Available Online
Journal of Economic Impact
ISSN: 2664-9764 (Online), 2664-9756 (Print)
https://www.scienceimpactpub.com/jei

ASSESSMENT OF CONSUMER SEGMENTATION AND VALUE PREFERENCES FOR ONION IN PAKISTAN

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ARTICLE INFO

Article history
Received: September 02, 2024
Revised: December 18, 2024
Accepted: December 25, 2024

Keywords
Consumer segments
Value preferences
Buying patterns
Cluster analysis
Value chain
Onion

ABSTRACT

This study aims to investigate the preferences of Pakistani customers for onion values, with an emphasis on the variables affecting their purchase decisions. An intercept survey with 273 respondents from three major Pakistani cities including Karachi, Lahore, and Faisalabad was conducted to gather data for this study. A well-structured questionnaire was used in the survey to provide thorough coverage of customer preferences and habits. The study used cluster analysis to identify three different consumer groups, or clusters that differed significantly in their decision-making. These differences were observed across critical dimensions, including search attributes, experiential factors, safety considerations, and marketing characteristics. The results indicated that Search attributes, including appearance and price, were vital for one group, but experience-related attributes, such as flavor and freshness, were essential for another. A third group emphasized safety considerations, encompassing cleanliness and traceability. These differences show the varied nature of customer behavior throughout the Onion value chain. The research emphasizes the necessity of aligning processes in the value chain with consumer preferences to improve consumer satisfaction and to address the changing customer needs successfully.

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https://doi.org/10.52223/econimpact.2024.6313

INTRODUCTION

Onion is an important commercial crop widely grown in different parts of Pakistan (Baloch et al., 2014). It is classified as a vegetable and is used as a vital condiment in households throughout the year (Adil et al., 2012). Pakistan is the seventh largest producer of onion in the world. China is the largest producer of onion globally, followed by India. The crop in Pakistan is cultivated every year, including monsoon, winter, and summer, thrice. Vegetables are a significant source of vitamins and minerals. It is evident that diets rich in vegetables provide health benefits and protect against the risk of diseases such as cancer, stroke, and diabetes (Ohen et al., 2014).

Onion is the most common vegetable in Pakistan, and it is in relatively inelastic demand. Due to this inelasticity and perishability, frequent price variations and trade occur between regional markets due to their supply position (Lohano et al., 2005). The markets of vegetables like onion and tomato are spatially integrated. The degree of integration in onion markets is higher due to its lower degree of perishability than tomato (Lohano and Mari, 2012). Fatima et al. (2015) have reported the increasing trend in Onion's wholesale prices in major markets, making it difficult for consumers to manage. However, consumers' purchase and consumption patterns for fruits and vegetables are influenced by several factors, including food safety and public concerns at the farm and processing level (Grunert, 2005). Thus, consumers in developed countries are becoming more critical and fragmented in their food choices.

Kotler et al. (2010) identified three important aspects a consumer should consider when developing alternative evaluations before purchasing intention. First, the customer sees the product as a collection of attributes; therefore, the product's perception is based on how well it complies with a set of attributes significant to the product class. According to Sun et al. (2012), consumers may place varying degrees of weight on relevant features and likely form judgments on brands based on comparing attributes. Because of these factors, manufacturers and value chains have more options to stand out from the competition, target markets, and adjust to local conditions while operating under a global marketing strategy (Grunert, 2005).

Both from the public and private sectors' points of view, the growth of the agri-food business depends critically on knowledge of consumer value preferences (González et al., 2011; Gao et al., 2011; Mowat and Collins, 2000; Skreli and Imami, 2012). As to Grunert (2005), the consumer value of a product is determined by the total advantages that the customer perceives they will gain after using it. While it has been suggested that consumers also consider attributes like food safety (Badar et al., 2015; Sun et al., 2012; Ngigi et al., 2011), health benefits (Moser et al., 2011; Ngigi et al., 2011), and other traits like freshness (Kamga and Akyeampong, 2013; Rani et al., 2018), taste (Frank et al., 2001; Rani et al., 2018), nutritional (Frank et al., 2001; Rani et al., 2018) size (Chiang et al., 2018), and color (Chiang et al., 2018; Frank et al., 2001). These attributes form an integral part of the evaluative process consumer's encounter before purchase decisions are reached. However, these attributes are divided into intrinsic and extrinsic categories (Chiang et al., 2018; Moser et al., 2011).

