based on these values, $\boldsymbol{\beta}_i$ was updated. Based on the new value of $\boldsymbol{\beta}_i$, $\boldsymbol{\alpha}$ and $\mathbf{S}$ are updated. This process is repeated until convergence. The estimated utility values from all individuals were aggregated according to different segmentations. The range of the utilities within an attribute was used to represent the importance of that attribute. The relative importance of an attribute was then based on the percentage of all attribute importance scores.

Results

The present research project studied the goat meat/mutton purchase preferences of households in urban centres of Punjab Province and ICT. This section provides an overall picture of respondent preferences.

Respondent data based on geographic, demographic, sociocultural (household size), and behavioural variables

Table 3 reports the respondent data based on geographic (description of the area respondents resided in), demographic (gender, age, education, and income), sociocultural (household size), and behavioural (place of purchase and usage rate) variables. Eighty-two percent of the respondents were from metropolitan cities, 40% of households consumed between 1 to 2 kg of goat meat/mutton per week, with 69% saying they would buy from traditional butcher shops (these data are with no trade-off scenarios, which will be presented later).

Seventy-six percent of the respondents were males and 66% were under the age of 30. Sixty-nine percent of the respondents had an undergraduate and above (BA/BSc and above) level of education, which may indicate a biased sample was collected as the online survey

Table 3. Segmentation variables based on geographic, demographic, sociocultural and behavioural characteristics of the study sample ($n = 576$ respondents)

Description of the area where the respondent lives in urban Punjab and/or the Islamabad capital territory (ICT)	Metropolitan city	472
	Suburb of metropolitan city	60
	Small town	44
Usage rate, i.e. household's average mutton consumption per week in kilograms (kg)	Less than 1 kg	188
	1–2 kg	231
	2–3 kg	110
	More than 3 kg	47
Place of purchase of mutton/goat meat	Traditional butcher shop	398
	Speciality meat retail store	77
	High-end supermarket	101
Gender of household member who purchases meat	Male	437
	Female	139
Age bracket of the respondent in years	Under 30	382
	30–39	71
	40–49	87
	50–59	29
	60 plus	7
Level of education of household member who purchases meat	Matric* and under	67
	Intermediate and diploma	110
	BA/BSc** and above	399
Total net household income per month (PKR)***	Less than 50,000	100
	50,001 to 100,000	170
	100,001 to 150,000	123
	150,001 to 200,000	80
	More than 200,000	103
Household size	4 or less	172
	5 to 6	287
	7 or more	117

Note(s): *Matriculation, referred to as matric, is the term referring to ten years of schooling in Pakistan

**Undergraduate degree, referred to as BA/BSc offered in college and universities in Pakistan

*** 1USD = 175.2 PKR, Official exchange rate from State Bank of Pakistan on 19 November 2021 when the survey was launched online ([State Bank of Pakistan, 2021](#))

Source(s): Authors' own work

responses catered to those having access to a computer or smartphone and being able to understand the English language in which the survey was conducted.

Thirty percent of the respondents were in the second lowest income bracket (PKR 50,001 to 100,000), closely followed by the middle-income bracket (21% in the 100,001 to 150,000 range). Fifty percent of the respondents' household size consisted of 5–6 members.

From [Table 4](#), the patterns of mutton consumption vary little across different income levels. Yet, there is a clearer trend in mutton consumption across household sizes. Specifically, as the household size increases, the percentage of respondents purchasing more mutton increases. Approximately a quarter of households with 6 members or fewer purchased 2 kg or more of mutton. With 7 or more members, around one-third of the households purchased 2 kg or more of mutton.

Relative attribute importance, segmentation based on a single segmentation variable and then based on the interaction between two segmentation variables

Relative attribute importance reflects the relative impact of each attribute on respondent choices. This section shows the overall impact of attributes on consumers' choices ([Table 5](#)). These consumers are then further segmented into groups ([Figures 2–4](#)) based on the segmentation variables mentioned in [Table 3](#) to study group preferences for attributes. Further

Table 4. Cross-tabulations showing the number of respondents (row percentages in parentheses) in each combination of income and mutton consumption, and household size and mutton consumption or cross-tabulations of the number of respondents (in parentheses) in each combination of income and mutton consumption, as well as household size and mutton consumption

