Segmenting Consumers of Tomato in Nepal: Implications for Value Chain Development

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Abstract

The Nepalese government is piloting five agricultural projects described as taking a value chain approach to development. Although consumer value lies at the core of value chain management principles, none of these projects adopts a consumer perspective. This is an example of a more widespread gap in both the literature and practice as to how consumer perspectives can be used in the development of agrifood value chains in developing countries. Using a consumer segmentation analysis, this paper examines consumer values in the consumption of fresh tomato in Nepal and their implications for value chain development.

Keywords: value chain, consumer segmentation, agrifood, developing countries, Nepal

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Background

In Nepal, a tiny Himalayan country between China and India, the agricultural sector has received a high priority in the country's development strategy for the last five decades (National Planning Commission 2007). The government's agricultural development strategy is based on a farmer group extension approach (Ministry of Agriculture and Cooperatives 2004) where farmers in groups are the entry points for development intervention. This farmer focused approach to development is based on premises such as that farmers are the basic building blocks of agriculture, the farm is a basic unit of analysis for agricultural competitiveness, and farmers' resources and capabilities constitute the entry point for developmental support.

Although the first premise still holds true, others have changed. Emergence of 'competition between chains of firms' as an effective agribusiness strategy as opposed to 'competition between firms' in many developed countries (Boehlje 1999; Collins 2003, 2009) challenges the premise of the farm as an analytical unit for competitiveness. Similarly, today's consumers are becoming more demanding (Woodruff 1997), especially given rising middle class incomes in the developing world (Bussolo et al. 2007; Ravallion 2009) and there has been significant growth in the numbers of 'caring, environmentally and socially aware and demanding' consumers in developed countries (Strong 1996, p.5). Consumerism, therefore, has driven agribusiness firms to align their business strategies and structures so as to ensure greater consumer value (Boehlje 1999) and it would seem reasonable that governments and their development partners might align their development strategies to reflect this trend.

The farmer-centered thinking of the Nepalese government has resulted in a silo approach to development that is farm production oriented. This approach not only mitigates against bringing all of the stakeholders in the farm-to-consumer chain together in a collaborative way, but it also fails to focus on the importance of consumer value. The on-going underperformance of the agriculture sector, despite its high development priority (National Planning Commission 2010) means that the existing farmer centered approach is not without flaws. Further, in line with the argument of Hamel (2000) these orthodox approaches to management and organizational design may be insufficient for Nepalese agribusiness actors to cope with rapidly changing technologies and global competition. Applying Hamel's approach to current value chain literature, it could be concluded that a shift in the development and management approach among actors and stakeholders in the Nepalese agribusiness sector is needed. This approach would be based on strategies focused on meeting consumers' needs in the context of the performance of the whole chain. That is, Nepalese agribusiness needs an innovative push towards adoption of value chain management (VCM) concepts and practices.

A value chain is a relationship-based governance structure, focused on value creating activities (Boehlje 1999) which brings a product or service from its origin to its end use (Kaplinsky and Morris 2001) in such a way that the process efficiently and effectively delivers value as defined by the consumers (Collins 2009). The management of chains conceptualizing in this way is called VCM. Though VCM is an established concept in the field of business and management, its application in the agrifood industry has been limited in developed economies (Fearne 2009) and even more limited in developing countries. Nevertheless, the relevance of VCM to improving the performance of the agrifood sector and its positive implications for consumers, producers and other chain members have been well

documented (e.g. Bonney et al. 2007; Bryceson and Cover 2004; Collins 2009; Fearne 2009; Humphrey 2006; Taylor 2005; Weaver and Wesseler 2004). Since VCM triggers a shift in the management strategy of agribusiness from a traditional silo approach to a more collaborative approach, in the Nepalese context where it is relatively new it can be seen as a management innovation, which Hamel (2007) advocates as the 21st century solution to achieving competitiveness.