Intrinsic Attributes: Intrinsic qualities are mostly related to a product's physical attributes or configuration and are difficult to alter without altering the product's essence (Badar et al., 2015; Sun et al., 2012). Jiménez-Guerrero et al. (2012) examine how intrinsic vs extrinsic factors influence consumers' purchase

decisions. The writers concluded that the most crucial feature for customers is an inherent quality (freshness). Customers benefit from veggies' freshness and color (Rani et al., 2018). According to Frank et al. (2001), color influenced customers' purchases approximately three times more than retail price. As a result, they disclosed that four of the six unique customer groups found using cluster analysis preferred green peppers. In contrast, one section, one part preferred brown, while another preferred yellow (Frank et al., 2001). In addition, intrinsic is divided into search and experience aspects (Moser et al., 2011).

Search Attributes: Search attributes denote the identification of goods by evaluating relevant attribute information before purchase, such as price dimension, size, and color (Chiang et al., 2018; Moser et al., 2011). A study conducted in Belgium by Ragaert et al. (2004) Concluded that search attributes emerge in terms of importance during the purchasing stage. The authors point out that experience attributes gain importance after consuming the product. Writh et al. (2011) claimed that search attributes such as size, color, and variety are important factors in determining consumers' purchase intentions.

Experience Attributes: However, experience qualities include needed details on attributes like flavor, aroma, and ripeness that can only be discovered after consumption (Badar et al., 2015; Frank et al., 2001; Moser et al., 2011; Rani et al., 2018). Kapoor (2015) stated customers in terms of value sensory qualities, including flavor and aroma.

Extrinsic Attributes: Extrinsic attributes are those related to the product but not included in the physical product itself; they are further divided into credential attributes and marketing attributes. Extrinsic attributes include brand, price, country of origin, warranties, and services (Badar et al., 2015; Sun et al., 2012).

Credential Attributes: Credential attributes are relevant information attributes like safety that are difficult to determine even after consumption (Badar et al., 2015; Moser et al., 2011; Ngigi et al., 2011; Poole et al., 2007). Regarding purchasing decisions, Kapoor (2015) proposed that buyers prioritized credibility over search and experience qualities.

Marketing Attributes: Price, packing, and certification are marketing attributes (Badar et al., 2015; Moser et al., 2011). According to Kapoor (2015), customer preferences for various market features show that, in terms of significance, the preferred attributes for vegetables are the availability of high-quality items with options and market convenience. The author disclosed that while choosing a vegetable store, market convenience should be considered along with the freshness and quality of the items. Price and aesthetic appeal were the two most significant elements influencing a consumer's choice of fruits and vegetables.

Willingness to Pay: Numerous factors impact consumers' perceptions of fruit and vegetable consumption quality. Moser et al. (2011) found that private factors like eating quality or personal health influence consumers' decisions to purchase/WTP for fresh fruit and vegetables. After examining regional variations, it was concluded that only health-related factors are valued globally, with consumers placing varying degrees of weight on other traits. According to Yaseen et al. (2016), consumers are prepared to pay notably varying price premiums for mango quality features.