	Mutton consumption (kg/week per household)				Number of respondents	
	Less than 1 kg	1–2 kg	2–3 kg	More than 3 kg		
<i>Income</i>						
Less than 50,000	33 (33.0%)	42 (42.0%)	14 (14.0%)	11 (11.0%)	100	
50,001 to 100,000	57 (33.5%)	81 (47.6%)	24 (14.1%)	8 (4.7%)	170	
100,001 to 150,000	35 (28.5%)	42 (34.1%)	40 (32.5%)	6 (4.9%)	123	
150,001 to 200,000	31 (38.8%)	31 (38.8%)	14 (17.5%)	4 (5%)	80	
More than 200,000	32 (31.1%)	35 (34.0%)	18 (17.5%)	18 (17.5%)	103	
Total	188	231	110	47	576	
<i>Household size</i>						
4 or less	75 (43.6%)	54 (31.4%)	29 (16.9%)	14 (8.1%)	172	
5 or 6	88 (30.7%)	125 (43.6%)	56 (19.5%)	18 (6.3%)	287	
7 or more	25 (21.4%)	52 (44.4%)	25 (21.4%)	15 (12.8%)	117	
Total	188	231	110	47	576	
Source(s): Authors’ own work						

Table 5. Relative attribute importance, i.e. the relative impact of each attribute on respondent ($n = 576$) choices in descending order with estimated standard deviation (SD) and 95% confidence interval (CI)

Attribute	Importance	SD	Lower 95% CI	Upper 95% CI
Hygiene	29.91	19.24	28.33	31.48
Place of purchase	22.43	14.89	21.21	23.64
Price	14.79	9.17	14.04	15.54
Visual texture of meat	14.19	9.33	13.43	14.95
Colour of meat	9.88	7.71	9.25	10.51
Choice of cut	8.81	7.41	8.20	9.41
Total	100			
Source(s): Authors' own work				

segmentation based on the interaction of the type of residential area with household income, education, and household size, respectively (Figures 2–4), is then studied.

Table 5 shows how much impact each attribute had on consumer choice. The importance score calculated at the individual level and displayed as an average of the sample ($n = 576$) shows that hygiene, followed by place of purchase, was most important to the consumers. Price was the third most important attribute for the survey respondents.

Further segmentation based on the interaction between residential area and household income (Figure 2) shows that hygiene overall was the most important attribute for the middle-income group (PKR 100,001 to 150,000) residing in the suburbs of metropolitan cities. Place of purchase was second most important for the second lowest income group (PKR 50,001 to 100,000) residing in suburbs of metropolitan cities.

The colour of meat was given the highest importance by the highest income groups (more than PKR 200,000) residing in small towns. Similarly, segmentation based on the interaction between the type of residential area and the level of education (Figure 3) shows that hygiene was the most important attribute for the highest education group (BA/BSc and above) residing in metropolitan city suburbs.

