

# **Production and Consumption**

## Sri Lanka's Apparel Industry: Post-MFA Challenges and Beyond

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*Key words: Multi-fibre Arrangement, Sri Lankan apparel industry, value chain, small economies, outsourcing, industrial restructuring, ethical production*

### Background

The phasing out of the Multi-Fibre Arrangement (MFA) that took place 1995-2005 had been the most critical challenge Sri Lanka's apparel industry (SLAI) faced in its four decades of existence. The MFA that came into effect 1974 signified the beginning of era of apparel exports growth at exponential proportions. Whilst a nation-based export quota system of the MFA led to a dramatic reconfiguration of global apparel market operations with a defragmentation of the apparel value chain, investment flows to developing countries soared and many became apparel producers.

The phasing out of the MFA protection, first via the Agreement on Textile and Clothing (ATC) and then the World Trade Organisation (WTO), exposed the apparel trade of many developing countries to a state of affairs different from what existed before. Under the post-MFA rules of engagement, many countries were exposed to the vagaries of global competition, and many predicted that the gains made so far by those countries under the MFA protective umbrella would potentially be reversed. The most vulnerable were the small economies like Sri Lanka, which lacked inputs such as economies of scale, backward linkages, competitive wages that were critical to survive competitive global forces. As predicted, producers with superior infrastructure and low costs made huge strides at the expense of several high cost producers, small and marginal players. Defying the widely held odds however were few countries that managed to maintain their status quo, and some even made significant export growth (Adhikari and Yamamoto, 2007).

Few studies have analysed the performance of the SLAI in the post-MFA era and the strategies adopted but the outcomes of these studies remain mixed. Broadly, the SLAI maintained its growth, with the latest in export earnings in 2011 at US\$4.2b, which reflects an annual average growth of 8.3% during 2005- 2011 period in comparison to close 5% during the 1995-2005. On the other hand, the global share of the Sri Lankan apparel export earnings fell from about 1.4% in the 1990s to around 1% in the 2000s. While these figures reflect SLAI vis-a-vis global apparel trade, they however, do not bring out the most dramatic processes that took place within the industry as it restructured and repositioned itself to face an intense global competition.

## **Objective**

This study aims to ascertain whether the SLAI substantially defied the post-MFA outcomes predicted for small economies. It examines how the SLAI performed, readjusted as it came under intense competitive pressure from sourcing firms, and also how the industry realigned to face the emerging realities. The study examines these aspects by focusing on the emerging trends in the post-MFA years, especially the structural shifts in markets and products. The study also examines the remaining gaps and the challenges and direction of the future. Findings of this study are to be used to lead an in-depth study of the SLAI that will profile the emerging industry and aid policy recommendations for its future.

## **Methodology**

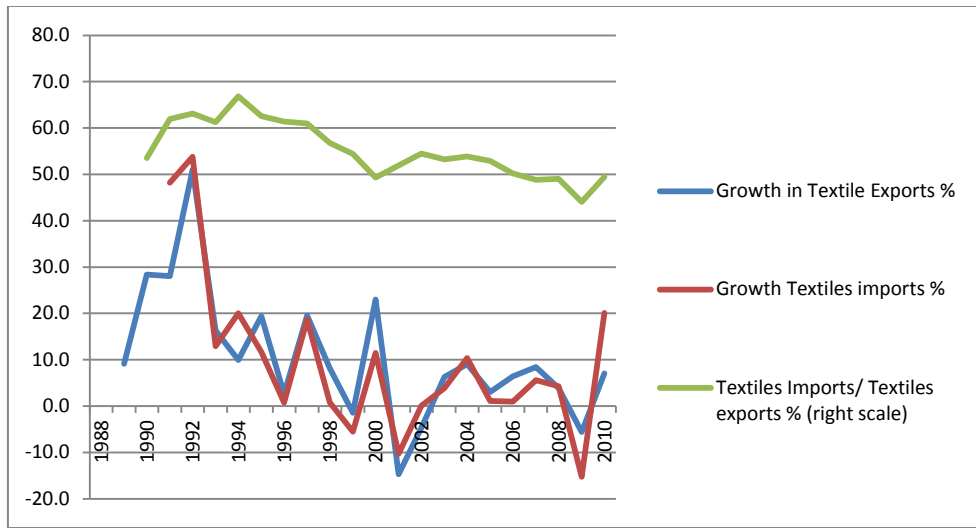
The study was based on two tiers of data and information: namely the secondary data obtained from a multitude of sources, including Sri Lanka Customs, Sri Lanka Export Development Board, Joint Apparel Association Forum, and un-published firm level data; the second tier of data are gathered from primary sources as firm-level qualitative information. Notwithstanding that the SLAI data have been most elusive to retrieve, firm-level qualitative information assessment was also used to fill information gaps, ascertain the issues faced and counter strategies adopted. The firm-level information from 10 companies, that represents a cross section of the industry, was targeted where senior officials at strategic level, and mostly Chief Executive Officers, were interviewed to gather information on the industry at micro level.