Socio-demographic Factors

Demographic characteristics significantly shape consumer buying intentions. Frank et al. (2001) found that several key aspects influence customer choices, including attitude, equal conduct, and social and economic background. Kpodo et al. (2015) and Bulsara and Trivedi (2016) argued that sociodemographic variables, including age, sex, income, education, and knowledge, also impact the buyer's decision to buy fruits and vegetables through various channels. Different social and ethnic groups have different attitudes about vegetables. It was shown that customers' willingness to pay for graded and packaged goods was significantly influenced by their family income and level of education (Kapoor, 2015). Furthermore, Ngigi et al. (2011) proposed that the mean willingness to pay more for food safety, quality, and associated concerns is higher in the higher-income groups

Unfortunately, Pakistan has deficient per capita vegetable consumption; individuals in higher income brackets only consume significantly more than the calculated national average, while most people live in rural areas, and a sizable portion of the poorer urban populations consume very little (Baloch et al., 2014). However, Adil et al. (2012) contended that according to consumers' favorable preferences, vegetable intake has demonstrated a growing tendency over time. Their study further pointed out that Pakistan is now experiencing scarcity in onion production due to the recent change in fruit and vegetable consumption patterns. In recent years, to satisfy consumer demand, the nation has had to import onions from India.

However, various studies have been previously conducted on fruit and vegetable consumption patterns in Pakistan (Adil et al., 2012; Badar et al., 2015; Baloch et al., 2014; Rani et al., 2018), but no study was found related specifically to consumers' preference for onion quality attributes. Consequently, little is known about the extent of consumers' preference for onions in the country. This current study investigates how the value preference of onion and consumer value can help to better address the overarching issues relating to value chain enhancement in Pakistan.

The specific objectives of the study are to evaluate the perceived value of onions among Pakistani consumers, identify the consumer segments to which these attributes apply, and understand how customer preferences influence the production of onions in Pakistan. Additionally, the study aims to explore ways to enhance the value chain in onion production based on these insights.

METHODOLOGY

Before conducting the intercept survey, the questionnaire underwent pre-testing. A survey of 273 consumers was conducted in the chosen cities. Face-to-face interviews were conducted with randomly selected customers from various retail outlets, such as supermarkets, wholesale markets, specialized shops, street vendors, and stallholders. Of the 273 consumers surveyed, 100 were from Karachi, 91 from Lahore, and 73 from Faisalabad. After carefully reviewing each completed questionnaire, those incomplete or incorrectly filled out were eliminated.

IBM SPSS Statistics 22 was utilized for data analysis. Fundamental data on onion consumers' consumption and purchase patterns were obtained using descriptive statistics, including cross-tabulations, frequency distributions, and percentages. A hierarchical clustering method was used to identify customer groupings using Ward's Method with Squared Euclidean Distance (Ares et al., 2008; Kennedy et al., 2008; Giunchi et al., 2008; Xuan. 2009). A cluster analysis was performed on the 19 onion attributes because it uses the analysis of variance to look at the distance between clusters; this approach is usually regarded as efficient. The scale appears to have been internally consistent with a Cronbach's Alpha of 0.7 for the 19 selected attributes. The dendrogram and agglomeration schedule determined the correct number of clusters (Kennedy et al., 2008). A comparison of clusters was conducted to find significant variations in the respondents' consumption and purchasing preferences, overall preferences for onion attributes, and socioeconomic factors. The

ANOVA, cross-tabulation, Kruskal-Wallis test, and post-hoc testing using Fisher's Least Significance Difference (LSD) were performed for this purpose (Macharia et al., 2013; Alamanos et al., 2013).

RESULTS AND DISCUSSION

Most survey respondents in Pakistan had the following buying habits: 17.8% were between the ages of 31 and 48 (Table 1), accounting for 31.1 percent of the income group earning between 50 and 75 thousand rupees. Channa (2013) and Badar (2008) reported the same findings: male members of the family usually carry out fruit shopping, and females seldom go out for the same purpose in several South Asian countries. Regarding marital status, 63.7 percent had a family size; most respondents were 5-6 members.

Most of the respondents had attained the education level of graduation and post-graduation, as represented by more than half of the respondents. The study conducted in three of Pakistan's largest cities may explain the respondents' high level of education.

