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Unravelling Consumer Preferences and Segments: Implications for Pakistan's Mandarin Industry Development through Market Relocation

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Abstract: Rising food security and safety concerns in developing countries have highlighted the importance of establishing efficient and dependable food distribution systems, which necessitate a thorough understanding of consumers and their needs. Thus, this study unravels consumer segments, their preferences, and socio-economic composition so that stakeholders in Pakistan's mandarin (locally known as Kinnow) industry can improve their practices and supply consumers' desired quality. Primary data were collected through an intercept survey of 540 mandarin consumers in four major cities of Pakistan. Collected data were subjected to hierarchical cluster analysis, Mean ANOVA, and Post-Hoc tests for consumer segmentation and profiling. The study classified consumers into three groups: 'value seekers' (45.74%), 'Kinnow lovers' (26.85%), and 'perfectionists' (27.41%) related to their choice of various attributes of fresh mandarin fruits. The three segments significantly differed in their preferences for quality attributes, consumption and purchase preferences, and socio-economic composition. The study highlights the implications of understanding consumer preferences and market segmentation for private and public stakeholders in the mandarin industry. The existence of consumer segments with distinct quality preferences urges value chain actors to upgrade and align their practices with consumer requirements. The study findings provide insights for deciding relevant crop/cultivar mix with due consideration to geographically distinct consumer segments and land suitability. The findings may also be useful to relevant public-sector institutions in developing policies and programs for the development of the horticultural industries in Pakistan.

Keywords: consumption preferences; agri-food industry; value chain; segmentation; consumer value; mandarin; land suitability

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1. Introduction

Mapping consumer preferences for a particular set of products and then basing the production thereafter is thought to yield profitable outcomes for the farm businesses [1]. Such outcomes are possibly supplemented through reduced damages to the produce (and increased chances of preservation of colour, taste, size, and texture being closer to high-demand consumer segments) and less amount/time of transportation due to the vicinity of potential markets. Deciding a production spot in response to a potentially high demand spot (segment) is synonymous with many types of autonomous decision-making ventures, which are established purely based on their clear preference for many consumer goods such as garments, cosmetics, beauty salons, shoe brands, and so on. This idea can be very well suited to primary production, such as in the mandarin industry, which can highly

benefit if citrus production and subsequent processing take place where their demand is high and consumers' preferences are somewhat known [2–4].

The value chain's activities are all thought to be driven by consumers. All participants in the value chain in contemporary food systems are guided by consumer preferences for quality. Producing high-quality products is greatly influenced by farm-level operations. Land management is a significant determining factor for these operations. Good production practices, such as effective land management, are one of the necessary conditions to promote the growth of agri-food businesses [5]. When consumers receive the desired quality attributes from a product, they increase their demand for that commodity, which encourages growers to expand their holdings of land and capitalize on their existing land management practices [5].

Mandarin (Citrus reticulata), locally known as 'Kinnow', is the leading Citrus cultivar grown and consumed in Pakistan [6,7]. It is the most popular winter fruit, consumed widely in fresh and processed forms such as juices, squashes, jams, etc. Consumers like Kinnows because of its taste and health benefits. It is one of the richest sources of vitamin C and contains sugar and minerals such as calcium and magnesium [8]. Pakistan also exports Kinnows to many countries such as Afghanistan, the United Arab Emirates, Saudi Arabia, Iraq, Indonesia, the Russian Federation, and the European Union, including the UK, Germany, Italy, Belgium, and the Netherlands [9].

In Pakistan, Kinnow production is concentrated mainly in the Punjab province due to climatic suitability [10]. The harvesting of Kinnows starts in November, and the peak season of its availability in the market is from January to March. In terms of industry structure, the fruit value chains, including that for Kinnows, are generally long in Pakistan due to the involvement of several intermediaries between growers and consumers [11,12]. The marketing of Kinnows starts with pre-harvest contractors who purchase standing crops in orchards at the flowering stage after estimating the possible returns. Other value chain actors such as commission agents, wholesalers, retailers, and exporters then facilitate the flow of Kinnows toward consumers in both domestic and export markets [13].

Over time, the production of Kinnows has significantly increased due to rising government attention and consumer demand. In 2021, citrus production including Kinnows in Pakistan reached 2.6 million tonnes and Kinnow exports were 0.36 million tonnes [14]. In the winter season, it is widely available in the domestic market in both traditional and modern retail outlets. Compared to other fruits and citrus cultivars, the consumers' liking for Kinnows is higher due to its taste and nutritional benefits. However, the industry's performance is not yet up to its fullest measure because of several production, harvesting, and marketing inefficiencies along the value chains. More recently, inadequate knowledge of consumer preferences is also described as a significant contributing factor to the suboptimal performance of horticultural industries, including Kinnows, in Pakistan [7,15]. Owing to this, consumers do not receive their desired value, which negatively impacts the profitability of stakeholders, particularly growers [11,13].

The Kinnow industry in Pakistan has sizeable growth potential in the local market due to an increase in population and changing consumer preferences toward nutritious and healthy diets such as fruits and vegetables. Since the majority of actors including growers, traders, and retailers are linked with the local value chains, growth in the industry can significantly contribute to improving their livelihood and the overall socio-economic development of the country. Recently, the government has also started paying attention to the development of horticulture crops including Kinnows in government plans and policies. In Pakistan, agriculture policy contains plans and measures for horticulture crops including mandarin; horticultural policy is not separately framed. Various public-sector institutions such as the Pakistan Horticulture Development and Export Company (PHDEC), Citrus Research Institute, Sargodha, and the Trade Development Authority of Pakistan (TDAP) are providing the services needed to improve the performance of the industry.

Rapid changes in consumer preferences and dietary patterns both in developed and developing countries have highlighted the need to explore the consumption and buying

preferences of consumers [16,17]. That is why it is now believed that the performance of agri-food value chains cannot be optimised without knowing what consumers value in products delivered to them. With an inadequate understanding of consumer preferences, value chain participants are unable to satisfy consumers, which negatively impacts their profits and the industry's development as a whole. Therefore, consumer preferences for agri-food products have been widely explored in developed countries [18]. However, published literature on consumer preferences for agri-food products is rare in developing countries because the existing research has focused mainly on production aspects, while consumer research has remained neglected [19,20].

Pakistan is a typical example of a country with a great dearth of published material on consumer preferences for agri-food products, let alone fresh fruits. Recently, the government's emphasis on the development of agri-food industries has also grown due to the realization that future growth in the agriculture sector relies heavily on the diversification and promotion of value-added opportunities, particularly in horticultural crops [13]. All these necessitate finding out what sort of attributes consumers prefer in fresh mandarin fruits so that appropriate consumer-driven value chain strategies can be suggested for the development of fruit industries. Thus, this study was planned to fill this knowledge gap and aimed at determining consumer preferences and segments and their implications for the development of the mandarin (Kinnow) industry in Pakistan.

2. Literature Review

Modern-day marketing theory describes consumers as drivers of all value chain activities [21]. The commonly held belief is that businesses operating along the value chains can earn profits only by delivering what consumers desire [18]. Therefore, the value consumers place on various product attributes such as freshness, taste, labelling, and packing plays a crucial role in framing appropriate marketing strategies. According to Paswan and Guzmán [22], consumers prefer buying those goods and services that deliver value to them. In the literature, the term value refers to the net benefit or utility consumers derive from consuming a product [23].