In Nepal where government and development partners assume such a significant role in agriculture because of its domination of the country's economy, VCM has emerged in government policy and donor development frameworks. In particular, the Nepalese government is currently implementing five agricultural projects with the support of development partners such as World Bank, Asian Development Bank and the International Fund for Agriculture Development, all of which involve VCM in some way in their development approaches. Yet although a consumer orientation is central to VCM (Collins 2009; Fearne 2009), there is no evidence of a consumer perspective in the design and implementation guidelines of these projects.

Despite the involvement of donors who have promoted a value chain approach in other developing countries, this lack of consumer perspective in the design of these projects would seem likely to impact on the effectiveness of value chain development in Nepal. Clearly, there is a need to address this shortcoming to demonstrate the linkage between establishing a knowledge of consumer value and its use in value chain development.

Objective

The objective of this research is to use the tomato market in Nepal as a case study to examine consumers' value preferences and to explore how these can be used in value chain development. Fresh tomato was chosen as a value chain development case study chain because tomato is consumed in almost every Nepalese household every day. The tomato value chain, therefore, is a commercially important agrifood chain in Nepal and is being promoted by agricultural development projects (Full Bright Consultancy 2008). There are two specific research questions:

- What values do Nepalese consumers seek when they purchase tomatoes?

- What are the implications of these values for tomato value chain development in Nepal?

Research Methods

Questionnaire design

A checklist of product and process-based attributes of agrifood products in general and tomatoes in particular were drawn from literature (Collins 2009; Johansson et al. 1999; Kennedy et al. 2008; Sun and Collins 2002, 2007). Two focus group discussions were conducted amongst tomato consumers of Kathmandu metropolis to identify relevant attributes for use in the research design. As a result, eighteen product and process based-attributes were included in a questionnaire whose purpose was to identify the relative importance that consumers attach to these attributes in their tomato purchasing decisions. Attributes included 12 intrinsic and 6 extrinsic product attributes, or 10 search, 3 experience and 5 credence attributes (Ford, Smith, and Swasy 1988; Grunert et al. 2005; Moser, Raffaelli, and Thilmany-McFadden 2011) (Table 1). Consumers' attitudes and perceptions towards these 18 variables were measured using a 5 point rating scale where 4 = very

important, 3 = important, 2 = less important, 1 = unimportant and 0 = do not know. The questionnaire also included questions about consumers' socio-demographic profiles.

Table 1. Taxonomy of variables used in the analysis

Attribute	Search	Experience	Credence
Intrinsic	Color	Shelf-life	Freshness
	Size	Cooking quality	Pesticide residue
	Ripeness	Taste	Production location
	Presence of peduncle[1]		Organic production
	Pest-free		
Extrinsic	Price		Traceability
	Packaging		
	Pack size		
	Shopping location		
	Display in shop		

Primary data collection

Data was generated by market intercept consumer surveys conducted in May and June 2010. Using a replacement lottery method (Kalton 1983), samples were drawn from the pool of 51 representative retail outlets until 423 individual shopper samples had been allocated to the respective outlets. In each selected outlet, consumers were interviewed randomly by selecting the first and subsequently available tomato buyers whom the enumerator met at the exit of the store. Out of the total 423 random samples drawn, 394 questionnaires were completed.

Method of segmentation

There is little research on segmentation techniques to guide value chain development in any sector in developing countries, and especially little that relates to the agrifood sector (Cunningham 2001). By comparison, in developed countries, customer segmentation approaches have been frequently used in marketing to devise customized strategies (Bock and Uncles 2002; Dickson and Ginter 1987; Flint, Woodruff, and Gardial 2002; Palmer and Millier 2004; Smith 1956; Verbeke, Vermeir, and Brunsø 2007; Zhang et al. 2008; Zhang et al. 2010). A segmentation approach was adopted in this research with the aim of developing value chain strategies focused on meeting the differing needs of discrete segments among tomato consumers. A cluster analysis (CA) approach was used, as it is a well-established method of multivariate analysis for consumer segmentation (Kettenring 2006).