Table 1. Demographic status of respondents (percentage).

Characteristics	Category	Percent
Gender	Male	71.8
	Female	28.2
Age (years)	Less than 20	9.9
	21-30	17.9
	31-40	29.3
	41-50	14.3
	51-60	27.1
	Above 60	1.5
Family Size (no).	1-2	21.2
	3-4	27
	4-5	24.2
	5-6	27.6
Marital status	Single	35.2
	Married	63.7
	Others	1
Education	No education	12.5
	Primary[1]	2.9
	Secondary[2]	4.4
	Intermediate[3]	17.6
	Graduate	28.2
	Post graduate	34.4
Occupation	Government servant	15.4
	Private employee	14.7
	Businessman	24.5
	Retired Person	2.6
	Student	16.7
	House wife	13.6
	others	12.5
Family Income (PKR/month)	Upto 25,000[4]	13.9
	25,0001-50,000	22.7
	50,001-75,000	31.9
	75,001-100,000	28.6
	More than 100,000	3.7

The survey reveals that most onion consumers prefer it in their diet and consider it good for health (Table 2). They prefer to consume onion daily and consider lunch the best time for consumption. This trend was present among all the three selected cities. Consumers prefer to consume onion in its fresh form, most preferably due to its taste and good health status. The lowest preferences were in fully cooked salad, partially cooked, and dry forms. It has been revealed that a consumer consumes nearly 10-20 grams of onion per dish and meal individually.

In Pakistan, people eat onions more frequently in the summer. Around 71.8 percent of respondents consume onion daily, while about 32.3 percent consume it thrice a week. The level of consumption was measured by analyzing the quantity of onion each consumer consumes per dish/meal. Most consumers were identified to consume 10–20 grams of onion in a dish per meal per day. Most of the respondents tend to purchase 5 kg or more than 5 kg usually. In another scenario of buying preferences, about 51.7 percent of consumers tend to buy 40 kg of onion in the early season, up to 39 percent about 20 kg in mid. In comparison, 28.7 percent tend to buy about 60 kg in the out or late season. When the prices are less than average, 71 percent of the respondents reported buying up to 5 kg of onion with an average expenditure of 250-300 rupees. Most respondents preferred to buy onion in fresh form, 68 percent, followed by sauce, 22.4 percent in salad, and 5.2 percent as the most preferred form to buy onion.

Onions are sold by contemporary and traditional sellers in Pakistan, including supermarkets and specialized stores, street sellers, town shopkeepers, and wholesale markets. 57.3 percent of respondents, however, said they preferred to shop at traditional stores. Respondents' preference for contemporary retailers/supermarkets was 23.7%, owing to reasonable and fixed prices, freedom to choose onion bulbs, and high quality. According to these respondents, superstores are primarily associated with the upper class and are associated with higher costs and lower quality than conventional sellers. The findings indicate that, like other developing nations, Pakistan's retail industry is gradually changing due to the rise of modern retailers, including mega markets, superstores, and specialized shops.

A hierarchical cluster analysis identified consumer groups based on their preferences for 19 distinct onion qualities. The study mainly depended on the views of the researchers because there was no trustworthy technique available, making it difficult to calculate the appropriate number of clusters (Hair et al., 2006; Roy, 2010). Using a three-cluster solution was found to be the best method to represent Pakistan's onion-consuming segments by using an agglomeration scheduling dendrogram.