## **Summary of findings**

The evidence suggests that the SLAI has gradually shifted from its reliance on several factors that provided the basis for its expansion in the MFA. For instance, low-end apparel supply chain access through low wages, concessional trade practices, reliance on few markets/ few products were considered things in the past. Also, the industry clearly has embarked on self-restructuring and self-initiatives in contrast to highly state policy dependant culture that dominated the MFA years. Most notably, industry through its market based initiatives have begun exploring innovative strategies to mitigate inherent odds, most notably lack of a sound backward linkages network, relatively high labour costs, etc.

The Figure 1 provides evidence of an emerging trends to how the local value addition has made commendable gains in the post-MFA years. Notably, textiles imports share in apparel exports has registered decline, from over 60% in the 1990s to below 50% in the latter half of 2000s.

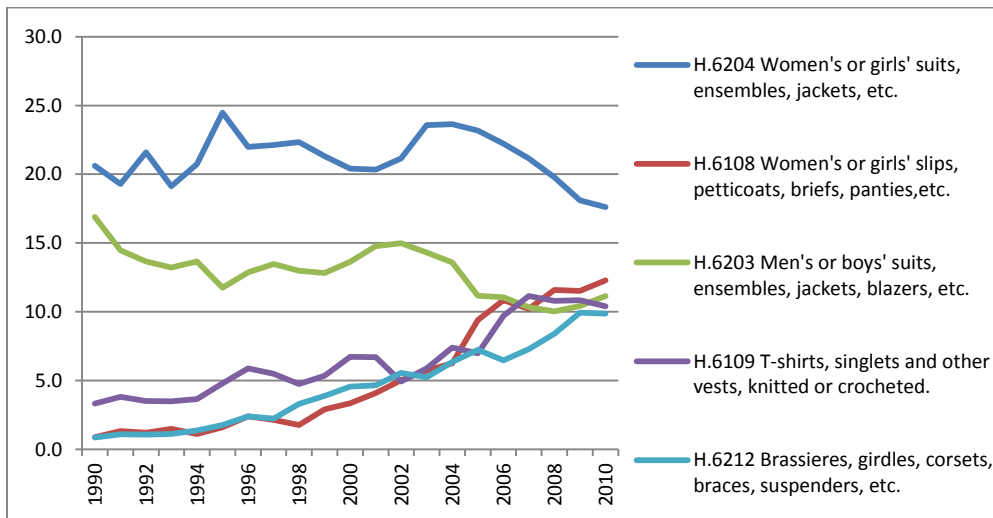
Figure 1 : Value addition in the post-MFA years



Source: CBSL Annual Reports, various issues

As can be seen in the Figure 2 below, the diversification of apparel exports that began in the late 1990s intensified in the second half of the 2000s. These export product diversifications reflect industry response to an emerging global trends and how it created competitive advantages.