The value preferences of consumers have expanded over time due to globalization, urbanization, rising incomes, and lifestyle changes [24]. Growing awareness about products and consumer rights has further contributed to this change. Consumers' sensitivities in the case of food products are relatively higher due to the rising food safety concerns. That is why consumers want better quality, safe, healthy, and nutritious food [18,25]. Several factors influence consumers' value preferences, including socio-economic, psychological, and environmental factors [26,27]. However, product quality attributes play a critical role in shaping consumer value preferences [28,29].

Previous studies, such as those by Huang et al. [30], Rahman et al. [27], and Di Vita et al. [8], have identified numerous quality attributes for fruits, which are broadly categorized into intrinsic and extrinsic attributes. In the case of fresh produce, as pointed out by Cantin and Gracia [31], both intrinsic and extrinsic attributes influence consumers when buying fresh produce. Intrinsic attributes pertain to the physical properties and composition of a product and cannot be altered easily by changing its genetic makeup [32]. Intrinsic attributes are further categorized into search and experience attributes. Search attributes such as size, freshness, and colour help buyers in attracting and examining products before purchasing [29,33]. A consumer experiences or recognizes attributes such as taste and ripeness while consuming the produce [34].

On the contrary, extrinsic attributes do not physically influence the products. Yet, consumers consider them important in their purchase decisions [31,35]. They include marketing and safety attributes. Safety attributes, also termed credence attributes, have implications for well-being and cannot be effortlessly decided without bringing about information costs [36]. Liguori et al. [37] and Rahman et al. [27] also found food safety to be a critical influencing factor in consumer choice.

Marketing attributes have assumed considerable importance and are concerned with sale conditions. They may include price, certifications, retailer conditions, grading, packing, and labelling [38]. In the past, limited studies have explored how consumers' value preferences for fruits and how they are influenced by various intrinsic and extrinsic attributes as well as socio-economic, demographic, and psychological factors. However, these aspects, along with the segmentation of consumers of fresh produce, particularly fruits, are being widely explored across the globe.

All consumers are not alike in their consumption and purchase behaviour due to demographic, geographic, cultural, and individual characteristics Kotler et al. [21] described these differences as crucial for developing appropriate market segmentation strategies. Market segmentation divides the market into distinct groups or segments of consumers who have distinct characteristics, behaviour, and needs [26,28]. While the segments are internally homogeneous, they are different from other segments. Resultantly, as pointed out by Cooil et al. [39], different consumer segments vary in their consumption and purchase behaviour and response to various marketing efforts.

For the development of the modern food distribution system, greater emphasis is placed on the identification of different consumer segments [25,33]. An in-depth understanding of the preferences of consumer segments helps growers align their products with the requirements of specific consumer segments [25]. In the marketing and agribusiness literature, the identification of consumer segmentation has drawn considerable attention from researchers in the recent past. For instance, Gunden and Thomas [25] assessed consumer attitudes toward fresh fruit and vegetables. Based on five attributes, i.e., nutrition value, hygiene, taste, affordable price, and freshness, they identified three distinct groups labelled "young professional", "older-employed", and "oldest-unemployed".

While determining the attitudes and consumption values of consumers of imported fruit in Guangzhou, China, Sun and Collins [40] divided consumers into four groups. Simunaniemi et al. [41] found two segments, "positive" and "indifferent" based on fruit and vegetable-related perceptions in Sweden. Adhikari et al. [42] identified four distinct segments of tomato consumers in Kathmandu: high-value discerning, low-value institutional, price-centric, and low-value rational consumers. They urged the stakeholders to adopt segment-specific strategic measures for the development of values. Macharia et al. [43] derived four heterogeneous segments of vegetable consumers using their value preferences, behaviour, and personal characteristics. They stressed understanding the unique value preferences of these segments because the value chain development process and practices cannot be successful without understanding the differences among them.

Consumer preferences for fresh fruits have not been widely explored, particularly in developing countries. Few studies have focused on citrus, let alone Kinnow (mandarin), among fresh fruits. Poole and Baron [44] explored consumer awareness levels about various citrus quality attributes. Campbell et al. [45] identified three consumer segments as price-sensitive, no-blemish, and no-seed segments based on consumer preferences for seven quality attributes of Satsuma mandarins. Campbell et al. [46]) identified six segments of consumers of mandarin in grocery stores in Birmingham and Montgomery, Alabama, USA. Based on the similarity of preferences, they were labelled as shelf life, convenience, no-handling, price-sensitive, loose fruit, and fuzzy preference segments. Campbell et al. [47] determined the probability of preferring three mandarin types (tangerine, satsuma, and clementine) from the internal quality analysis of paired samples and based on demographic and purchase responses. Gao et al. [2] found freshness, appearance, and flavour as the critical quality attributes of fresh citrus. They also found a significant impact of consumers'

various demographic and behavioural characteristics on their preferences and identified three consumer segments: perfectionist, pro-price, and pro-quality. Muktar et al. [48] analysed consumer preferences for local and imported citrus fruit juice in Nigeria.

3. Methodology

The study used a survey approach to get information from Kinnow consumers. The Kinnow industry significantly contributes to the socioeconomic development of the country by satisfying the nutritional needs of domestic consumers and earning foreign exchange. Numerous value chain actors and market functionaries earn their livelihoods from this industry. Therefore, the knowledge of consumer preferences can significantly contribute to the development of this industry. To this end, the study adopted a mixed methodology approach and conducted focus group discussions and a consumer survey for gathering both qualitative and quantitative data. The details of the methods used for the collection and analysis are elaborated below.

3.1. The Study Area

The study is based on primary data collected through a consumer survey in four major cities in Pakistan—Lahore, Faisalabad, Rawalpindi, and Islamabad. These cities are densely populated, and they consume a significant portion of agricultural produce, including fruits [49].

3.2. Data Collection

Data were collected in two stages. First, two focus group discussions (FGDs) were held to gain insights into consumers' primary consumption and buying preferences. For this purpose, consumers buying Kinnows at different retail outlets were invited to participate in the FGD at a local place. The first FGD comprised eight consumers. They were mostly (62.5%) aged between 30 to 40 years and graduates (87.5%) and belonged to different income groups. In the second FGD, ten consumers participated who were mostly (70%) aged between 40 to 50 years and postgraduates (80%). They had medium to higher levels of monthly family incomes. The feedback gained from the FGDs contributed to designing the survey questionnaire. Mainly, it helped in identifying various search, experience, safety, and marketing-related quality attributes that Pakistani consumers considered important in buying Kinnows.

In the second stage, a consumer survey was conducted first in Faisalabad and then in Lahore, Rawalpindi, and Islamabad, respectively, from March to June 2017. Consumers were intercepted when they had finished buying Kinnows from various retail outlets, including traditional and modern retailers operating in different localities in selected cities. The proportion of consumers interviewed at modern retail outlets was lower (10%) because the market share of these outlets is less than 10% in Pakistan [11,50]. During the survey, 540 consumers of Kinnows were interviewed face-to-face. Of them, 170 each were from Lahore and Faisalabad, and 100 each belonged to Rawalpindi and Islamabad.

For interviews, a questionnaire was developed by scanning relevant literature and considering the feedback from the focus group discussions. The first section of the questionnaire contained questions on Kinnow consumption and buying preferences in Pakistan. The second section was intended to measure the importance consumers attach to 21 Kinnow quality attributes on a five-point scale (where 1 = not at all important and 5 = highly important). These included eight search, seven experience, two safety, and four marketing-related attributes. The last section captured the demographic characteristics of the respondents. Before the field survey, the questionnaire was pretested on 20 consumers, and the needed changes were incorporated. However, they were not included in the final analysis.