The results of the ANOVA and LSD post hoc test findings used the mean separation test, and three clusters were shown to be substantially distinct from one another across all quality parameters, including price. Given the circumstances of emerging nations, this is acceptable (Table 4). The Kruskal-Wallis test shows additional statistically significant variations in consumption, buying, and social economic preferences. Regarding onion consumption, purchase volumes, and store preferences, the respondents' socioeconomic characteristics in the three clusters varied significantly (Table 5). The age, education, marital status, employment, and income level of the three clusters vary substantially, but not just in terms of gender (Tables 5 and 6). This was predicated on people of all genders and family sizes, such as onions, regardless of their preference. These results are consistent with Sabber et al. (2008), who documented non-significant variations in fruit and vegetable intake behavior based on gender. The three clusters were called "Onion Lovers" (Cluster One), "Value Seekers" (Cluster Two), and "Safety Conscious" (Cluster Three) based on their preferences for nineteen onion attributes. Similar labeling approaches were also employed in related investigations by Adhikari et al. (2012), Gunden and Thomas (2012), Alamanos et al. (2013), and Macharia et al. (2013).

[1] Equivalent to 5th grade
[2] Equivalent to 10th grade
[3] Equivalent to 12th grade
[4] Pakistani Rupee (PKR)

Table 2. Preferences of Onion consumption.

Consumption Preferences	Categories	Percent
Extent of likeliness	Not at all	15.6
	very little	25.3
	Somewhat	28.2
	to a great extent	30.9
Reason of likeliness	Taste	31.4
	Good for health	42.6
	Easily available	24.3
	Others	1.7
Frequency of	Daily	71.8
consumption	Twice a week	4
	Thrice a week	32.3
	Fortnightly	1.8
Preferred	Breakfast	4
consumption time	Lunch	90.5
	Evening	1.8
	Dinner	3.7
Preferred	Fully cooked	49
consumption form	Partially cooked	3.1
	Fresh	22.2
	Dry	18.1
	Fast food	1.3
	Salad	5
	Others	1.3
Consumption	10-20g	55.8
quantity	21-25g	32.3
(grams/day)	26-35g	10.5
	Above 35g	1.4

The three clusters exhibited the following profiles based on socioeconomic traits, consumption and purchasing preferences, and attribute preferences.

Onion Lovers (Cluster One)

When purchasing onions, consumers in this cluster were more interested in ingesting onions and gave just a few extrinsic and intrinsic factors consideration. Despite the other qualities, their primary reason for purchasing onions seems to be quality factors, including look, freshness, and flavor. Because 51.6 percent of the respondents fell into this category, it was termed "onion lovers." Onion lovers had considerably lower mean scores for all primary qualities than the other two groupings. Every search attribute was significant in this cluster. Taste and shelf life were the most highly regarded experience qualities. The cluster placed less emphasis on attributes linked to safety; this might be due to consumers' lack of awareness of the significance of food safety for their health. The cluster placed less emphasis on traits linked to safety; this might be due to consumers' lack of awareness of the health consequences of food safety concerns, which are frequent in developing countries and influence some customers' preferences (Table 4).

Even though most of the customers in this cluster were light eaters, they nonetheless consumed 10–20 grams of onion in each dish during meals. Within this cluster, the frequency of onion eating was greatest. Most of the responders in this cluster enjoy purchasing onions from street sellers, spending about one hundred rupees a week on them (Table 5). Across all age categories, males make up most of the consumers in this cluster, and most have sizeable families. The cluster included every economic category and was educationally diverse, with individuals spanning all income levels (Table 6).

Table 3. Purchase preferences of Onion.

Purchase preferences	Categories	Percent
Frequency of	Everyday	32.6
Purchase	twice a week	24.1
	fortnightly	40.6
	Others	2.7
Quantity of	Less than 1kg	6.2
purchase	I kg,	11.1
(kg/shopping)	5 kg	49.5
	more than 5kg	33.2
Weekly	100	32.3
expenditures (PKR)	200	3.7
	250-300	36.7
	Above 300	27.3
Preferred retailers	Street vendors	57.3
	Town small holder/. Shop	5.7
	Model Bazar weekly markets	7.4
	Whole sale market	5.9
	Super market/ super store	23.7

Value Seekers (Cluster Two)

This cluster, called value seekers, included 22.7 percent of the respondents who considered all relevant features while purchasing onion. Except for the variety of damage, free, shelf life, pesticide-free, cleanliness, pricing, and packaging, the cluster notably varied from onion lovers in all aspects above. Look for fresh onions free of damage inside the cluster of search attributes. Since this cluster of customers is value-seeking, taste is the most essential feature. Safety and marketing-related factors, such as cleanliness and packaging, were also crucial to this consumer base (Table 4).