In a heterogeneous market, CA segments consumers into homogeneous sub-groups (Hair et al. 2010) based on the variables used to classify them. CA is used in this research for the exploratory purpose of developing a taxonomy of fresh tomato consumers and profiling them in terms of their value preferences and socio-demographic characteristics. Such an approach has two implications. First, it establishes baseline consumer value profiles in the Kathmandu fresh vegetable market for comparison against future segmentation studies. Second, it demonstrates that consumer segmentation studies can contribute to customized value chain

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[1] The stalk that supports the tomato fruit

strategies, thereby contributing to value chain development among the actors and stakeholders of the system.

Design issues in cluster analysis

Research design issues relevant to CA are adequate sample size, detection of outliers, selection of similarity measures, and standardization of the data (Hair et al. 2010). Addressing these issues is important in increasing the robustness of the analysis. The sample size of 394 was large enough to draw valid conclusions since a minimum of 100 observations is sufficient to perform segmentation using CA (Hair et al. 2010). An agglomeration schedule, which is an output of CA, was used to detect outliers and no sample was found having any role in destabilizing outputs. A squared Euclidean distance measure was used as the measure of distance. Standardization of the data was not needed since the unit of measurement was same for all variables.

A bivariate Pearson's correlation coefficient (r) analysis revealed that three pairs of attributes, namely packaging and pack size, taste and cooking quality, and organic production and production location, were correlated (r>0.5) (Allen and Bennett 2010). To reduce the effect of multicollinearity, three attributes with low rating values in each set- pack size, cooking quality and production location -were dropped in the final analysis.

Hierarchical cluster analysis was used initially to identify the appropriate cluster size (Everitt et al. 2011). Because hierarchical cluster analysis can provide as many cluster solutions as the number of cases, the agglomeration schedule and the dendrogram were used to derive a potential range of appropriate cluster sizes. The agglomeration schedule revealed that a four or five cluster solution maximized between-cluster heterogeneity without a large decrease in intra-cluster homogeneity. The shape of the dendrogram supported this result since a slight shift along one axis reduced cluster numbers from nine to five, a further small shift reduced cluster numbers to four, but a shift of almost twice that distance was required to reduce cluster numbers to three. Thus both the agglomeration schedule and the shape of the dendrogram supported either a four or five cluster solution.

In the next stage, non-hierarchical cluster analysis using the k-means technique, which is more robust (Everitt et al. 2011; Hair et al. 2010; Pena, Lozano, and Larranaga 1999), was used to segment consumers based on four and five-cluster alternatives. K-means analysis minimizes the variance within clusters by continuing to reassign cases to the cluster whose centroid lies closest to the case (Punj and Stewart 1983). It also fine tunes existing cluster solutions derived from the hierarchical algorithm (Hair et al. 2010) and segments observations relatively evenly. Table 2 summarizes the distribution of cases for four and five-cluster solutions.

Table 2. Cross-tabulation between clusters for four and five-cluster solutions

		Cluster Number of Cases (Five-cluster solution)					
		1	2	3	4	5	Total
Cluster Number	1	1	3	67	0	86	157
of Cases	2	49	0	0	0	1	50
(Four-cluster	3	0	1	10	111	0	122
solution)	4	0	52	13	0	0	65
Total		50	56	90	111	87	394

6

In this research the four-cluster solution was selected because from a management perspective, a solution with fewer clusters would be preferred for ease of interpretability (Trocchia and Janda 2003) and parsimony in strategic implementation (Hair et al. 2010).