3.3. Data Analysis

The study employed both qualitative and quantitative data analysis techniques. First, the qualitative data generated through focus group discussions were analysed using thematic content analysis, which is a widely used technique for extracting important themes or categories from textual data [51]. For this purpose, the audio recordings of the focus group discussion were transcribed verbatim in English and analysed using NVivo, a software developed by QSR International for reducing qualitative data into meaningful themes [52].

The quantitative data generated through consumer surveys were analysed using IBM SPSS 22 software. For this purpose, a code sheet was developed, and the data were transferred to the computer accordingly and examined carefully for possible data entry errors. Descriptive statistics such as averages, percentages, frequency distribution, and cross-tabulation helped in identifying basic patterns in consumption and buying preferences.

Cluster analysis was used to identify various Kinnow consumer segments in terms of their choice of various attributes of fresh mandarin fruit. Cluster analysis is a multivariate analytical technique that divides objects or cases into meaningful groups based on pre-specified attributes. These groupings are internally homogeneous but are different from each other. To identify different segments of Kinnow consumers, hierarchical cluster analysis was performed using Ward's Method with Squared Euclidean Distance [53–55]. The consumer-perceived importance for quality attributes was collected on a five-point Likert scale and used as an input for cluster analysis. Cluster comparisons were performed using mean ANOVA, the Kruskal–Wallis test, and post-hoc tests with Fisher's Least Significance Difference (LSD).

4. Results and Discussion

4.1. Focus Group Discussion Findings

The focus group discussions revealed consumers' liking of Kinnows because of their nutritive value, taste, and juiciness. Most of the participants in both focus groups described its consumption as essential for health due to vitamin C. The majority preferred fresh consumption due to the direct intake of vitamins and fibre, ease of consumption, and cheaper availability. A few participants also preferred Kinnow juice because they found it tasty and refreshing. The focus group participants described their desired quality attributes in Kinnows. They included juiciness, skin thickness, freshness, size, taste, colour, firmness, price, grading and packing, retailer, seed presence, ripeness, ease of peeling, attached stem, retailer cleanliness, freedom from damage and blemishes, and shape.

A majority of the participants expressed their preferences for traditional retailers such as roadside sellers and street vendors due to their easy accessibility, availability of good quality fresh fruit, and relatively lower prices. A few participants also indicated their preference for modern retailers, including supermarkets and superstores. They believed that the quality of fruit sold at these retail outlets was better because of their standardized procedures and practices. The participants also complained about retailers' malpractices such as higher prices, topping, and quality-mixing. The participants desired uniform fruit quality and urged the concerned authorities to stop topping and quality mixing.

4.2. Demographic Profile of Survey Respondents

The study sample predominately comprised male respondents because female buyers in fruit markets are not common in Pakistan. Most of the respondents were aged between 21 and 40 years. More than 62% were either graduates or post-graduates, which can be ascribed to a relatively higher literacy rate in the surveyed cities. More than three-fourths were married, and the families of most of the respondents comprised three to four members. Occupation-wise, the majority were employees, and less than 30% had their own businesses. Most of them reported their monthly family income ranging from Rs.40,000 to Rs.80,000 (Table 1).

Table 1. Demographic profile of survey respondents (percentage).

Characteristic	Category	Percent (n = 540)
Gender	Male	96.9
	Female	3.1
Age (Years)	≤30	39.1
	31–40	45.0
	41–50	12.6
	51–60	2.6
	>60	0.7
Education	No education	1.1
	Primary	10.9
	Secondary	8.9
	Intermediate	17.2
	Graduation	53.5
	Post-graduation	8.3
Marital status	Single	23.1
	Married	76.9
Family size (No.)	1–2	5.0
	3–4	64.1
	5–6	21.5
	>6	9.5
Occupation	Public-sector employees	24.6
	Private-sector employees	44.3
	Businesspeople	29.4
	Retired person	0.9
	Homemakers	0.7
Family Income (PKR/Month)	≤20,000	17.0
	20,001–40,000	17.0
	40,001–60,000	35.4
	60,001–80,000	25.7
	80,001–100,000	3.9
	>100,000	0.9

Notes: ($1 = PKR270).

4.3. Consumption Preferences

The survey results revealed Kinnow as a major winter fruit liked widely by consumers in Pakistan. The majority (58%) liked Kinnows because it is a rich source of vitamin C and contributes to good health. Other reasons for liking included taste (21%), easy availability (11%), and pleasurable experiences (10%). More than three-fourths (nearly 79%) indicated their preferences for fresh consumption of Kinnow whereas only 21% indicated their preference for processed fruit. This highlights the presence of a smaller segment for processed fruits. The major reason for a low percentage of respondents willing to use processed fruit is that traditionally, Kinnow fruit has been consumed fresh. There is, in addition, less availability of processed Kinnow fruit and that is mostly in the form of packaged orange juice. Nevertheless, people do prefer fresh fruit for fresh orange juice. Work is in progress to explore various dynamics of such behaviour, though not so

common, to come up with some plausible conclusions. Regarding the level, consumption of 1–2 Kinnows at one time was found to be common, as was reported by more than 73% of the respondents. The study findings revealed that the daily consumption of Kinnow was not common in the surveyed cities. The majority preferred consuming Kinnows either twice (nearly 42%) or once a week (33.0%). More than 44% preferred to consume Kinnows in the afternoon (Table 2). In Pakistani culture, it is common that people prefer to consume Kinnows in the afternoon while sitting in the sunshine. As is also clear from the study findings, very few preferred to consume Kinnows in the morning, evening, or night.

Table 2. Kinnow consumption preferences of consumers in Pakistan (percentage).

Consumption Preferences	Categories	City				Overall
		Lahore	Faisalabad	Rawalpindi	Islamabad	
Reasons	Taste	16.5	28.2	16.0	4.0	17.8
	Health benefits	52.4	45.3	68.0	79.0	58.0
	Easy availability	17.6	9.4	9.0	4.0	10.9
	Pleasure	11.2	11.8	7.0	8.0	10.0
	Eating habit	2.4	5.3	-	5.0	3.3
Form	Fresh	77.6	74.1	74.0	94.0	78.9
	Processed	22.4	25.9	26.0	6.0	21.1
Level	1–2	67.6	74.6	69.0	86.0	73.6
	3–4	31.8	24.2	29.0	13.0	25.3
	≥5	0.6	1.2	2.0	1.0	1.1
Frequency	Daily	20.6	11.2	21.0	12.0	16.1
	Twice a week	34.7	57.1	59.0	11.0	41.9
	Thrice a week	10.6	6.5	3.0	2.0	6.3
	Weekly	32.9	17.6	17.0	75.0	33.0
	Fortnightly	1.2	2.9	-	-	1.2
	Monthly	-	4.7	-	-	1.5
Timing	Morning	14.1	10.6	-	44.0	15.9
	Afternoon	40.6	46.5	57.0	34.0	44.3
	Evening	10.0	4.1	1.0	6.0	5.7
	Night	4.1	0.6	-	-	1.5
	Anytime	31.2	38.2	42.0	16.0	32.6

4.4. Purchase Preferences

The data in Table 3 present the purchase preferences of consumers. The study found that half of the respondents preferred buying Kinnows once a week and nearly 44% a few times a week. Less than four percent preferred daily buying. Generally, Kinnows are sold in dozens in the retail markets of Pakistan except in a few areas of Southern Punjab, where they are traded in kilograms. As shown in Table 3, the majority (78.1%) used to buy 1–2 dozen(s) in one shopping, and those buying 3–4 dozen were relatively less. Regarding weekly expenditure on Kinnows, nearly 32% reported up to Rs.200; 31.1%, Rs.201–500; and 37.2%, more than Rs.500.