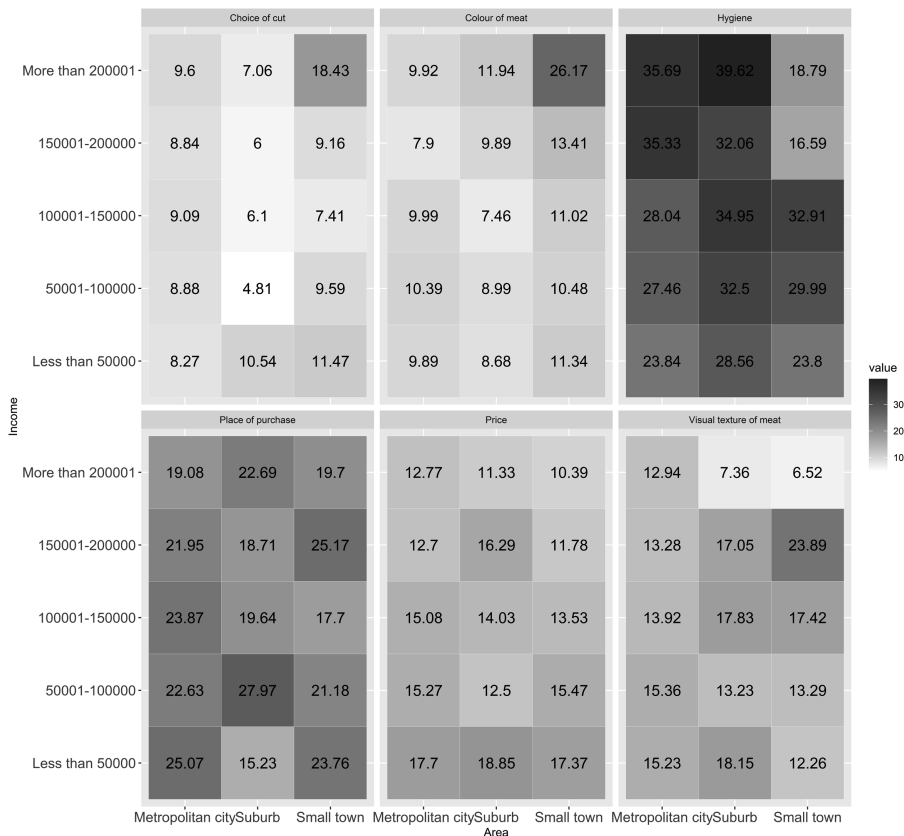


Figure 2. Relative attribute importance based on the interaction between the area where the respondent lived (on the horizontal axis) and household income per month (PKR) (on the vertical axis) of consumers from urban Punjab and/or the capital Islamabad ($n = 576$). Source: Authors' own work

Place of purchase was important for the lowest education group (matric and under; referring to not more than ten years of schooling) residing in metropolitan city suburbs. Price was of higher importance to the lowest education group (matric and under) residing in small towns. Furthermore, consumer segmentation based on the interaction between the type of residential area and household size (Figure 4) shows that hygiene was given the highest importance by the smallest households (4 or less) residing in metropolitan city suburbs (areas defined in Table 3).

Place of purchase was most important for the largest families (7 or more) residing in suburbs of Metropolitan cities. Price was most important to mid-size families (5–6) residing in small towns.

Attribute utilities and utility values based on residential areas, level of education, household income, and household size

Attribute utilities indicate the relative desirability of each level within an attribute. Each attribute shows the utilities for each level. Utilities are zero-centred within each attribute, and the scores sum to zero. A positive utility means respondents prefer it relative to other levels in the same attribute, while a negative utility means respondents like it relatively less than the other levels within the same attribute.

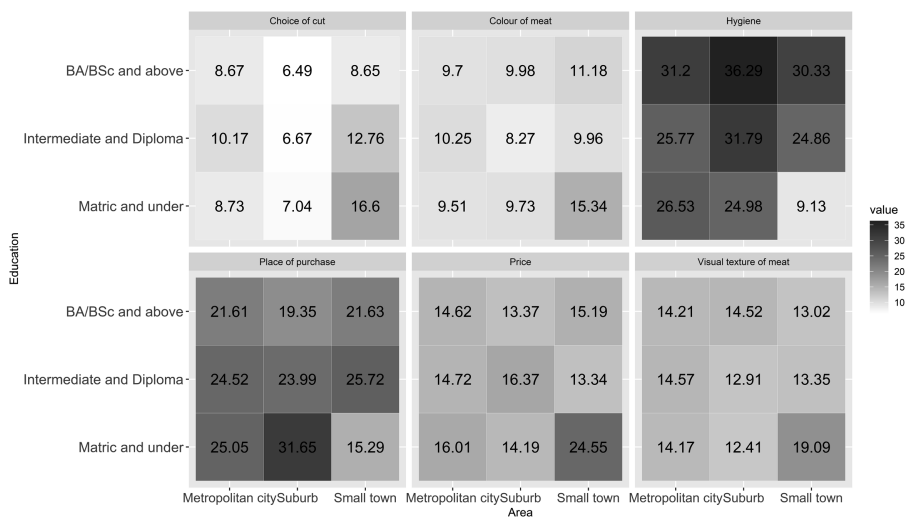


Figure 3. Relative attribute importance based on the interaction between the area where the respondent lived (on the horizontal axis) and the level of education (on the vertical axis) of consumers from urban Punjab and/or the capital Islamabad ($n = 576$). Source: Authors' own work