Overall, the responders in this cluster who buy the most onions indicate customers who spend around 250 rupees a week on onions. They explain the most significant percentage of consumers who purchase onions from modern retailers (Table 5). Like other clusters, value seekers are mainly educated men from middle-class to upper-class backgrounds (Table 6).

Safety Conscious (Cluster Three)

According to respondents' preferences based on higher mean attribute ratings for safety-related concerns, consumers who were safety conscious made up 25.6% of the sample. This group seems to be concerned about their health. Consumer's prioritized search attributes within this cluster, such as onion size, freshness, and damage-free status. They also valued safety-related attributes like shelf life and odor. Price, retailer cleanliness, and availability of the onion information that may indicate consumers' inclination to learn more about safety were deemed the most significant marketing-related attributes (Table 4). The 75.7 percent of customers concerned about safety said they would purchase onions from regular retail stores instead. The weekly expenditure on onion purchases in this cluster was 300 rupees, with around 90% of the respondents purchasing more than 5 kg of onions (Table 5). Consumers in this cluster have big families, with six to eight individuals, and the members' educational levels are low to medium. Most responders had medium-sized incomes, between 50,000 and 75,000 Pakistani rupees (Table 6).

Table 4. Cluster Comparison Based on Onion Quality Attributes – ANOVA.

Category	Attribute Type	Attribute	Cluster 1	Cluster 2	Cluster 3		
			Onion lovers (n=141)	Value seekers (n=62)	Safety Conscious (n=70)	F- Value	p-Value
INTRINSIC	Search	Shape	1.72[a]	3.75[b]	3.76[c]	21.623	0.00**
		Large size	2.45[a]	3.70[b]	4.19[c]	8.204	0.00**
		Freshness	3.36[a]	4.05[b]	4.16[b]	7.237	0.001*
		Variety	3.27[a]	2.37[a]	1.70[b]	3.582	0.00**
		Damaged free	3.90[a]	4.1[b]	4.39[b]	9.315	0.029*
		Blemished free	2.81[a]	3.96[b]	4.01[c]	2.526	0.00**
	Experience	Sprouted Free	3.36[a]	3.96[b]	3.98[b]	53.110	0.082[NS]
		Ease of cutting	2.27[a]	3.17[b]	4.13[b]	7.091	0.00**
		Taste	3.36[a]	4.20[b]	4.10[c]	13.067	0.001*
		Odor	2.45[a]	3.61[b]	4.88[b]	93.544	0.00**
		Shelf life	3.36[a]	3.63[a]	4.91[b]	59.709	0.00**
	Safety	Pesticide Free	3.18[a]	3.8[a]	4.89[c]	176.167	0.00**
		Origin	2.09[a]	2.92[b]	4.92[b]	73.422	0.00**
		Cleanliness	2.63[a]	2.80[a]	4.95[b]	41.801	0.00**
EXTRINSIC	Marketing	Price	3.72[a]	4.03[a]	4.92[c]	61.647	0.00**
		Retailer	3.36[a]	3.81[b]	4.91[c]	133.597	0.00**
		Cleanliness, Information	2.81[a]	3.42[b]	4.94[b]	81.327	0.00**
		Packaging	2.81[a]	3.51[a]	4.95[c]	85.759	0.00**
		Certifications	2.82[a]	3.47[b]	4.94	155.813	0.00**

Note: Alphabets in superscript indicate results of Post-Hoc Tests (Fisher's least significance difference LSD test). The same letters in each column in a row indicate that clusters against that specific attribute are not significantly different at α=0.05, Cronbach's alpha= 0.7, ** highly significant (α≤ 0.01), * Significant (α≤ 0.05), [NS] Non-Significant.