Table 3. Kinnow purchase preferences of consumers in Pakistan (percentage).

Buying Preferences	Categories	City				Overall
		Lahore	Faisalabad	Rawalpindi	Islamabad	
Frequency	Daily	1.2	7.1	2.0	2.0	3.4
	Few times a week	46.4	62.9	39	12	43.8
	Weekly	50.6	22.9	59.0	86.0	50.0
	Fortnightly	-	1.8	-	-	0.6
	Monthly	1.8	5.3	-	-	2.2
Purchase quantity (Dozen)	1–2	84.1	67.1	77	88	78.1
	3–4	15.9	27	19	12	19.2
	≥5	0.0	5.9	4.0	0.0	2.6
Weekly expenditure (PKR)	≤200	38.8	5.3	25	71	31.7
	201–500	27.6	27.1	56	19	31.1
	>500	33.6	67.6	19	10	37.2
Preferred retailer	Traditional	95.3	93.5	100	93.0	95.2
	Modern	4.7	6.5	-	7.0	4.8

Modern retailers such as supermarkets and superstores have stepped into the retail markets of Pakistan, and their presence is gradually growing [50]. Nevertheless, traditional retailers such as roadside shops/stallholders and street vendors dominate the retail fruit market. The study findings also reflected the same, as more than 95% preferred traditional retailers such as street vendors and roadside sellers for buying Kinnows due to the relatively lower prices and the availability of fresh fruit. Those who preferred modern retailers stated fruit quality and cleanliness as the main underlying reasons for their preference.

Quality attributes are cues that consumers consider important in making their purchase decisions. Broadly, they are identified as search, experience, food safety, and marketing-related attributes [31,56]. In this study, consumer responses for eight search attributes, including attached stem, unblemished, undamaged, flavour, freshness, large size, and skin colour, were captured. As can be seen from Figure 1a, relatively greater mean attribute scores suggested that consumers preferred to buy undamaged, unblemished fresh Kinnows with good flavour. The experience attributes included in the study were ripeness, seed presence, juiciness, sweet taste, ease of peeling, skin thickness, and firmness. The mean attribute score for juiciness was the highest, followed by ripeness, sweet taste, and firmness (Figure 1b), which indicated that consumers preferred juicy ripened sweat and firm Kinnows.

Recently, consumer sensitivity to food safety has started rising in Pakistan due to awareness and increasing health consciousness. To explore this aspect, the study included two safety attributes—pesticide-free production and cleanliness. Higher mean scores confirmed that consumers also attached importance to food safety attributes. The study also captured consumer responses for four marketing attributes, grading, packaging, retailers' cleanliness, and price, and found retailers' cleanliness and price as the most critical marketing attributes in the purchase consideration of consumers (Figure 1c).

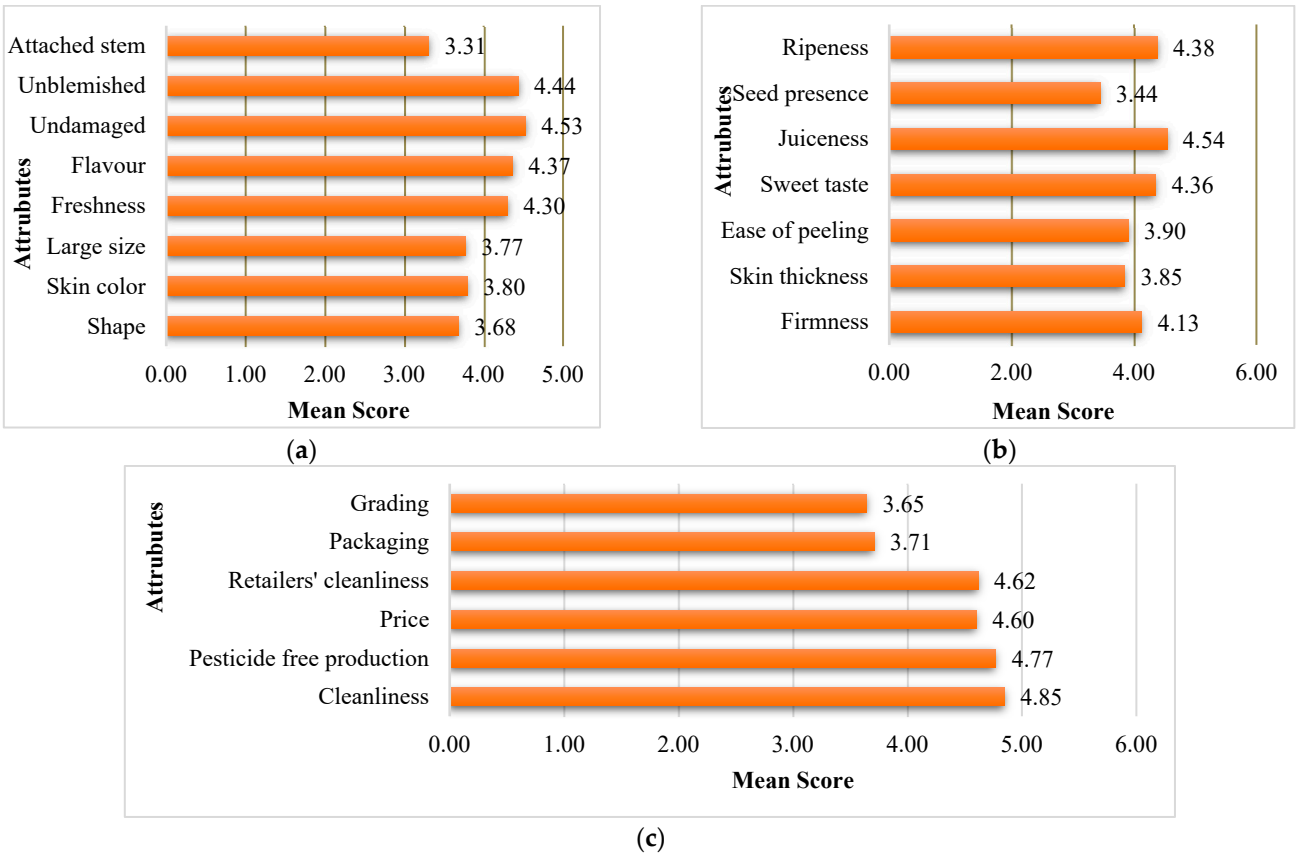

Figure 1. Mean consumer importance rating scores for Kinnow quality attributes. (**a**) Search attributes, (**b**) Experience attributes, (**c**) Safety and marketing attributes (Source: Authors' calculations).

4.5. Consumer Segments

The study identified three consumer segments (clusters) with distinct preferences for the various quality attributes of Kinnows (Table 4). Based on their preferences, the segments were labelled as value seekers (cluster-1), Kinnow lovers (cluster-2), and perfectionists (cluster-3). Cluster comparisons further revealed significant differences in consumption and buying preferences as well as demographic profiles among the three segments.

Table 4. Cluster comparison based on Kinnow attributes—ANOVA.

