

# Sri Lankan Consumer Preference for Red Lentils: A Conjoint Approach

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## Abstract

*Sri Lankan market is one of the prime targets among the pulse exporting countries. Thus, by using conjoint analysis, this study aimed to examine the consumer preferences for red lentil in Sri Lanka and how the preferences vary across different shopping outlets and by socio-demographic factors. Consumers placed a significantly greater level of importance on visual quality than the other attributes – size, packaging and price. Trade-off patterns were different across shopping outlets and by socio-demographic factors. This study raises the need for addressing how visual quality of red lentils be enhanced along the chain.*

## Introduction

Red lentil (*Lens culinaris*) was introduced to Sri Lanka after the economic liberalization policies in 1977 and since then its consumption levels have grown rapidly replacing the traditional pulse varieties like green gram (*Vigna radiata*) and cowpea (*Vigna unguiculata*). It has been estimated that over 70% of the average monthly per capita consumption level of pulses is contributed by lentils amounting to 671.14 grams of lentils per person per month (Department of Census and Statistics 2011). Although the Sri Lankan consumer preference for red lentils has expanded with time, Sri Lanka was unable to produce

lentils due to its unfavourable weather conditions. The full domestic requirement is met through imports. Over the years there has been a substantial increase in the level of imports of lentils to Sri Lanka. Therefore, Sri Lanka has become a prime target market among the pulse exporting countries (Mercantile Consulting 2005; Agblor 2006). Therefore, proper understanding of what consumers want and will-pay for are crucial for all the players in the supply chain especially for exporters of lentils to Sri Lanka in designing their marketing plans. Thus, the objectives of this study were to examine the consumer preferences for red lentil in Sri Lanka and how the preferences vary across different shopping outlets and by socio-demographic factors.

## **Procedures**

Consumer preferences vary with different product attributes. If number of product attributes is given, consumers make a trade-off (Green and Wind 1975; Green and Sirinivasan 1990) and select the product combination that provides them with the greatest utility. Therefore, in this study conjoint analysis technique was preferred over the other methods. As the first step in the conjoint study design, the product attributes of lentil were identified by store visits. Thereby size, visual quality, packaging and price were identified as the key attributes of lentil. Good visual quality was defined as lentil with even sized seeds, without broken seeds, husks and un-split lentils. These four attributes were measured in two levels yielding 16 product combinations ( $2^4$ ). In order to estimate the specific level of effect independently, eight combinations were selected based on a fractional factorial design model.

An intercept survey of 300 consumers was carried out in 5 different districts of Sri Lanka. Four districts were selected based on the population density and one representing a major pulse producing district. Survey was carried out in July-August 2010 in three outlet types – grocery, supermarket and other shops. Based on 2400 observations generated, part-

worth utilities – impact of each attribute on individual’s utility – were calculated by using the TRANSREG procedure in SAS. Relative importance values of each of the attribute were calculated by dividing the utility range of a given attribute by the total utility ranges of all attributes and presented as a percentage.

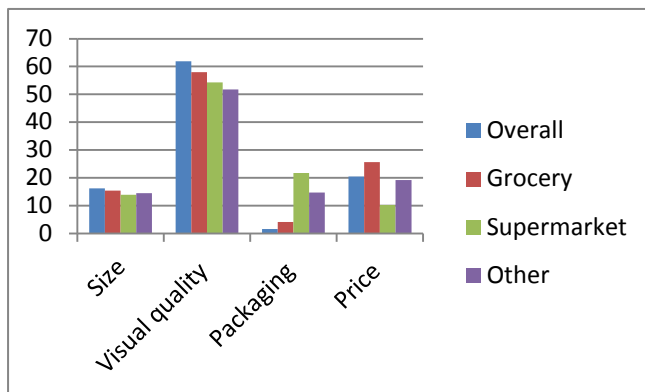
## **Results and discussion**

The sample represented 63% females and 37% males. The average age was 43 years and 79% had secondary level education. Sixty nine percent were employed of which 37% employed in the government sector while 32% employed in the private sector. Interestingly, 57.6% of the respondents indicated that they consume red lentils daily. Of these respondents, 25.3% indicated that they consume red lentils twice a day while 29% consumed only once a day. Average monthly household consumption of red lentil was 2.38 Kg. Forty three percent of the respondents indicated that grocery stores as their most preferred shopping outlet while only 22% preferred supermarkets. A majority (70%) of the respondents preferred to buy lentil in non-packeted form while 23% preferred packeted lentil with a label. The main reason for purchasing lentil in non-packeted form was that they can check the quality of lentils prior to purchase.

Relative importance values were calculated based on the part-worth utilities for the four attributes of lentils – size, visual quality, packaging and price. These relative importance values were used to explain the importance of one attribute in relation to the others. Analysis of the overall sample revealed that respondents’ place a significantly greater level of importance on visual quality than the other 3 attributes (Figure 1). This order of preference was consistent across all shop types. A previous study (Ariyawardana and Collins - *in Press*) has shown that lentil consumption is primarily driven by its cooking convenience and this is

could be the main reason for consumers to rank visual quality as the first preference over the other attributes.

Although the overall sample showed price, size and packaging were second, third and fourth respectively as the order of attribute importance, this ranking was varied across different shop types. Relative importance placed on size of lentil was consistent across shop types. Overall sample revealed that price was more important than packaging but the trade-off pattern was different across shop types. Respondents who shop at grocery shops ranked price as the most important attribute and they trade off packaging to price. The reverse was found among the respondents who shop at supermarkets.



**Figure 1: Relative importance values of lentil attributes**

Further analysis was carried out to investigate how the relative importance placed on lentil attributes vary with income, education, age and household size. Results showed that with increasing income there is a trade-off between price and visual quality where they place more importance on visual quality than price. A similar pattern was observed with the level of education. Interestingly, importance of size as an attribute increased with the level of education (from primary to tertiary education) and overall, lentil size was more important than packaging. With age, consumers considered price is relatively more important than

visual quality. However, there was no clear trade-off pattern with respect to the household size.

## **Conclusions**

This study revealed that visual quality is the most important attribute of lentils and this was consistent across shop types. Therefore, improvement of visual quality would improve the market potential of red lentils in Sri Lanka. This raises the importance of grading after processing and use of similar varieties in processing to avoid different sizes in the final mix and maintaining appropriate moisture content to avoid breakage and proper splitting. Findings of this study also revealed that consumers across all shop types preferred bigger sized red lentil than the smaller ones. Size of the lentil is primarily determined by the variety and hence there would be a better market for exporting countries that produce lentils with relatively bigger seeds. Therefore, this study clearly shows that focus on the entire value chain as a whole is crucial in developing the red lentil market in Sri Lanka.

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