Results

Cluster Characteristics

Clusters are characterized by analyzing the pattern reflected in the mean and mean-centered values for each cluster as shown in Table 3 and Figures 1 and 2.
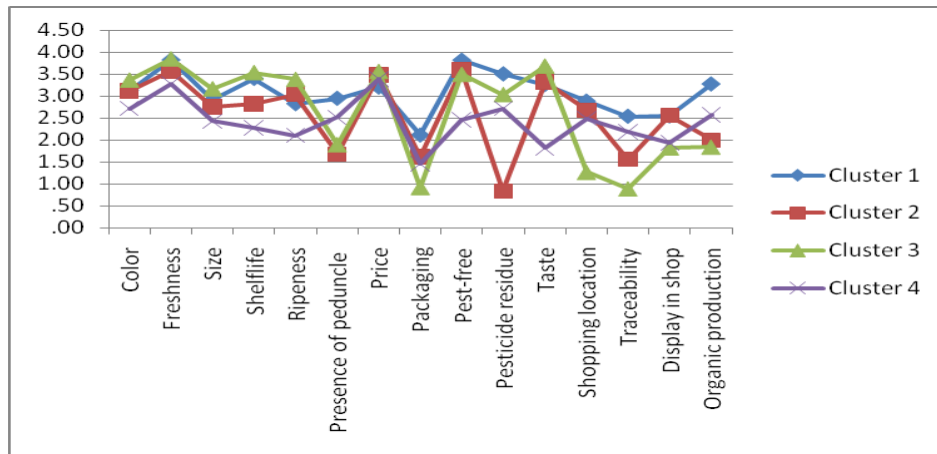
Cluster 1: Cluster 1 contains 40% of the observations and is distinguished by relatively high means for the credence attributes of freshness, pesticide residue, traceability, and organic production. This cluster has above average ratings for all attributes except packaging. A distinguishing feature of this cluster is the lowest mean value for price, which indicates that this group values quality over price. Members of this group seem to be discerning consumers who look for premium products. Being the largest cluster and giving such importance to credence attributes, this cluster has strategic significance from a value chain development perspective.

Cluster 2: Cluster 2 contains 13% of the observations and is most distinguished by the lowest mean value for the presence of pesticide residue. Consumers in this group are more concerned about extrinsic attributes, primarily the shopping location and the overall look of the product, and are less concerned about credence and process-based attributes, such as traceability and organic production. This group of consumers may be non-responsive towards health and food safety initiatives.
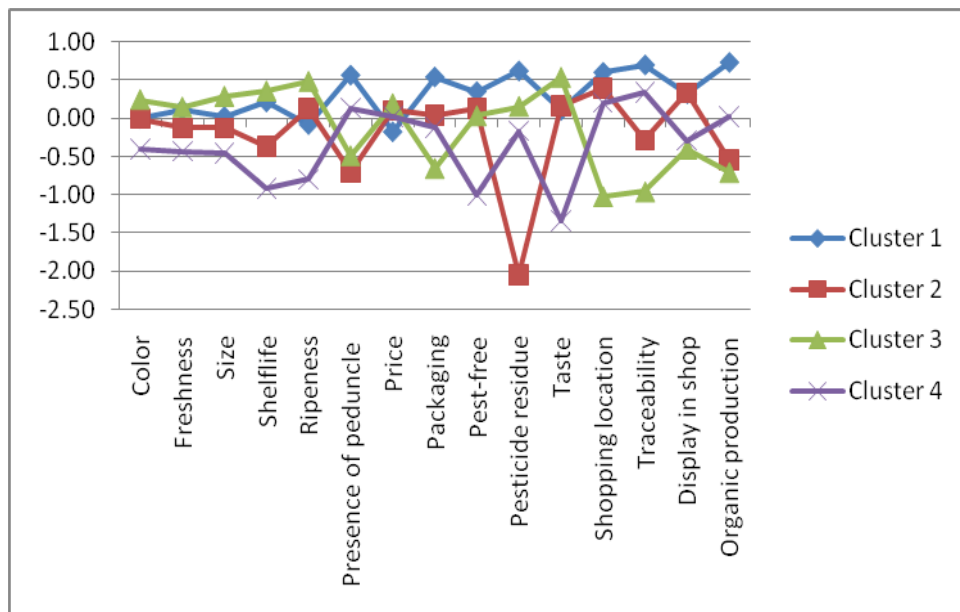
Cluster 3: Cluster 3 comprises 31% of total observations and is the second largest. Its most distinguishing feature is that consumers in this cluster place the highest importance on price compared with other clusters and has the highest mean values for product physical attributes such as color, size, shelf-life and ripeness and the lowest means for credence attributes such as traceability and organic production.