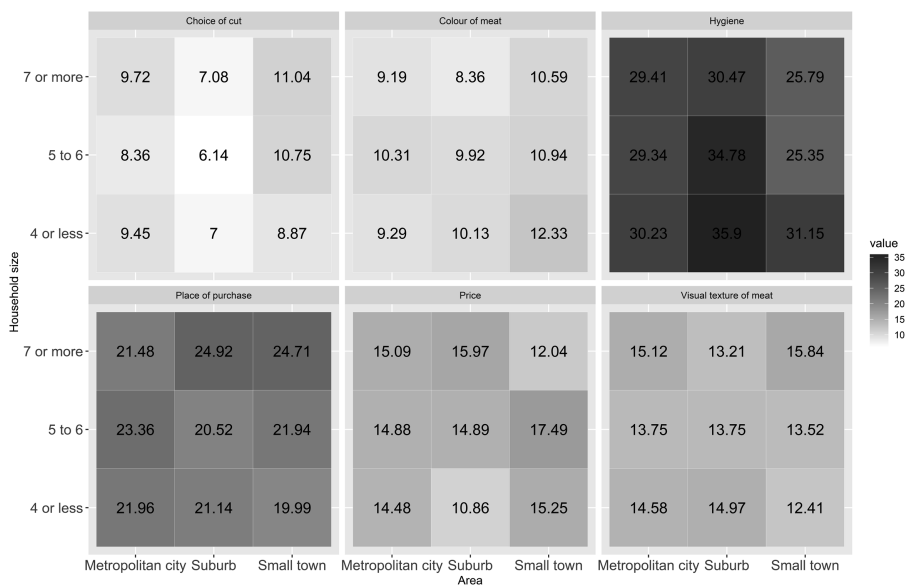


Figure 4. Relative attribute importance based on the interaction between the area where the respondent lived (on the horizontal axis) and household size (on the vertical axis) of consumers from urban Punjab and/or the capital Islamabad ($n = 576$). Source: Authors' own work

Table 5 above presented relative attribute importance, i.e. the relative impact of each attribute on respondent choices. Table 6 shows the overall relative desirability of each level within an attribute, which is then further segmented based on area, education, income, and household size of respondents.

Overall, within the hygiene attribute, which was the most preferred (Table 5), the “No Exposure to dust and flies” level was most desirable (Table 6). For the second most preferred attribute, i.e. place of purchase, the “traditional butcher shop” was more preferred to “high-end supermarkets”, while “specialty meat retail stores” were the least preferred. Respondents’ preference for a lower price was reflected in the higher utility score for the lowest price, 1,350 Rs/kg.

Segmentation based on residential area shows that small town residents preferred traditional butcher shops. These households also had a higher preference for reddish colour meat. Residents of suburbs of metropolitan cities were more after pinkish-coloured meat and sought meat with “no exposure to dust and flies.”

Education-based segmentation shows that intermediate and diploma holder-headed households preferred traditional butcher shops and also preferred moist meat without wrinkles. Lowest education households (matric and under) were most sensitive to prices. People in the highest education consumer (BA/BSc and above) bracket sought meat with no exposure.

Income-based segmentation revealed that households in the two highest income brackets preferred buying goat meat/mutton from high-end supermarkets although the highest income earners were divided between traditional and high-end supermarkets. All households, irrespective of income, preferred a lower price, and leg or shoulder was the preferred choice of cut. The two lowest income brackets had a higher preference for reddish-coloured meat, whereas the rest preferred pinkish-coloured meat. All households had a higher preference for meat with no exposure to dust and flies.

Finally, household size-based segmentation showed that mid-sized (5–6 member) households most preferred traditional butcher shops and reddish-coloured meat. Smaller families (4 or less) preferred leg or shoulder cuts, pinkish-coloured meat with no exposure to dust and flies.

Discussion

The study, conducted in Islamabad and Punjab Province, Pakistan, between 2021 and 2023, investigates the intricacies of customer preferences for goat-mutton meat in Pakistani urban Punjab and ICT. This study is critical because it improves and extends the results of previous studies on the consumption, production, and export of mutton and other halal meat products in Pakistan.

The study used the choice-based conjoint (CBC) method embodied in [Sawtooth \(2023\)](#) software to evaluate the survey on consumer behaviour. This approach facilitated the input of data through internet platforms such as personal computers and smartphones, while also offering a sophisticated analytical instrument. As a result, the study is valuable for local and international scholars. This study examines the demographic characteristics of the participants, in addition to presenting its primary findings. The involvement of metropolitan participants offers distinct perspectives on urban consumer behaviours, which are becoming progressively significant in a swiftly urbanising worldwide context. Urban areas play a vital role in Pakistan, as the urban population is expanding rapidly, and the preferences of urban consumers influence market trends. The approach employed in the study enhances a wider understanding of research methods. The CBC method enhanced the efficiency of data collection and improved analytical depth and accuracy.