Attribute Nature	Attribute Type	Attribute	Cluster 1 (n = 247)	Cluster 2 (n = 145)	Cluster 3 (n = 148)	F-Value	*p*-Value
Intrinsic	Search	Shape	4.04 ^{a}	2.59 ^{b}	4.16 ^{a}	239.16	0.00 *
		Skin colour	4.17 ^{a}	2.74 ^{b}	4.20 ^{a}	264.65	0.00 *
		Large size	4.18 ^{a}	2.86 ^{b}	3.99 ^{c}	205.14	0.00 *
		Freshness	4.39 ^{a}	4.33 ^{a}	4.12 ^{b}	12.44	0.00 *
		Flavour	4.40 ^{a}	4.41 ^{a}	4.26 ^{b}	4.39	0.01 *
		Undamaged	4.59 ^{a}	4.34 ^{b}	4.61 ^{a}	10.46	0.00 *
		Unblemished	4.53 ^{a}	4.06 ^{b}	4.64 ^{a}	37.11	0.00 *
		Attached stem	2.85 ^{a}	2.88 ^{a}	4.49 ^{b}	106.96	0.00 *

Table 4. *Cont.*

Attribute Nature	Attribute Type	Attribute	Cluster 1 (n = 247)	Cluster 2 (n = 145)	Cluster 3 (n = 148)	F-Value	*p*-Value
	Experience	Firmness	4.34 [a]	3.67 [b]	4.22 [a]	54.15	0.00 *
		Skin thickness	4.25 [a]	2.87 [b]	4.14 [a]	171.18	0.00 *
		Ease of peeling	4.28 [a]	3.30 [b]	3.86 [c]	89.60	0.00 *
		Sweet taste	4.45 [a]	4.15 [b]	4.40 [a]	13.90	0.00 *
		Juiciness	4.58 [a]	4.54 [a]	4.47 [a]	1.67	0.19
		Seed presence	3.40 [a]	3.12 [b]	3.82 [c]	18.32	0.00 *
		Ripeness	4.45 [a]	4.04 [b]	4.59 [c]	31.41	0.00 *
Extrinsic	Safety	Cleanliness	4.87 [a]	4.73 [b]	4.92 [a]	9.20	0.00 *
		Pesticide-free production	4.74 [a]	4.68 [a]	4.91 [b]	5.82	0.00 *
	Marketing	Price	4.85 [a]	3.95 [b]	4.82 [a]	129.52	0.00 *
		Retailer's cleanliness	4.74 [a]	4.21 [b]	4.81 [a]	43.16	0.00 *
		Packaging	3.34 [a]	3.39 [a]	4.65 [b]	119.96	0.00 *
		Grading	3.28 [a]	3.21 [a]	4.68 [b]	130.04	0.00 *

Note: Superscript [a, b, c] indicates 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 $\alpha = 0.05$, * Significant ($\alpha \leq 0.01$). Source: Authors' calculations.

Cluster-1 emerged as the largest segment comprising 45.74% of respondents. This segment was labelled 'value seekers' because they considered the search, experience, and safety attributes the most important in their purchase decisions. Only a few attributes such as attached stem, seed presence, and packaging and grading did not matter. The importance ratings indicate that value seekers endeavour to get most of their desired attributes in their price range (Table 4). As pointed out by previous authors [12,57,58], such consumers try to get the best value for their money.

Regarding their consumption level, more than two-thirds preferred consuming 1–2 pieces of Kinnows at one time. More than half (58.7%) liked to consume Kinnows a few times a week. Half of the value seekers preferred consuming Kinnows in the afternoon while sitting in the sunshine (Table 5). Most of them preferred buying Kinnows a few times or once a week. In one shopping, the majority preferred buying 1–2 dozen Kinnows. Among value seekers, nearly 40% reported spending more than Rs.500, followed by another 38.4% with weekly expenditures ranging from Rs.201 to Rs.500 (Table 6).

Table 5. Cluster comparison—consumption preferences.

Consumption Preferences	Category	Cluster-1 Value Seekers	Cluster-2 Kinnow Lovers	Cluster-3 Perfectionists	Chi-Squared Value	*p*-Value
Level (No. of pieces)	1–2	68.02	81.38	75.0	21.088	0.00 *
	3–4	29.96	18.62	24.33		
	5 and above	2.02	-	0.67		
	Mean rank	299.86	238.34	253.01		

Table 5. *Cont.*

Consumption Preferences	Category	Cluster-1	Cluster-2	Cluster-3	Chi-Squared Value	*p*-Value
		Value Seekers	Kinnow Lovers	Perfectionists		
Frequency	Daily	21.1	6.9	16.9	45.822	0.00 *
	Few times a week	58.7	46.9	31.7		
	Weekly	18.6	39.4	50.7		
	Fortnightly	0.4	3.4	0.7		
	Monthly	1.2	3.4	-		
	Mean rank	224.28	317.05	302.03		
Preferred timing	Morning	5.3	17.2	32.4	41.439	0.00 *
	Afternoon	50.6	33.8	43.9		
	Evening	2.8	11.7	4.7		
	Night	2.0	1.4	0.7		
	Anytime	39.3	35.9	18.2		
	Mean rank	301.20	284.34	205.70		

Notes: * Significant ($\alpha \leq 0.01$). Source: Authors' calculations.

Table 6. Cluster comparison—buying preferences.

Purchase Preferences	Category	Cluster-1	Cluster-2	Cluster-3	Chi-Squared Value	*p*-Value
		Value Seekers	Kinnow Lovers	Perfectionists		
Frequency	Daily	3.6	4.8	1.4	30.959	0.00 *
	Few times a week	54.0	44.2	27.0		
	Weekly	40.9	44.1	70.9		
	Fortnightly	-	2.1	-		
	Monthly	1.6	4.8	0.7		
	Mean rank	238.40	274.83	319.83		
Quantity (Dozens/shopping)	1–2	77.3	75.9	81.7	10.252	0.01 *
	3–4	20.3	21.3	15.6		
	5 and above	2.4	2.8	2.7		
	Mean rank	281.58	284.09	238.70		
Weekly expenditure on Kinnows (PKR)	Less than 200	21.9	23.4	56.1	49.218	0.01 *
	201–500	38.4	26.9	23.0		
	Above 500	39.7	49.7	20.9		
	Mean rank	291.65	307.37	199.09		
Preferred retailer	Traditional	97.2	93.8	93.2	3.938	0.140
	Modern	2.8	6.2	6.8		
	Mean rank	265.15	274.26	275.74		

Notes: * Significant ($\alpha \leq 0.01$). Source: Authors' calculations.

In terms of the socio-economic composition, more than half of the value seekers were aged less than 30 years. Mostly, they were married and had 3 to 6 family members. Although half were either graduates or post-graduates, many value seekers also possessed lower levels of education. Income-wise, this segment had representation from different

income groups. However, the presence of those earning from Rs.40,000 to Rs.80,000 was relatively high (Table 7).

Table 7. Cluster comparison—socio-economic characteristics.