Cluster 4: Cluster 4 contains 16% of total observations. The distinguishing feature of this cluster is that it has the lowest means for product external and physical attributes such as color, size, ripeness and pest free status. Although consumers in this group gave below average ratings for most other attributes, they are second to cluster 1 in their preferences for presence of the peduncle, traceability and organic production, which are considered important features associated with health and food safety. Thus the most notable feature of this cluster is that its consumers seem concerned about features that add value to health and food safety, while being below average on other attributes.

<Insert **Table 3**. Means values and Mean-centered values from k-means cluster analysis>

Figure 1. Distribution of mean values of clustering variables

Figure 2. Distribution of mean-centred values of clustering variables

The underlying structures of these observations reveal that cluster 1 consists of consumers who place importance on most of the product and process-based attributes and are less concerned about price compared to other attributes. Cluster 2 comprises consumers who have the least concern about pesticide residues and more concern about where they shop and the physical appearance of the product. Consumers in cluster 3 are relatively sensitive to physical attributes and less concerned about the production related processes. Cluster 3 members are most concerned about price. Consumers in cluster 4 are below average for most attributes but are highly concerned about product features that are associated with food safety and health.

Consumer profiles

8

Having characterized the clusters on the basis of consumers' responses to product and process-based attributes, they can be characterized by the socio-demographic profile of their membership to examine underlying relationships between the preferences to attributes and the socio-demographic profiles of their consumer members.

Table 4 presents a result of Chi-square tests that compare clusters against gender, education, family structure, preferred shopping location and income. Education, family structure, preferred shopping location and income were statistically significant in explaining variations in the preferences of consumers, a result that supports the distinctiveness of the clusters.

Table 4. Chi-square test of consumer segments against socio-demographic variables

	Value	**df**	**Asymp. Sig. (2-sided)**
Gender	5.942	3	.114
Shopping location	64.545	15	.000
Education	60.625	12	.000
Family Income	59.364	15	.000
Family composition	12.860	3	.005

Chi-square $(X^2) = p < .05$

Further, a cross-classification of clusters based on the socio-demographic features by which the clusters differ significantly (shopping location, education, family income, and family composition) provides a profile of each consumer segment. Based on the cross-classification analysis, the four resulting segments of consumers are labeled as high-value discerning consumers, low-value institutional consumers, price-centric non-informed consumers and low-value rational consumers.

High-value discerning consumers

Consumers in this cluster are discerning individuals who value premium products over price. Their main concerns are about process and credence attributes such as freshness, organic production, traceability and pesticide residue. Approximately 85% of consumers in supermarkets fall into this category, indicating that supermarket consumers have greater concerns about food safety and health. About 50% of consumers who purchase tomatoes in corner shops are also in this category. Since prices are usually expensive in supermarkets and corner shops compared to other outlets, the expressed low concern of these consumers about price in favor of other attributes is consistent with their actions. Almost 75% of these consumers come from higher income brackets and 90% of them are either high school or college graduates. At the household level, 47% of consumers whose family size is less than 4 are in this cluster. This cluster therefore represents consumers who are educated, have higher incomes, prefer to shop in specific permanent locations such as supermarkets and corner shops, and seek and are willing to pay for a premium product. Thus they are labeled 'high value discerning' consumers.