Table 5. Cluster Comparison- Consumption and Purchase Preferences.

Preference	Category	Cluster 1	Cluster 2	Cluster 3	Mean Rank	Kruskal Wallis Test	Asymp. Sig.
		Onion lovers	Value seekers	Safety Conscious			
Preferred time of consumption	Breakfast	4.9	0	5.7	137.99[a]	17.855	0.007[NS]
	Lunch	88.0	100.0	87.1	135.00[b] 136.74[c]		
	Evening	0.7	0.0	5.7			
	Dinner	6.3	0.0	1.4			
	Fully cooked	7.6	22.3	10.6	136.51[a]	72.69	0.007*
	Partially cooked	4.3	3.6	2.0	145.79[b]		
Preferred consumption form	Fresh	42.5	25.5	30.9	130.29[c]		
	Dry	9.9	1.6	25.4			
	Fast food	11.9	27.0	1.6			
	Salad	18.2	20.0	29.5			
	Others	5.6	0.0	0.0			
Consumption quantity (grams/day)	10-20g	71.1	0.0	0.0	94.38[a]	307.2	0.000**
	21-25g	13.4	100	4.3	149.0[b]		
	26-35g	0.7	0.0	5.7	212.99[c]		
	Above 35g	14.8	0.0	81.4			
Purchasing quantity (kg)	Less than 1kg	10.6	0.0	2.9	113.71[a]	172.582	0.000**
	I kg	20.4	0.0	2.9	111.84[b] 206.16[c]		
	5 kg	42.3	98.4	4.3			
	more than 5kg	26.8	1.6	90.0			
Weekly expenditure (PKR)	100	54.2	1.6	12.9	102.76[a]	213.997	0.000**
	200	0.7	0.0	1.4	141.87[b]		
	250-300	30.3	98.4	7.1	202.21[c]		
	Above 300	14.8	0.0	78.6			
Preferred retailers	Traditional[1]	83.5	72.6	87.2	124.21[a]	61.08	0.000**
	Modern[2]	16.5	27.3	12.8	126.63[b] 171.96[c]		

[1]Traditional retailers refer to street vendors and temporary and permanent stallholders. [2]Modern retailers include specialty shops, modern stores and supermarkets with storage facilities. [a]Onion Lovers, [b]Safety Conscious, [c]Value Seekers,** highly significant (α≤ 0.01), * Significant (α≤ 0.05), [NS] Non-Significant.

Table 6. Cluster Comparison- Socio-Economic Characteristics.