Figure 2: Diversification of apparel exports



Source : Sri Lanka Customs data

The survival of the SLAI in the post 1995 phase seems most attributable to the ingenuity of the industry itself. The study leads to the credence that specific strategies lead by a handful of major producers as critical inputs in reshaping the industry. Several leading apparel producers took upon the task themselves to move up the value chain by developing strong and sustained partnerships with reputed international retailers. They, in the process, established a reputation for selected garments varieties where the industry could draw considerable advantages over its lower cost competitors. Sri Lanka's reputation as leading manufacturer of more complex women's lingerie is a case in point. As the high cost of production remained a perennial challenge to Sri Lankan producers, the industry took initiatives to manage the costs through appropriate research and development and targeted human resource development. The existing apparel training infrastructure was made more industry issues focused and was reinforced by private sector industry training initiatives, the first such was created in 1998. Industry undertook its own initiative to set up design schools, while partnered with academic elite to create high-end fashions. This marked an emerging phase of industry strategy to pitch high value-added garments. The industry undertook the challenges as a collective responsibility, and this paved the way to the creation of the Joint Apparel Association Forum. The SLAI consolidated this opportunity to access EU market under the GSP granted in 2004 further by strategically positioning by adopting ethical manufacturing standards, which found an appealing position in the EU market. Evidently, while the ethical positioning through the "Garments Without Guilt", though did not create higher margins for exports, it indeed sustained export order volumes over Sri Lanka's competitor countries. Across the SLAI, however, the phasing out of the quotas had serious implications, with many small producers and also several large manufactures closing down. The industry responded to this challenge by market-based restructuring, where mergers and consolidations through a series of horizontal integrations. As a result, many small firms formed clusters around leading firms through subcontracting whilst some others fully integrated with them making gains in economies of scale to some degree. Parallel to this process, top garment manufacturers embarked on moving the apparel value chain upstream. The processes associated with original design manufacturing (ODM) and original brand manufacturing (OBM), ranked high as the distinctive initiatives taken recently. Evidently, lack of bilateral trading arrangements with the main market economies, especially with the US has been a factor against a winning potential sustained growth strategy for the industry.

## **Conclusions**

Amongst the challenges that of the SLAI are high cost of overheads, especially energy costs, the long-term prevalence of an over-valued currency regime, high sustained cost of financing and, domestic wage rigidities fuelled by volatile industry relationships were identified as further drag on the industry growth. The adverse situations were

further compounded by apparent State apathy to address national economic issues and the vagaries of global politics such issues as human rights and political rights which made headlines in the major market economies.

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## **GSP-Plus Removal and the Apparel Industry in Sri Lanka: Implications and Way Forward**

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**Keywords :** *Apparel sector; European Union (EU); Generalised System of Preferences (GSP) Plus concessions; competitors; preferential access*

### **Introduction**

Given the heavy dependence on developed Western markets for its exports, Sri Lanka's apparel industry has been a sector significantly affected by the recent unfavourable developments in these markets. Added to dampened demand from such markets is the challenge posed by the withdrawal of the Generalized System of Preferences (GSP) Plus concessions granted by the European Union (EU) in August 2010. Moreover, under new GSP reforms that will come into effect in 2014, Sri Lankan exports to the EU are set to face higher tariffs, with competitors being eligible to several concessions. The lack of a level-playing field in exporting to the EU is a significant challenge Sri Lanka will have to face in the near future.