Low-value institutional consumers

The most striking feature of the consumers in the second cluster is their lowest rating for concern about pesticide residues and highest rating for product display in the shop. Combined with their major concern for low price and ripeness, it is possible that the importance they attach to display in the shop is associated with being able to buy ripe fruit for a low price. Based on observations during the survey period, consumers in this cluster are institutional

buyers who were purchasing over-ripe tomatoes towards the end of the day at low prices. The local vegetable market is the preferred buying location for 46% of these consumers, and none of them shop at supermarkets. Educationally, around half of them are high school graduates and only 8% have a university degree. More than 80% of them are in the middle income bracket. Interestingly, no respondent who earns less than NRs5,000 (USD59.44[2]) per month (the low income bracket) is in this cluster. This group also has the largest family size of any cluster.

The data reveals that many consumers in this cluster are institutional consumers who operate low-standard hotels and catering services. They buy over-ripened tomatoes at low prices but their preferred shopping locations do not include street vendors and pedestrian markets, which are low value markets in the Nepalese context. Because they want regular suppliers who can consistently supply very ripe tomatoes, they choose wholesale and local vegetable markets because of the high volumes transacted and the associated high levels of over-ripeness and waste. Thus they are labeled in this analysis as 'low-value institutional' consumers.

Price-centric non-informed consumers

Consumers grouped in cluster 3 are very price-sensitive and most concerned about the product's external physical attributes. While they express some concern about pesticide residues, they show low levels of concern for health and food safety related credence attributes. Given that informed consumers tend to place high importance on credence attributes (Verbeke, Vermeir, and Brunsø 2007), consumers in this group appear to have little knowledge or concern over the attributes for which today's more informed consumers are very much sensitive. In terms of education, this cluster contains diverse membership. Among consumers with no formal education, 45% are in this cluster, yet half the cluster's members are university graduates. A little more than half (52%) of the consumers in this cluster are in the income bracket of NRs10,000-20,000 (USD118.88-237.76) per month, which is below the poverty line in Nepal for a family of four members or more. Most of them (57%) prefer shopping in local vegetable markets, where they get a wide range of choices on price. In this cluster, 58% have a relatively large family size of more than 4 members. This group of consumers is labeled as 'price-centric non-informed' consumers.

Low-value rational consumers

Consumers in cluster 4 express below average ratings for all variables except presence of the peduncle, shopping location, traceability and organic production. Their ratings for intrinsic attributes of the product, such as color, freshness, size, shelf-life, ripeness, and taste, and extrinsic attributes such as packaging, are the lowest among all clusters. However, their rating for traceability and organic production is higher, and for price is lower, than 'low value institutional' consumers and 'price-centric non-informed' consumers. Their higher rating for health and safety related attributes, traceability and organic production, and low rating for price demonstrates a level of rationality at a time when consumers are becoming very sensitive to these issues.

A distinguishing socio-demographic characteristic of this group is that around 80% of them are low income earners. In spite of this, they do not believe that price is the most important attribute in buying tomatoes and they place greater importance on products' credence attributes than physical attributes. With a low ability to pay high prices, yet high value

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[2] Dollar equivalence is based on an NRs100:USD1.18 exchange rate of as at 17 January 2012 (Source: www.oanda.com)

attached to credence attributes, these consumers are labeled as 'low-value rational' consumers.

Management implications

These results have implications for value chain development. In part they provide a rationale for chain members to engage in more collaboration to deliver attributes that consumers value and will pay for, and they also provide signals for actors and other stakeholders to use in customizing value chain development strategies targeting individual consumer segments.

Facilitation of value chain collaboration

Zero tolerance for pesticide residues, mandatory systems for food safety and product traceability and increasing interest in organic production are common features of food retailing in developed countries (e.g. Gil, Gracia, and Sanchez 2000; Porter, Baker, and Agrawal 2011). Each of these are features or attributes that can only be delivered by a whole of chain approach. Individual firms must play a role, but no firm in isolation can guarantee food safety, traceability, freedom from residues, and so on. As similar concerns among consumers become more common in developing countries, the need to adopt whole of chain approaches becomes more obvious. In the case of Nepal, for example, findings from this analysis could be used to stimulate value chain collaboration among firms wishing to target higher value consumers, the largest segment of the consumer population in this study and the segment which places greatest importance on credence-based attributes. Delivering these attributes requires more aligned processes, more reliable information and greater collaboration among chain members – the building blocks of VCM.