Among all attributes, hygiene was the most preferred attribute for households from urban Punjab and ICT (Table 5), particularly for those from suburbs of metropolitan cities in the highest education and income brackets and the medium to small-sized households (Figures 2–4). No exposure to dust and flies was the utility level consumers were most concerned about within the hygiene attribute, which reflects a desire and gap that needs to be met by the meat market in Pakistan (Table 6).

Place of purchase was the second most preferred attribute for these households (Table 5), preferred more by the residents of the suburbs of metropolitan cities, particularly the second

Table 6. Utility values ($n = 576$) indicating the relative desirability of each level within an attribute presented as overall or average and then segmented based on (1) the respondent's area of residence (2) respondent's level of education (for household member who purchases meat) (3) household's total monthly net income per month (PKR) and (4) household size in urban Punjab and/or the capital Islamabad. For each case (area, education, income and household size) utilities are zero-centred and distributed within each attribute, summing to zero

Attribute levels	Overall	Area	Suburb of metropolitan city	Small town	Education		BA/BSc and above	Income Less than 50,000	50,001 to 100,000	100,001 to 150,000	150,001 to 200,000	More than 200,000	Household size		
		Metropolitan city			Matric and under	Intermediate and diploma							4 or less	5 to 6	7 or more
<i>Place of Purchase</i>															
Traditional butcher shop	22.11	22.01	19.87	26.22	29.07	31.41	18.37	33.69	27.1	40.68	-10.68	5.9	14.91	27.24	20.1
Speciality meat retail store	-15.94	-16.91	-9.25	-14.65	-25.45	-19.11	-13.47	-23.18	-17.1	-23.03	-3.3	-8.34	-15.42	-17.96	-11.73
High-end supermarket	-6.17	-5.1	-10.63	-11.56	-3.62	-12.31	-4.91	-10.51	-10.01	-17.66	13.98	2.44	0.5	-9.27	-8.37
<i>Price</i>															
1,350	10.31	10.68	8.16	9.26	19.73	10.68	8.63	11.58	12.16	15.23	5.26	4.07	15.89	9.56	3.96
1,400	1.58	1.87	1.12	-0.92	1.84	4.91	0.61	4.62	3.25	-2.34	2.83	-0.43	-3.01	3.4	3.85
1,500	-11.89	-12.55	-9.28	-8.34	-21.58	-15.59	-9.24	-16.2	-15.41	-12.9	-8.09	-3.65	-12.88	-12.95	-7.82
<i>Choice of cut</i>															
Mixed meat	-6.64	-6.64	-6.25	-7.15	-7.37	-7.28	-6.34	-1.89	-11.55	-4.46	-3.33	-8.33	-8.94	-6.96	-2.49
Leg or Shoulder	6.64	6.64	6.25	7.15	7.37	7.28	6.34	1.89	11.55	4.46	3.33	8.33	8.94	6.96	2.49
<i>Visual texture of meat</i>															
Moist without wrinkles	21.45	21.53	21.84	20.13	21.61	27.00	19.90	22.39	20.65	24.57	24.77	15.58	17.91	22.59	23.9
Dry with wrinkles	-21.45	-21.53	-21.84	-20.13	-21.61	-27.00	-19.90	-22.39	-20.65	-24.57	-24.77	-15.58	-17.91	-22.59	-23.9
<i>Colour of meat</i>															
Pinkish	-1.85	-1.98	2.48	-6.33	-4.73	-10.87	1.12	-5.3	-10.79	2.86	4.08	6.04	1.96	-4.21	-1.66
Reddish	1.85	1.98	-2.48	6.33	4.73	10.87	-1.12	5.3	10.79	-2.86	-4.08	-6.04	-1.96	4.21	1.66
<i>Hygiene</i>															
Possible Exposure	-68.25	-67.9	-79.69	-56.39	-45.11	-51.28	-76.81	-46.21	-59.37	-63.47	-98.53	-86.46	-74.66	-68.01	-59.39
No Exposure	68.25	67.9	79.69	56.39	45.11	51.28	76.81	46.21	59.37	63.47	98.53	86.46	74.66	68.01	59.39
None*	-245.75	-248.37	-180.18	-307.06	-275.15	-285.23	-229.93	-264.46	-280.33	-257.96	-182.12	-205.33	-268.67	-237.58	-232.08