Several studies have examined the importance of the GSP Plus scheme for beneficiary countries. Onguglo (undated), analysing the importance of EU GSP preferences for all beneficiary countries, shows that the coverage and utilization rates by import value are considerably higher for GSP Plus at 74 per cent and 86 per cent respectively, compared to 38 per cent and 64 per cent for general GSP. Wijayasiri (2007) assesses the usefulness of the EU and US GSP schemes for Sri Lanka's exports using three indicators (coverage, utilization and utility rates). He finds that while close to 100 of apparel exports from Sri Lanka to the EU are eligible for preferential treatment, the utilization rate is low at 28 per cent, mainly owing to stringent rules of origin (RoO) criteria. De Mel et al. (2011) also analyse the utilization of various trade agreements in Sri Lanka using both primary and secondary data, and conclude that the utilisation rate of GSP has increased over the years – from 42 per cent in 2003 to 72 per cent in 2008 – especially after the GSP-Plus came in to place. A firm-level survey reveals that a majority of the selected firms use the EU GSP scheme and rate it as highly beneficial.

### **Objectives**

The focus of the studies on Sri Lanka has been mostly on the general GSP scheme and not so much on the GSP-Plus scheme in particular. The withdrawal of GSP-Plus

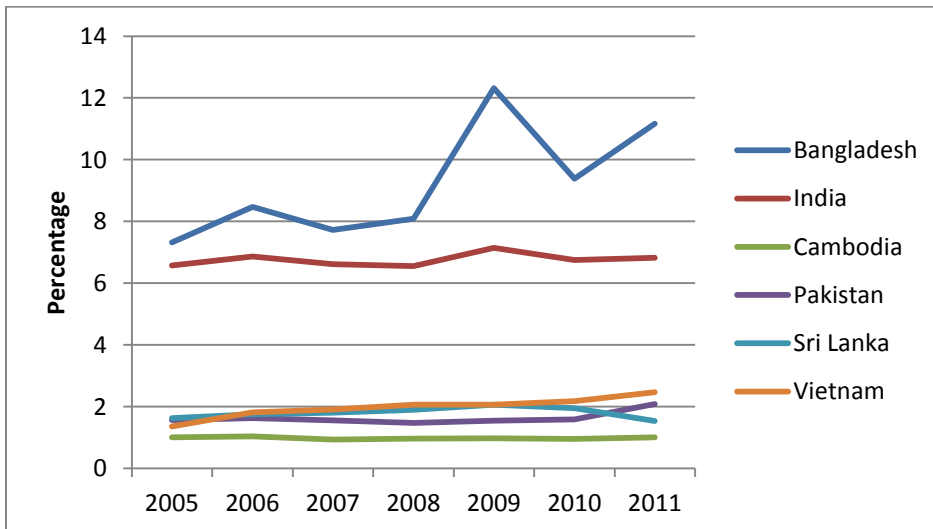


concessions and the importance of the EU as the prime destination of Sri Lanka's apparel exports warrant a fresh look at the performance of Sri Lanka's apparel industry. In this context, this study aims at assessing the current impact of GSP-Plus withdrawal on the Sri Lankan apparel industry, possible future impacts, and means of mitigating negative impacts and moving forward.

## Methodology and Results

The study employed both primary and secondary data sources. Secondary data, obtained from the Department of Customs and the Department of Commerce of Sri Lanka, were used to analyse the impact on apparel exports to the EU following the withdrawal of GSP-Plus concessions. In particular, indicators of the usefulness of trade agreements including coverage, utilisation and utility rates were calculated for Sri Lanka's apparel exports to the EU both under the general GSP and GSP Plus schemes. Results indicated that the GSP Plus scheme has played a significant role in penetrating the EU market compared to the general GSP scheme – utilization rates, which averaged around 35 per cent and 15 per cent for HS 61 and 62 product categories for the period 2002-2004 where only the general GSP preferences were available, increased significantly in the post-2005 period, peaking at 77 per cent and 55 per cent for HS 61 and 62 respectively in 2009 – the last full year in which GSP Plus was available. The rates for 2010 and 2011 show a declining trend in the absence of GSP Plus.