Facilitating customized strategies

Market segmentation facilitates targeted strategies as it identifies homogeneous groups of consumers with similar preferences (Wedel and Kamakura 2002). This analysis identified four distinct consumer segments which could be targeted differently. Value chain actors prepared to collaborate could increase their returns by targeting 'high-value discerning' consumers with high quality tomatoes at premium prices. The findings could also help actors in the chain to develop differentiated pricing strategies for each segment. In collaboration with upstream members of the chain, this could enable them to refocus their business on production and marketing strategies targeted at individual segments.

Segments of consumers that are significant but not seen as immediate targets may have a lower priority, but natural variation in product quality, a feature of agricultural production, means that lower value product may still be channeled strategically towards these consumer segments.

Limitations, future research and contributions

Limitations and future research

Yankelovich and Meer (2006) argue that the three constraints that limit the benefits of segmentation are distraction from production features to consumers' identity, little emphasis on actual consumer behavior, and undue emphasis on technical features of segmentation rather than on practical implication. This study addresses the first and third constraints by using product and process-based attributes for segmentation, and applying simple and frequently used methods of segmentation. Taking Yankelovich and Meer's (2006) perspective, this study does not account for consumers' actual purchase behavior directly, but by conducting surveys in actual market settings immediately after consumers' purchase actions, it was expected that their survey response was a close reflection of their actual

behavior. A design that could have included both perceptions and actual behaviors may have further strengthened the study's validity.

This study has used variables related to consumers' preferences for product benefits as the basis for segmentation because the objective of the study was to identify different consumer value profiles. Choice barrier, which refers to consumers' inability to maximize their utility due to lack of knowledge (Bock and Uncles 2002), was not used as a basis for segmentation in this study. Verbeke et al. (2007) argue that consumers who are involved with product quality and have greater confidence to evaluate that quality, tend to place higher value on credence based attributes than search attributes. This implies that ratings for credence based attributes such as traceability, food safety and responsible production systems, would be higher for more informed consumers. Lower importance attached to some of these attributes in this study by a majority of consumers suggests a possible choice barrier among Nepalese tomato consumers. Future research may include choice barriers as a basis for segmentation to further refine the analysis. Also, roles of different stakeholders such as government and development partners in reducing choice barriers could be explored.

Further research might also explore similarities and differences among the actors and stakeholders in agrifood chains in terms of their understandings of consumer value preferences and the impact these differences have on partner selection and collaboration in value chain development.

Contribution

This study contributes to the segmentation literature by including both product and process-based attributes specific to tomato consumers in Nepal, a developing country. The approach adopted in this study would provide a basis for developing VCM strategies in similar country and industry contexts. Most importantly, this study is among the first to link consumer segmentation to value chain development in a developing country.

Conclusion

The results show that tomato consumers in Kathmandu clearly differ in their preferences and characteristics. Perhaps surprisingly, high value consumers represent the largest segment, which provides an incentive for chain actors to explore ways of collaborating to target this segment. As its consumers seek attributes that can only be delivered through whole of chain efforts, a VCM approach applied to this segment might serve as a demonstration of the benefits of such an approach more widely in the agrifood sector of Nepal.

With growing knowledge among consumers, more awareness by stakeholders and actors in agrifood chains, a growing middle income population and more supermarkets in developing countries, the numbers of consumers who value whole of chain attributes are expected to increase in the future. At the same time, even in a least developed country such as Nepal, more strict food safety and quality regulations are expected to be enacted in response to incidences of losses from food borne diseases elsewhere. Greater knowledge about high value consumer segments, such as from this study, when combined with these forces for food safety and quality, will enhance opportunities for value chain collaboration among chain actors in Nepal and provide new insights for development partners.