Note(s): * The "None" option allowed respondents to express their lack of interest for a choice question(s). The None option was shown for each of the six choice sets displayed. A respondent could choose different combinations throughout the survey or choose NONE for each one of the six choice sets

Source(s): Authors' own work

lowest income group (PKR 50,001 to 100,000), lowest education group (matric and under) and largest families (7 or more) (Figures 2–4). Traditional butcher shop was the most preferred within the place of purchase attribute for all consumers (Table 6). Small town residents, households with heads with a mid-level of education (intermediate and diploma holders), mid-income households (PKR 100,001 to 150,000) and mid-sized households (5–6 members) stood out. The choice of traditional butcher shops, perhaps, reflects the social aspect of trust and likely long-term relationships that the households have with these smaller butchers. It may also be linked to the higher prices charged by some of the bigger outlets, which were not part of this study.

The price of meat was the third most important attribute for the urban Punjab and ICT households surveyed (Table 5). Households in the lowest income bracket (less than PKR 50,000) in metropolitan suburbs, households in small towns with the household head in the lowest education (matric and under) bracket, and small town mid-sized (5–6 members) households were most concerned about the price attribute (Figures 2–4). The lowest price point (PKR 1,350 per kg), as expected, was given the highest utility by all households. However, households in small towns, those with heads in the lowest education (matric and under) bracket, and the smallest size households (4 or fewer) stood out (Table 6). The lowest educated households may also have lower income and thus be more price-conscious.

The study has investigated the factors that influence consumer decisions while buying goat meat/mutton in urban centres. The findings imply that hygiene, purchasing location, and price have the greatest influence on consumer behaviour. The emphasis on hygiene reflects a global trend of health-consciousness, indicating an increased awareness and concern for food quality and safety among Pakistan's urban population in a country where basic sanitation and poor hygiene at meat shops are a challenge (Tariq *et al.*, 2022). This tendency is becoming more prevalent in consumer behaviour surveys, indicating a global shift towards healthier and safer food choices (Pires *et al.*, 2020).

The importance of purchase location in customer decision-making sheds light on the evolving retail environment in urban Pakistan. The importance of this attribute, namely place of purchase, reflects a market in which consumers are becoming more discriminating about where they buy their meat, whether from traditional butcher shops, speciality meat stores, or upmarket supermarkets. The wide range of retail options indicates a diverse consumer base with varying needs and expectations, making it difficult for any one type of retailer or supplier to meet these varying demands.

Price is a factor that is related to the place of purchase, although the relationship between the two has not been defined well here. The importance of price as a critical determinant is consistent with global consumer behaviour trends, particularly in developing countries such as Pakistan, where economic difficulties have a significant impact on purchasing decisions. The study's findings on weekly meat consumption trends among different households provide useful insights into socioeconomic factors affecting these choices. According to the findings, mutton is considered a luxury and is consumed in varying amounts depending on the household's size and economic status.

These findings are relevant to a wide range of practical interests, including health and nutrition, agriculture, and social sciences. The variety of options available to consumers, which is influenced by factors such as family size, money, and age, highlights the importance of precise and targeted approaches in meat production, marketing, and retail techniques. For example, emphasising sanitation and quality assurance may appeal to health-conscious consumers, whereas providing low prices may appeal to price-sensitive sectors.

The age and education level of the respondents provide important insights into the shifting demographics of meat eaters in urban Pakistan. The presence of a younger, more educated consumer base is noticeable, with most people under the age of 30. The shift is expected to have a significant impact on the goods and services that appeal to this demographic, potentially influencing future meat consumption trends such as preferences for organic or ethically produced commodities. Furthermore, the investigation of weekly meat consumption across

various households reveals patterns that reflect broader socioeconomic trends. The various levels of consumption among people with varying income levels and household sizes provide a thorough understanding of how economic status and family dynamics influence dietary preferences. This section of the study may be particularly useful to those interested in the impacts of economic capacity and cultural preferences on purchasing behaviours.