Figure 1: Export Shares in the EU Apparel Market, 2005-2011



Source: Own calculations using data from OTEXA, *US Imports of Textile and Apparel*. (<http://otexa.ita.doc.gov/scripts/tqads2.exe/ctrypage>) and the Market Access Database, Statistical Database. ([http://madb.europa.eu/mkacddb2/statistical\\_form.htm](http://madb.europa.eu/mkacddb2/statistical_form.htm))

Indeed, following the withdrawal of GSP-Plus, apparel export earnings to the EU recorded notable declines of approximately 10-15 per cent during 2012. Moreover, as illustrated in Figure 1 above, Sri Lanka's apparel export share into the EU market witnessed a steady increase after 2005 under the GSP-Plus scheme, but has recorded a significant decline in 2010 and 2011. The increasing export shares of regional competitors such as Bangladesh, India and Pakistan is also evident.

This analysis is complemented by interviews carried out with stakeholders in the Sri Lankan apparel industry, including apparel exporters to the EU and industry officials from the Joint Apparel Association Forum (JAAF), Sri Lanka Apparel Exporters Association and the Department of Commerce, with a view to obtaining their perceptions on the current situation and changes required in taking the industry forward. Such interviews revealed diverse viewpoints. One group acknowledged that loss of GSP-Plus would have a significant negative impact on the industry, especially by 2014 and beyond. Another group was of the view that, despite GSP-Plus removal, Sri Lanka's apparel exports would remain resilient in the future. They argued that many EU buyers gave more priority to factors such as long-standing relationships with suppliers, quality and reliability, and focus less on prices. This has indeed been observed in the case of large players in the industry, such as MAS Holdings and Brandix, which have established strong brands and reputation with buyers over the years.

## **Conclusions**

The study concludes that, despite such favourable factors, the loss of GSP-Plus could bring about significant challenges to the Sri Lankan apparel industry due to several reasons. First, the EU GSP reforms in 2014 will give added advantage to Sri Lanka's competitors in penetrating the EU market. Second, the crisis in the EU and subsequent dampened demand means that there would be more focus on prices in the future. Third, apart from large garment exporting firms, many other small and medium industries with less of an advantage in terms of long-standing relationships are likely to feel the impact to a large extent, which could also lead to closing of factories and job losses for many rural poor.

## **Policy Recommendations**

Thus, in looking to the future, Sri Lanka will have to find ways of mitigating negative impacts. One option is to fulfill the GSP-Plus criteria and regain some of its preferential access in the European market. However, this would be dependent on many political factors which remain highly uncertain. The need to diversify exports, both in terms of markets and products is another alternative receiving policy attention. The successful

penetration of new markets is, nevertheless, not an easy task. Given the lack of a level-playing field, increasing labour productivity and supply chain efficiency to remain competitive is key in moving forward and ensuring the sustainability of Sri Lanka's apparel industry.

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Ôjk jegqm .Kkh lsífi mrud³:h jkafka iudch ;=< ;u wjYH;d iy hq;=li imqrd,ñka jeo.;a Ôjk ;;ajhla mj;ajd .ekSug wjYH jegqmla ms<sn\j woyila bÈBm;a lsíuhs' fuu m³fhaIKh isy lrkq ,enqfõ weÖ"i lafIa;%h wdY%s;j /ia lr .;a ksheÈhla u.ska Bg wod< Ôjk jegqm .Kkh lsíugh's' tys\$ lemS fmfkk ,laIK jqfha fuu ksheÈfhka 67]la u ldka;djka ùu;a 62] la u wújdyl ùu;a h' 92] la u fiajh lf<a uyd mBúdK l³udka; j, ksid kshñ; m³ñ;Skag wkqj jegqma f.ùü wdÈh isýjk nj Wml,amkh flBks' ta wkqj iiu; l%ufõohlg wkqj Ôjk jegqm .Kkh l< w;r mdi,a hk orejka fofofkl= isák uõ-msh fofokdu /lshdj lrk l=gqĩnhl mehl Ôjk jegqm re 128'60 la f,i .Kkh flBks'