Characteristic	Categories	Cluster-1	Cluster-2	Cluster-3	Chi-Squared Value	*p*-Value
		Value Seekers	Kinnow Lovers	Perfectionists		
Gender	Male	96.8	99.3	94.6	5.34	0.07
	Female	3.2	0.7	5.4		
	Mean rank	270.74	263.86	276.59		
Age (Years)	Up to 30	53.0	25.5	29.1	17.184	0.00 *
	31–40	28.1	60.0	58.1		
	41–50	15.4	10.3	10.1		
	51–60	2.4	2.8	2.7		
	Above 60	0.8	1.4	-		
	Mean rank	242.97	299.42	288.12		
Marital status	Single	8.9	40.7	29.7	56.738	0.00 *
	Married	91.1	59.3	70.3		
	Mean rank	308.95	223.14	252.73		
Family size	1–2	17.8	28.3	19.6	16.685	0.00 *
	3–4	52.6	51.0	73.6		
	5–6	22.3	19.3	5.4		
	>6	7.3	1.4	1.4		
	Mean rank	296.79	253.20	243.58		
Education	No education	1.6	0.7	0.7	28.1177	0.00 *
	Primary [1]	16.2	-	12.8		
	Secondary [2]	12.6	6.9	4.7		
	Intermediate [3]	18.6	20.6	11.5		
	Graduate	45.3	62.1	58.8		
	Post-graduate	5.7	9.7	11.5		
	Mean rank	235.44	307.18	293.09		
Family income (PKR [4]/month)	<20,000	19.4	20.0	10.1	13.160	0.00 *
	20,001–40,000	16.2	19.3	16.2		
	40,001–60,000	36.0	38.6	31.1		
	60,001–80,000	21.5	19.3	39.2		
	80,001–100,000	5.7	2.1	2.7		
	>100,000	1.2	0.7	0.7		
	Mean rank	264.13	244.69	306.42		

Notes: [1] Grade 5 equivalent; [2] Grade 10 equivalent; [3] Grade 12 equivalent; [4] Pakistani Rupee ($1 = PKR270; * Significant ($\alpha \leq 0.01$). Source: Authors' calculations.

Cluster-2 constituted 26.85% of surveyed consumers and were identified as 'Kinnow lovers' because they were merely concerned with consuming Kinnows. A few attributes were essential for them, including freshness, flavour, freedom from damages and blemishes, sweat taste, juiciness, ripeness, cleanliness, pesticide-free production, and retailer

cleanliness. Since they love to consume Kinnows, the price was not as crucial as in the other two segments.

Most of them consumed 1–2 pieces of Kinnow and mostly a few times or once a week. While one-third liked consuming Kinnows in the afternoon, nearly 36% were ready to consume Kinnows anytime (Table 5). They preferred buying Kinnows a few times or once a week regarding purchase frequency. More than 75% typically buy 1–2 dozen(s) in one shopping. Nearly half reported spending more than Rs.500 in a week on buying Kinnows (Table 6).

This segment comprised almost all male consumers and mostly aged 31–40 years. Although the majority were married, the presence of single consumers was comparatively higher (40.7%) in this segment. Mostly, they had small families comprising up to four members. More than 70% were graduates and post-graduates. The monthly family income of most of this segment members was less than Rs.60,000 (Table 7).

Cluster-3 comprised 27.41% of consumers and were labelled as 'perfectionists' because they described almost all attributes important in their purchase decisions. As noted from the higher mean attribute score in Table 4, this segment had greater safety and marketing-related attribute preferences than the other two segments. Only this segment attached importance to packaging and grading.

Table 5 reveals that 75% of perfectionists preferred consuming 1–2 pieces and 24.33%, 3–4 pieces of Kinnow at one time. Among them, the tendency to consume frequently was less, as half of them liked to consume Kinnows only once a week, mainly in the morning or afternoon. The majority, i.e., 70.9%, used to purchase Kinnows every week. Unlike other segments, the weekly expenditure of most perfectionists (56.1%) on Kinnow buying was less than Rs.200 (Table 6).

This segment also comprised primarily male consumers. Nevertheless, the presence of female consumers was greater compared to other segments. The majority were aged up to 40 years and most were married. A family size of 3–4 members was typical in this segment. Most of the segment members possessed higher levels of education and belonged to families earning from Rs.40,001 to Rs.80,000 per month (Table 7).

5. Conclusions and Policy Implications

The study findings have highlighted changes in consumer preferences for fresh produce in Pakistan. Along with the essential attributes such as price, freshness, and no blemishes or damage, consumers now consider safety and marketing-related attributes necessary in their purchase decisions. The presence of consumer segments with distinct requirements indicates that agro-food industries can increase their profits by targeting these segments. The value chain actors particularly growers should understand these segments and align their production and marketing practices with consumer requirements.

The use of good land management practices for Kinnow production, harvesting, and marketing can help gain better quality produce and increase land productivity through the adoption of modern techniques of value addition and locating production to those areas where the demand and/or market conditions are conducive. This will improve the profitability, logistics, and provide avenues for further development of the land resources, especially concerning Kinnow production, which is not as exhaustive as that for wheat, sugarcane, maize, or cotton. Such land use options need to be further explored given the fragile institutional support and recent labour migration from rural to industrial locations. Nevertheless, value-addition practices and market segmentation can significantly reduce damage and blemishes on Kinnows. The extension department can guide growers and traders in ensuring consumers' desired quality along the value chain by upgrading their production, harvesting, and marketing practices. This would also require a change in the orientation of extension staff because they are usually trained in disseminating production-related knowledge. They should also be trained to help growers learn about marketing, such as what, how, and when to produce and where to sell their produce.

The study has also pointed out some retail-level malpractices such as higher prices and poor-quality mixing. This could be due to their lack of awareness of changing consumer needs and inadequate business training. With this insensitivity to consumer needs, it could be difficult for traditional retailers to compete with modern retailers who are gradually increasing their presence in major cities. Therefore, traditional retailers need to upgrade their practices. As suggested by Chamhuri and Batt [59], training them on ensuring consumers desired fruit through improving their practices can help them retain their customers.

Currently, the market share of modern retailers is significantly lower. Modern retailers are trying to build their fruit supply chains to capture consumers who are growing dependent on them for purchase purposes. However, the study findings revealed that consumer preference for modern stores to purchase Kinnow is still relatively low, mainly because their fruit quality does not match consumers' expectations [13]. This suggests that modern stores and supermarkets should address these consumers' concerns by improving their quality and more competitive pricing.

In conclusion, the study findings have provided deep insights into what consumers prefer in their consumption and purchase of Kinnows in Pakistan. The value chain actors need to understand the requirements of different consumer segments. By aligning their supplies with consumer requirements, value chain actors can enhance their profits and the overall performance of the Kinnow industry in Pakistan. To overcome the problems of higher prices and quality mixing, relevant public-sector institutions should develop quality grades and take appropriate regulatory and enforcement measures to curtail such malpractices. Such practices are critical not only to maximize consumer satisfaction but also to ensure sustainable land use management.

By adopting contemporary methods of value addition and locating production to those places where demand or market conditions are favourable, good land management strategies for mandarin (Kinnow) production (being one of the most land-intensive products in Pakistan), harvesting, and marketing can help boost land productivity and yield better-quality fruit. While Kinnow production is less extensive than that of wheat, sugarcane, maize, or cotton, this will increase profitability and logistics and open up opportunities for further development of land resources. Given the recent government support and labour migration from rural to urban areas, such land use possibilities need to be captured. To this end, consumer research is essentially important.

The study makes a substantial contribution to the literature on agri-food commodity segmentation because such studies are uncommon, especially in developing countries. The study has used a set of search, experience, safety, and marketing-related quality attributes for the identification and profiling of consumer segments. As such, no study has used all these attributes for the segmentation of consumers of agri-food commodities, let alone mandarins. Hence, academics and researchers working on consumer preferences for agri-food commodities can use the study findings and approach for further contributions to the literature. One such aspect is to evaluate covariates of product choice viz. fresh vs. processed fruit along with other relevant aspects.