This study provides insights into how various consumer categories prioritise essential qualities of mutton products in terms of market segmentation. Segmentation information is essential for marketers and producers as it enables them to customise their products and marketing methods to certain market segments. Comprehending the preferences of diverse demographics enables firms to enhance their product targeting and marketing endeavours to effectively address the distinct demands and objectives of these segments.

Furthermore, the study's investigation of consumer preferences provides critical information for policy design. An in-depth understanding of the factors that influence consumer preferences for meat products can help policymakers devise policies that promote public health, promote sustainable agriculture methods, and boost economic growth. Understanding the significance of hygiene, for example, might impact the formulation of regulations and informational support aimed at improving food safety standards throughout the mutton/meat supply chain.

Insights into consumer preferences and behaviour in these sectors can be valuable for global meat producers and merchants seeking to grow their businesses. An in-depth comprehension of factors such as purchasing location, hygiene, and expenditure can aid multinational enterprises in tailoring their strategies to cater to the varying demands of consumers in different locations. Furthermore, the study's findings underscore the importance of hygiene and a global trend towards improved health awareness among consumers. The increased demand for hygienic and safe food items has significant implications for the global meat industry, necessitating a rethinking of manufacturing and distribution systems (Henchion *et al.*, 2014).

An emphasis on buying cost and location provides important insights into economic realities and consumer preferences in urban Pakistan. These analytical insights are critical for local businesses to refine their pricing strategies and choose the best retail channels to reach their target audience. Understanding these aspects of client behaviour is critical for businesses to remain competitive and respond to market needs.

The study adds to our understanding of consumer behaviour in the context of food consumption. By analysing the consumption of goat/mutton meat in a specific geographic location, the study adds to the growing body of knowledge about how cultural, economic, and social factors influence consumer choices. This understanding is critical for both firms and governments when developing programs that are not just economically feasible, but also culturally and socially relevant (Grunert *et al.*, 2004). In Pakistan, where meat consumption is deeply ingrained in the culture, understanding the cultural complexities that influence purchasing decisions is critical in understanding the market for meat.

However, the results should be used with caution due to the following limitations. First, the use of an online survey may have led to potential bias, as it may have excluded people who are not proficient in using electronic devices or have no Internet access. Also, since the survey was conducted in English, which is not a native language in Pakistan, it may have introduced some biases. Given that the survey was conducted in the Punjab Province and the capital territory, the results may have limited generalisability to other regions. Yet, the findings may be relevant to wider South Asia, where goats are consumed regularly.

This study provides a comprehensive assessment of the preferences of urban Pakistani customers for goat-mutton meat. The findings have extensive ramifications for many stakeholders, encompassing local enterprises, worldwide industry pioneers, legislators, and university academics. The study's novel methodological approach, we hope, enhances its utility as a reference for future research on consumer behaviour, especially in the setting of emerging economies. The conclusions of this study have practical implications for

comprehending present market dynamics and predicting future trends in the meat industry in Pakistan and globally.

Conclusion

Goat meat/mutton is an important part of the Pakistani diet. More goat meat is consumed in Pakistani Punjab, the capital Islamabad and the southern parts of the country. Sheep meat is preferred in the north of Pakistan, where it is more available as the conditions are colder. The attributes and levels narrowed down and studied in this survey reflect the order of attribute and level (utility) preferences of urban consumers, while not distinguishing between sheep and goat mutton except by mentioning regional differences in product availability due to geographical differences in climates.

This survey of urban mutton consumers in the Islamabad Capital Territory and in the Punjab was informed by 576 respondents on their preferences regarding this highly prized traditional meat. It is especially enjoyed during Eid-al-Adha, a significant Muslim observance when sheep and goats are sacrificed in huge numbers.

Initial survey interviews were with butchers and shop customers, which helped formulate questions about the attributes of mutton purchase preferences, mutton hygiene, appearance, convenience, and prices. When the survey questionnaire was being tested, face-to-face interviews were helpful. Consumers were guaranteed privacy and assured their answers would remain anonymous and reported only as part of statistical summaries. An online version of the survey made wider participation possible, as consumers in these urban areas could complete the survey on their mobile phones. Consumers were questioned about their family numbers and typical weekly mutton purchases for home consumption, as well as the range of their family's average monthly incomes, their education levels, and residential areas. Their names were not recorded.