Characteristics	Category	Cluster 1 Onion lovers	Cluster 2 Value seekers	Cluster 3 Safety Conscious	Mean Rank	Kruskal Wallis Test	Asymp. Sig.
Gender	Male	67.6	73.8	78.6	142.92[a]	2.925	0.232NS
	Female	32.4	26.2	21.4	134.30[b]		
					129.75[c]		
Age (years)	Less than 20	14.8	3.3	5.7	123.64[a]	20.159	0.00**
	21-30	25.4	6.6	12.9	127.45[b]		
	31-40	18.3	70.5	15.7	172.43[c]		
	41-50	16.9	9.8	15.7			
	51-60	24.6	6.6	12.9			
	Above 60	0	70.5	50.0			
Family Size (no).	1-2	12.0	21.3	35.7	160.72[a]	28.672	0.00**
	3-4	18.3	45.9	24.3	113.29[b]		
	4-5	29.6	14.8	21.4	109.51[c]		
	5-6	40.1	18.0	21.4			
Marital status	Single	45.1	19.7	28.6	124.52[a]	11.673	0.003*
	Married	52.8	80.3	71.4	156.94[b]		
	Others	1.4	0.0	0.0	144.93[c]		
Education	No education	22.5	0.0	0.0	108.87[a]	73.371	0.00**
	Primary[1]	0.7	1.6	8.6	208.38[b]		
	Secondary[2]	7.7	0.0	1.4	131.87[c]		
	Intermediate[3]	26.1	1.6	14.3			
	Graduate[4]	19.7	14.8	57.1			
	Post graduate[5]	23.2	82.0	15.7			
Occupation	Government servant	16.9	9.8	17.1	144.70[a]	10.629	0.005*
					108.43[b]		
	Private employee	19.0	6.6	12.9	146.28[c]		
	Businessman	7.7	77.0	12.9			
	Retired Person	1.4	3.3	4.3			
	Student	26.8	0.0	11.4			
	House wife	6.3	1.6	38.6			
	others	21.8	1.6	2.9			
Family Income (PKR/month)[6]	Upto 25,000	18.3	8.2	10.0	115.99[a]	35.121	0.00**
	25,0001-50,000	33.8	8.2	12.9	185.13[b]		
	50,001-75,000	23.9	14.8	60.0	137.69[c]		
	75,001-100,000	21.8	63.9	11.4			
	More than 100,000	2.1	4.9	5.7			

[1]Eequivalent to 5th grade, [2] Equivalent to 10th grade, [3]Equivalent to 12th grade, [4]Equivalent to 14th grade, [5] More than 14th grade, [6] Pakistani Rupee, [a]Onion Lovers, [b]Safety Conscious, [c]Value Seekers,** highly significant (α≤ 0.01), * Significant (α≤ 0.05), [NS] Non-Significant.

CONCLUSIONS AND IMPLICATIONS

Pakistan's consumer value preferences for fresh fruits and vegetables must be better understood, partly due to the study's lack of empirical evidence. The study's conclusions support Pakistan's robust onion demand and the significance of extrinsic factors like safety and market concerns, as well as intrinsic quality traits like experience and search. The cluster analysis identifies three customer groups: value seekers, safety aware, and onion lovers. These three groupings differed from one another in terms of socioeconomic traits, purchasing habits, and consumption patterns. Those who loved onions, the most significant cluster, were more concerned about eating onions. Thus, they looked at fewer attributes (search and experience, in particular) with less significance and quality attributes. Concerns regarding food safety were not a major worry for customers in this cluster. Consumers who care about safety regarded safety-related traits; they were more health-conscious and represented the second largest cluster. Value seekers, who made up the smallest cluster, were concerned about safety and features relevant to the market and the search and experience aspects other groups found significant.

Interestingly, the most significant cluster, the onion lovers, had much lower mean scores for all essential characteristics. All search parameters had significance in this cluster. Taste and shelf life were considered the most valuable experience criteria, whereas safety-related attributes were given less weight. The primary retail format was that of street sellers. Customers desire onions that taste fresh and are convenient to buy, store, and prepare, according to Mintel (2016). Consumers become more demanding that essential tastes be delivered with an ideal shelf life as time passes, posing a problematic issue for producers.

Ultimately, there is a growing tendency toward food safety as more and more quality-conscious customers want characteristics like sanitation, branding, and quality. Therefore, it is possible to provide customers with genuine value while increasing profitability by focusing on these traits. The primary retail format was that of street sellers. Customers desire onions that taste fresh and are convenient to buy, store, and prepare, according to Mintel (2016). As time passes, consumers demand that essential tastes be delivered with an ideal shelf life, posing a problematic issue for producers.

Acknowledgment

All authors' contributions to this study are gratefully acknowledged. Muhammad Talha Azeem was responsible for conceptualization, data acquisition, precise analysis, methodology design, and manuscript writing. M. Tayab Tahir, Sadia Ilyas, and

Shahida Perveen contributed substantially to the data compilation and discussion of results. While Hammad Badar supervised and reviewed, all authors examined and authorized the final manuscript.

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