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Appendix 1

Consumer Survey Questionnaire

Location of Survey (Market center):
Date of Survey: Respondent's Gender: Male ☐ Female ☐
Starting Time: Finishing Time:
Enumerator: Respondent's name (optional):

1. How important are the following characteristics to you to buy and to consume tomatoes?

Characteristic	Very important	Important	Less important	Not important	Don't know
Color					
Freshness					
Size					
Shelf life					
Ripeness					

Characteristic	Very important	Important	Less important	Not important	Don't know
Presence of peduncle					
Price					
Packing					
Pack size					
Free of pest damage					
Free of pesticide residue					
Cooking Quality					
Taste					
Others (specify)					

2. How important are the following process factors/information for you while buying and consuming tomatoes?

Characteristic	Very important	Important	Less important	Not important	Don't know
Production location					
Shopping location					
Traceability					
Display in the shop					
Organic production					
others (specify)					

General information about yourself

3. Your educational background?

    a) Self-studied   b) Primary level
    c) Secondary level   d) University level
    e) No formal education

4. In which income group your family's average monthly incomes fall?

    a) Less than NRs5000 per month   b) NRs5000 – 10,000 per month
    c) NRs10, 001 – 20,000 per month   d) NRs 20,000-50,000 per month
    e) NRs50, 000 -1, 00,000 per month   f) More than NRs1, 00,000 per month

5. Your family composition?

    No. of adults in the family ☐   No. of children ☐

Thank you for your cooperation

Table 3. Means values and Mean-centered values from k-means cluster analysis

Variable	Mean Values				Mean-Centered Values						
	Cluster Number:				Cluster Number:						
Importance of the attribute	**1**	**2**	**3**	**4**	**1**	**2**	**3**	**4**	**F**	**Sig**	**Total**
Color	3.13	3.12	3.37	2.72	0.00	-0.01	0.24	-0.41	9.359	.000	3.13
Freshness	3.82	3.58	3.85	3.28	0.11	-0.13	0.14	-0.43	18.089	.000	3.71
Size	2.91	2.76	3.17	2.43	0.02	-0.13	0.28	-0.46	12.590	.000	2.89
Shelf life	3.40	2.82	3.54	2.28	0.21	-0.37	0.35	-0.91	44.916	.000	3.19
Ripeness	2.83	3.04	3.39	2.11	-0.08	0.13	0.48	-0.80	33.898	.000	2.91
Presence of peduncle	2.95	1.68	1.90	2.52	0.56	-0.71	-0.49	0.13	37.173	.000	2.39
Price	3.20	3.48	3.57	3.40	-0.18	0.10	0.19	0.02	6.252	.000	3.38
Packaging	2.11	1.62	.93	1.46	0.53	0.04	-0.65	-0.12	53.941	.000	1.58
Pest-free	3.82	3.60	3.50	2.46	0.35	0.13	0.03	-1.01	73.216	.000	3.47
Pesticide residue	3.50	.84	3.04	2.72	0.61	-2.05	0.15	-0.17	152.224	.000	2.89
Taste	3.26	3.32	3.69	1.82	0.10	0.16	0.53	-1.34	96.034	.000	3.16
Shopping location	2.89	2.68	1.27	2.49	0.60	0.39	-1.02	0.20	95.207	.000	2.29
Traceability	2.54	1.56	.89	2.18	0.69	-0.29	-0.96	0.33	84.546	.000	1.85
Display in shop	2.55	2.56	1.83	1.94	0.32	0.33	-0.40	-0.29	19.623	.000	2.23
Organic production	3.27	2.00	1.84	2.57	0.72	-0.55	-0.71	0.02	69.189	.000	2.55