In the analysis of the results, all the attributes of mutton and consumer preferences in its marketing could be statistically cross-tabulated with the attributes of the consumers. These cross-referenced results are presented in tabular form for numerical results and in graphic form, where strengths of important preferences can be illustrated with shading. The results may be regarded as an up-to-date snapshot of mutton consumption preferences in urban Pakistan.

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Appendix

Introduction and Consent for Respondents

You are invited to participate in a research study investigating consumers' mutton (goat meat) purchase preferences in urban Punjab and the capital Islamabad of Pakistan using Conjoint based survey. Before you decide whether you wish to participate in this study, it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully.

This survey aims to understand the attributes associated with consumers' purchase preferences while buying mutton. In this study, mutton purely refers to goat meat. Your participation in the survey will assist us in understanding the factors (e.g. Place of purchase) associated with consumers' mutton purchasing intentions.

If you agree to participate, you will be asked to complete this survey, which has eight demographic, six discrete choice and one open-ended qualitative question. The questionnaire should take no longer than five minutes. This survey is free to participate in and can be completed from any device with an internet connection.

Participation in this research survey is entirely your choice. The data collected in this survey will be anonymous and cannot be withdrawn once a response is submitted, even if the entire survey is not completed.

The responses collected from the survey will be kept confidential and will be stored in a data archive. The collated responses to questions will be accessible by any member of the research team. The provided information will be used solely for this research project, and only aggregated results will be reported in reputable academic publications.

If you have any questions, please feel free to contact Dr Munnawar Naz Khokhar on nazkhokhar@comsats.edu.pk. This project has received clearance from the COMSATS University ethics committee (reference number: CUI-ISB/MS/2021/15).

Thank you for your participation.

Demographic Questions

Q1. How would you describe the area where you live in urban Punjab and/or the capital Islamabad of Pakistan?

- (1) Metropolitan city (e.g. Lahore, Rawalpindi, Islamabad, Multan)
- (2) Suburb of Metropolitan city (e.g. private housing societies around urban centres)
- (3) Small town (e.g. Taxila or Talagang near Islamabad)
- (4) I DO NOT live in urban Punjab or the capital Islamabad, Pakistan (GO to terminate question)

Q2. What is your household's average mutton consumption per week in kilograms (kg)?

- (1) Less than 1 kg
- (2) 1–2 kg
- (3) 2–3 kg
- (4) More than 3 kg
- (5) NONE (GO to terminate question)

Q3. Where do you purchase mutton/goat meat?

- (1) Traditional butcher shop (local shop in your neighbourhood)
- (2) Speciality meat retail store (e.g. Zenith, Meat One, Meat Plus)
- (3) High-end supermarket (e.g. Imtiaz, Carrefour, Savemart, Punjab Cash and Carry)

Q4. What is your gender (household member who purchases meat)?

- (1) Male
- (2) Female

Q5. What is your age (years)?

- (1) Under 30
- (2) 30–39
- (3) 40–49
- (4) 50–59
- (5) 60 plus

Q6. What is the level of your education (household member who purchases meat)?

- (1) Matric and under
- (2) Intermediate and Diploma
- (3) BA/BSc and above

Q7. What is your total net household income per month (PKR)?

- (1) Less than 50,000
- (2) 50,001 to 100,000
- (3) 100,001 to 150,000
- (4) 150,001 to 200,000
- (5) More than 200,000

Q8. How many people currently live in your household?

- (1) 4 or less
- (2) 5 to 6

(3) 7 or more

Conjoint Questions

Assuming you are buying goat meat/mutton for your regular household consumption and these are your only options, which would you choose?

- (1) Price (*Rs/kg*)
 - 1,350
 - 1,400
 - 1,500
- (2) Place of purchase
 - Traditional butcher shop
 - Speciality meat retail store
 - High-end supermarket
- (3) Choice of cut
 - Mixed meat (*all cuts*)
 - Leg or Shoulder (*raan or dasti*)
- (4) Visual texture of meat
 - Moist without wrinkles
 - Dry with wrinkles
- (5) Colour of meat
 - Pinkish
 - Reddish
- (6) Hygiene
 - Possible Exposure to dust, flies and microbial activity
 - No Exposure to dust, flies and microbial activity

Open-Ended and Terminate Questions

Now that you have done the survey, please add any additional information that this survey may have missed or your insight as a consumer (No response required option activated so that people should not stop here).

Thank you for your participation in the goat meat/mutton purchase preferences choice survey.

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