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References

1. IICA. The Role of Consumer Preferences in Agricultural Production Practices from the Perspective of Food Health and safety. Inter-American Institute for Cooperation on Agriculture. 2019. Available online: https://repositorio.iica.int/bitstream/handle/11324/8640/BVE20017772i.pdf?sequence=2&isAllowed=y (accessed on 22 March 2023).
2. Gao, Z.; House, L.; Gmitter, F.G., Jr.; Valim, M.F.; Plotto, A.; Baldwin, E.A. Consumer preferences for fresh citrus: Impacts of demographic and behavioral characteristics. *Int. Food Agribus. Manag. Rev.* **2011**, *14*, 23–40.
3. Di Vita, G.; Vecchio, R.; Borrello, M.; Zanchini, R.; Maesano, G.; Gulisano, G.; Brun, F.; D'Amico, M. Oh my darling clementine: Heterogeneous preferences for sustainable citrus fruits. *Renew. Agric. Food Syst.* **2021**, *36*, 557–568. [CrossRef]
4. Stampa, E.; Schipmann-Schwarze, C.; Hamm, U. Consumer perceptions, preferences, and behavior regarding pasture-raised livestock products: A review. *Food Qual. Prefer.* **2020**, *82*, 103872. [CrossRef]
5. Moyo, M.; Ssali, R.; Namanda, S.; Nakitto, M.; Dery, E.K.; Akansake, D.; Adjebeng-Danquah, J.; van Etten, J.; de Sousa, K.; Lindqvist-Kreuze, H.; et al. Consumer preference testing of boiled sweetpotato using crowdsourced citizen science in Ghana and Uganda. *Fron. Sust. Food Syst.* **2021**, *5*, 620363. [CrossRef]
6. Haider, S.T.-A.; Ahmad, S.; Anjum, M.A.; Naz, S.; Liaqat, M.; Saddiq, B. Effects of different postharvest techniques on quality management and shelf life of 'Kinnow' mandarin fruit. *J. Food Meas. Charact.* **2021**, *15*, 2549–2561. [CrossRef]
7. Moosa, A.; Farzand, A.; Sahi, S.T.; Khan, S.A.; Abbas, M.F.; Abbas, A.; Binyamin, R. First report of post-harvest Fusarium rot caused by Fusarium oxysporum on Citrus reticulata Blanco cv. 'Kinnow' in Pakistan. *J. Plant Pathol.* **2020**, *102*, 945–946. [CrossRef]
8. Di Vita, G.; Borrello, M.; Vecchio, R.; Gulisano, G.; D'Amico, M. Purchasing drivers of fresh citrus fruits in urban Italy: Is it all about taste? *Nutrients* **2020**, *12*, 979. [CrossRef]
9. Memon, N.A. Market potential for Pakistani Citrus fruit (Kinnow) in world. *Pak. Food J.* **2014**, *1*, 41–42.
10. Government of Pakistan. *Agricultural Statistics of Pakistan 2017–2018*; Economic Wing, Ministry of National Food Security and Research, Government of Pakistan: Islamabad, Pakistan, 2019.
11. Badar, H.; Ariyawardana, A.; Collins, R. Dynamics of mango value chains in Pakistan. *Pak. J. Agric. Sci.* **2019**, *56*, 523–530.
12. Collins, R.; Dunne, T.; Campbell, J.; Johnson, P.; Malik, A.U. *A Constraint Analysis of Pakistan Mango Supply Chains*; Australian Centre for International Agricultural Research (ACIAR): Canberra, Australia, 2006.
13. Naseer, M.A.u.R.; Ashfaq, M.; Hassan, S.; Abbas, A.; Razzaq, A.; Mehdi, M.; Ariyawardana, A.; Anwar, M. Critical issues at the upstream level in sustainable supply chain management of agri-food industries: Evidence from Pakistan's citrus industry. *Sustainability* **2019**, *11*, 1326. [CrossRef]
14. Government of Pakistan. *Fruit, Vegetables and Condiments Statistics of Pakistan 2020–2021*; Economic Wing, Ministry of National Food Security and Research, Government of Pakistan: Islamabad, Pakistan, 2022.
15. Yaseen, A.; Mehdi, M.; Somogyi, S.; Ahmad, B. Consumer preference to pay a price premium for quality attributes in Pakistani grown mangoes. *Pak. J. Commer. Soc. Sci.* **2016**, *10*, 615–637.
16. Chenarides, L.; Grebitus, C.; Lusk, J.L.; Printezis, I. Food consumption behavior during the COVID-19 pandemic. *Agribusiness* **2021**, *37*, 44–81. [CrossRef] [PubMed]
17. Tao, H.; Sun, X.; Liu, X.; Tian, J.; Zhang, D. The impact of consumer purchase behavior changes on the business model design of consumer services companies over the course of COVID-19. *Front. Psychol.* **2022**, *13*, 818845. [CrossRef] [PubMed]
18. Basha, M.B.; Lal, D. Indian consumers' attitudes towards purchasing organically produced foods: An empirical study. *J. Clean. Prod.* **2019**, *215*, 99–111. [CrossRef]
19. Finzer, L.E.; Ajay, V.S.; Ali, M.; Shivashankar, R.; Goenka, S.; Sharma, P.; Pillai, D.S.; Khandelwal, S.; Tandon, N.; Reddy, K.S.; et al. Fruit and vegetable purchasing patterns and preferences in South Delhi. *Ecol. Food Nutr.* **2013**, *52*, 1–20. [CrossRef]
20. Toussaint, M.; Cabanelas, P.; González-Alvarado, T.E. What about the consumer choice? The influence of social sustainability on consumer's purchasing behavior in the food value chain. *Eur. Res. Manag. Bus. Econ.* **2021**, *27*, 100134. [CrossRef]
21. Kotler, P.; Keller, K.L.; Chernev, A. *Marketing Management*; Pearson Education: Saddle River, NJ, USA, 2021.
22. Paswan, A.K.; Guzmán, F. Consumer value and time. *J. Creat. Value* **2017**, *3*, 157–161. [CrossRef]
23. Barnard, F.L.; Akridge, J.T.; Dooley, F.J.; Foltz, J.C.; Yeager, E.A. *Agribusiness Management*; Taylor & Francis: Boca Raton, FL, USA, 2016.
24. Fanzo, J.; Davis, C. Transformations across diets and food systems. In *Global Food Systems, Diets, and Nutrition: Linking Science, Economics, and Policy*; Fanzo, J., Davis, C., Eds.; Springer International Publishing: Cham, Switzerland, 2021; pp. 71–84.
25. Gunden, C.; Thomas, T. Assessing consumer attitudes towards fresh fruit and vegetable attributes. *J. Food Agric. Environ.* **2012**, *10*, 85–88.
26. Grasso, A.C.; Hung, Y.; Olthof, M.R.; Brouwer, I.A.; Verbeke, W. Understanding meat consumption in later life: A segmentation of older consumers in the EU. *Food Qual. Prefer.* **2021**, *93*, 104242. [CrossRef]
27. Rahman, S.M.E.; Mele, M.A.; Lee, Y.-T.; Islam, M.Z. Consumer preference, quality, and safety of organic and conventional fresh fruits, vegetables, and cereals. *Foods* **2021**, *10*, 105. [CrossRef]
28. Jürkenbeck, K.; Spiller, A. Importance of sensory quality signals in consumers' food choice. *Food Qual. Prefer.* **2021**, *90*, 104155. [CrossRef]