/ia lr .;a o;a; j,ska fmkajk mßÈ .Kkh lrk ,o udisl Ôjk jegqm jk re 22"639 g wdikak f,i re 20"197 l fõ;khla ,nk kuq;a ta i|yd wu;r meh 104 la fiajh lrk nj fmkS hhs' ta wkqj Tjqkag ,efnk mehl jegqm re 72 ls' iiu; jev lrk ld,h wkqj fiajh lrñka jeo.;a f,i iudch ;=< Ôj;a ùug kï ;j re 56 lska Tjqka f.a mehl jegqm jeäúh hq;= nj o ta wkqj fmkS hhs' ksIamdok msßjeh wkqj i,ld neÉ úg t;ri úYd, jegqma uÜgula lr <Õd ùu fiajd fhdaclhkag widOdrK úh yels jqj o mj;sk jegqma uÜgfi wksjd³h fjkila isÿ úh hq;= nj fuys\$ fmkS hhs' j³;udkfha l<ukdlrKfha kj;u ixl,amh jk mq³K ;;a;aj l<ukdlrKh hgf;a o fiajd kshqla;slhka fj; 1\$3 l nr ;eíula isÿ fldg we;af;a ixúOdkfha mqoa.,hka f.a wjYH;d ;Dma;su;a lrk /lshdfõ ;;ajhla we;s lsíu uõska fiajl M,odhs;djh yd ld³hCIu;djh we;s l< yels ksid h' t u.ska Y%uh ms<sn|j > ,xldj i;=j mj;akd idfmalaI jdisfha Wmßu m%fhdaek .ekSug wmg yels jkq we;'

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## **Status with Conspicuous Goods: The Role of Modern Housing**

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**Keywords:** *Consumer behavior, Housing industry, Luxury goods, Status consumption*

### **Introduction**

People care about their standing in society and what others think about them. One of the foremost reasons for this is the status consideration. Today, most people invest on luxury houses, which are noticeable to the public for the purpose of demonstrating their status to others. Indeed, acquiring expensive and status goods, such as luxury houses, has been labelled ‘conspicuous consumption’.

Thorstein Veblen (1899) coined the term over a century ago in his classic *Theory of the Leisure Class*, in which he defines the term as lavish spending on goods and services acquired mainly for the purpose of displaying income or wealth. Present-day scholars often quote new, larger and ostentatious houses as conspicuous product that signaling qualities of consumption (Frank, 1999; Jessie and John, 2002; Lloyd, 2005). For example, Lloyd (2005) says that “in the U.S., a trend in 1950s towards large houses began, with the average size of a home about doubling over a period of 50 years...this trend is a symbol of conspicuous consumption”. According to Frank (1999), one’s evaluation of the ‘adequacy’ of one’s own living space involves comparing it with ‘mental images’ of the living spaces of others.

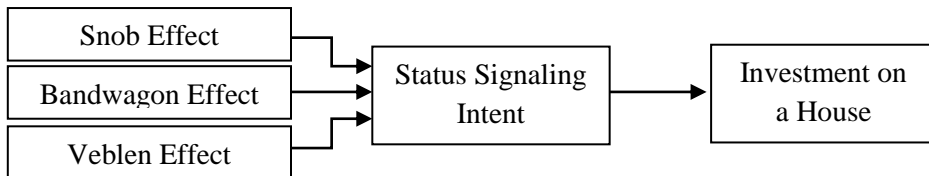
Although the role of modern houses in exhibiting the status of owner has been studied by a number of scholars in elsewhere in the world, a study of conspicuous motivations of modern house owners (MHOs) in Sri Lanka is relatively scarce. On the other hand, postmodern developments are significantly influencing the universal nature of conspicuous consumption, particularly in developing countries like Sri Lanka. Fuelled by increasing purchasing power and high social interactions, individuals’ conspicuous consumption trends are largely persuaded in these countries. In light of this, the purpose

of this study is to examine how MHOs exhibits their status by living in modern, larger and ostentatious house. It further explores various aspects related to the phenomenon of conspicuous consumption among MHOs in the Kurunegala district.