29. Moser, R.; Raffaelli, R.; Thilmany-McFadden, D. Consumer preferences for fruit and vegetables with credence-based attributes: A review. *Int. Food Agribus. Manag. Rev.* **2011**, *14*, 121–142.
30. Huang, W.-S.; Kuo, H.-Y.; Tung, S.-Y.; Chen, H.-S. Assessing consumer preferences for suboptimal food: Application of a choice experiment in citrus fruit retail. *Foods* **2021**, *10*, 15. [CrossRef] [PubMed]
31. Cantin, C.M.; Gracia, A. Intrinsic and extrinsic attributes related to the influence of growing altitude on consumer acceptability and sensory perception of fresh apple. *J. Sci. Food Agric.* **2022**, *102*, 1292–1299. [CrossRef]
32. Hossain, A.; Islam, I.; Deba Nath, S. Does quality matter for fruit purchase decisions? *A hedonic analysis. J. Int. Food Agribus. Mark.* **2022**, 1–18. [CrossRef]
33. Tarancón, P.; Tárrega, A.; González, M.; Besada, C. External quality of Mandarins: Influence of fruit appearance characteristics on consumer choice. *Foods* **2021**, *10*, 2188. [CrossRef]
34. Petrescu, D.C.; Vermeir, I.; Petrescu-Mag, R.M. Consumer understanding of food quality, healthiness, and environmental impact: A cross-national perspective. *Int. J. Environ. Res. Public Health* **2020**, *17*, 169. [CrossRef]
35. Jiménez-Guerrero, J.F.; Gázquez-Abad, J.C.; Huertas-García, R.; Mondéjar-Jiménez, J.A. Estimating consumer preferences for extrinsic and intrinsic attributes of vegetables. A study of German consumers. *Span. J. Agric. Res.* **2012**, *10*, 539–551. [CrossRef]
36. Ferdinand, F.W.; John, L.S.; James, B.W. The relative importance of search versus credence product attributes: Organic and locally grown. *Agric. Resour. Econ. Rev.* **2011**, *40*, 48–62.
37. Liguori, J.; Trübswasser, U.; Pradeilles, R.; Le Port, A.; Landais, E.; Talsma, E.F.; Lundy, M.; Béné, C.; Bricas, N.; Laar, A.; et al. How do food safety concerns affect consumer behaviors and diets in low- and middle-income countries? A systematic review. *Glob. Food Secur.* **2022**, *32*, 100606. [CrossRef]
38. Massaglia, S.; Borra, D.; Peano, C.; Sottile, F.; Merlino, V.M. Consumer preference heterogeneity evaluation in fruit and vegetable purchasing decisions using the best–worst approach. *Foods* **2019**, *8*, 266. [CrossRef]
39. Cooil, B.; Aksoy, L.; Keiningham, T.L. Approaches to customer segmentation. *J. Relatsh. Mark.* **2008**, *6*, 9–39. [CrossRef]
40. Sun, X.; Collins, R. Attitudes and consumption values of consumers of imported fruit in Guangzhou, China. *Int. J. Consum. Stud.* **2002**, *26*, 34–43. [CrossRef]
41. Simunaniemi, A.-M.; Nydahl, M.; Andersson, A. Cluster analysis of fruit and vegetable-related perceptions: An alternative approach of consumer segmentation. *J. Hum. Nutr. Diet.* **2013**, *26*, 38–47. [CrossRef] [PubMed]
42. Adhikari, R.P.; Collins, R.; Sun, X. Segmenting consumers to inform agri-food value chain development in Nepal. *Int. Food Agribus. Manag. Rev.* **2012**, *15*, 93–114.
43. Macharia, J.; Collins, R.; Sun, T. Value-based consumer segmentation: The key to sustainable agri-food chains. *Br. Food J.* **2013**, *115*, 1313–1328. [CrossRef]
44. Poole, N.; Baron, L. Consumer awareness of citrus fruit attributes. *Br. Food J.* **1996**, *98*, 23–28. [CrossRef]
45. Campbell, B.L.; Nelson, R.G.; Ebel, R.C.; Dozier, W.A.; Adrian, J.L.; Hockema, B.R. Fruit quality characteristics that affect consumer preferences for Satsuma mandarins. *HortScience* **2004**, *39*, 1664–1669. [CrossRef]
46. Campbell, B.L.; Nelson, R.G.; Ebel, R.C.; Dozier, W.A. Mandarin attributes preferred by consumers in grocery stores. *HortScience* **2006**, *41*, 664–670. [CrossRef]
47. Campbell, B.L.; Nelson, R.G.; Ebel, R.C.; Dozier, W.A.; Campbell, J.H.; Woods, F.M. Mandarin market segments based on consumer sensory evaluations. *J. Food Distrib. Res.* **2008**, *39*, 43–55.
48. Muktar, B.G.; Gambo, B.A.; Mukhtar, U. Consumer preference analysis on local and imported citrus fruit juice in Kano metropolis, Kano State Nigeria. *J. Agric. Econ. Ext. Rural Dev.* **2015**, *3*, 351–358.
49. Government of Pakistan. Pakistan Bureau of Statistics. 2017. Available online: http://www.pbs.gov.pk/content/population-census (accessed on 2 March 2020).
50. Ghani, J.A. Consolidation in Pakistan's retail sector. *Asian J. Manag. Cases* **2005**, *2*, 137–161. [CrossRef]
51. Creswell, J.W. *Qualitative Inquiry and Research Design: Choosing among Five Approaches*; SAGE Publications: London, UK, 2012.
52. Bazeley, P.; Jackson, K. *Qualitative Data Analysis with Nvivo*; SAGE Publications: London, UK, 2013.
53. Ares, G.; Gámbaro, A. Food choice and food consumption frequency for Uruguayan consumers. *Int. J. Food Sci. Nutr.* **2008**, *59*, 211–223. [CrossRef] [PubMed]
54. Kennedy, J.; Worosz, M.; Todd, E.C.; Lapinski, M.K. Segmentation of US consumers based on food safety attitudes. *Br. Food J.* **2008**, *110*, 691–705. [CrossRef]
55. Pieniak, Z.; Verbeke, W.; Olsen, S.O.; Hansen, K.B.; Brunsø, K. Health-related attitudes as a basis for segmenting European fish consumers. *Food Policy* **2010**, *35*, 448–455. [CrossRef]
56. Brečić, R.; Mesić, Ž.; Cerjak, M. Importance of intrinsic and extrinsic quality food characteristics by different consumer segments. *Br. Food J.* **2017**, *119*, 845–862. [CrossRef]
57. Haq, S.U.; Shahbaz, P.; Abbas, A.; Batool, Z.; Alotaibi, B.A.; Traore, A. Tackling food and nutrition insecurity among rural inhabitants: Role of household-level strategies with a focus on value addition, diversification and female participation. *Land* **2022**, *11*, 254. [CrossRef]

58. Walsh, G.; Hennig-Thurau, T.; Wayne-Mitchell, V.; Wiedmann, K.-P. Consumers' decision-making style as a basis for market segmentation. *J. Target. Meas. Anal. Mark.* **2001**, *10*, 117–131. [CrossRef]
59. Chamhuri, N.; Batt, P.J. Exploring the factors influencing consumers' choice of retail store when purchasing fresh meat in Malaysia. *Int. Food Agribus. Manag. Rev.* **2013**, *16*, 99–122.