## Methodology

This paper reports the outcome of an exploratory baseline study, which carried out within the Kurunegala Municipal Council Limits with 120 MHOs (N = 120, 78 men and 42 women; age range 35 – 51 years). A series of MHOs discussions as well as personal interviews with renown architects supported by an extensive site visits were undertaken to gather firsthand information on housing symbolism. The Five-Point Likert scale, ranging from 1= strongly disagree to 5= strongly agree, was used to measure the respondents' signaling intent through three principal external effects identified by Leibenstein (1950), i.e. Snob effect (*other's demand reduces own demand*), Bandwagon effect (*other's demand increases own demand*), Veblen effect (*where quantity demanded for a good may increase with price*) (Figure 1).

Figure 01: Research Model



Further, researchers assigned the conspicuousness rating, based on the status consideration of MHOs, from 1 to 5 (1 = '*not at all conspicuous consumption*' to 5 = '*definitely conspicuous consumption*'). Along with other exploratory data analysis methods, the Statistical Package for Social Sciences (SPSS) [version 17] was utilized to facilitate an objective assessment of data gathered.

## Results & Discussion

The results highlights that MHOs are highly influenced by their social status. Not surprisingly, the findings confirm that a consumer perceives both utilitarian function ( $\beta=0.654$ ,  $p<0.001$ ) and expressive or status function ( $\beta=0.831$ ,  $p<0.001$ ) of housing. Further, result confirm that females were more likely than males to purchase or construct status-congruent houses and the higher investments on the status houses are

generally associated with respondents' profession ( $r = 0.876$ ,  $p < 0.001$ ) and the place of living ( $r = 0.821$ ,  $p < 0.001$ ).

As expected, conspicuousness ratings were higher for outer-appearance of house ( $M = 4.7$ ), its size ( $M = 4.2$ ), interior decorations ( $M = 4.1$ ) and lower for number of rooms ( $M = 2.9$ ) and a modern-equipped pantry ( $M = 2.7$ ). Most of the respondents accepted that they have invested on modern, larger and ostentatious houses to displaying their higher status than others ( $M = 4.85$ ), which is followed by to creates social opportunities and social interaction ( $M = 4.64$ ), to distinguish them from others ( $M = 4.21$ ), and to impress upon others that he/she possesses wealth ( $M = 3.87$ ).

Finally, the outcome of analysis shows that MHOs' status signaling are largely persuaded by Veblen effect ( $r = 0.781$ ,  $p < 0.001$ ). The Bandwagon effect ( $r = 0.679$ ,  $p < 0.001$ ) and Snob effect ( $r = 0.623$ ,  $p < 0.001$ ) are also found to be significantly influence. Veblen effect is highly correlated with income, education and profession of the respondents, where as Snob effect was significantly correlated with the place of living, particularly among the urban residents. A significant correlation was found between the respondents' gender and Snob effect.

## Conclusions

According to the findings, both status and utilitarian functions of housing are found to be important determinants for MHOs investment decisions in Kurunegala district. Yet, most of them pay more attention on status functions than utilitarian function. Moreover, MHOs struggle to create social opportunities and to distinguish them from others by having a modern and ostentatious house. Impressing upon others that MHOs possess wealth is also an important motivation of conspicuous MHOs. Place of living, profession, and gender are largely influence MHOs' investment decisions.

While, the outer-appearance, size and the interior decorations are extremely important for MHOs, some MHOs increase their demanded for a luxury house with its value and some increase their demand when other increases their demand. The results of the research can be considered useful for marketing of luxury houses in Sri Lanka. When designing a new house the potential added values through the status function are to be concerned by the architects.

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## **Consumer Preferences for Different Attributes of Powdered milk: A Conjoint Analysis**

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*Key words: Powdered milk, Conjoint analysis, Part-worth values*

### **Introduction**

Consumption of dairy products in Sri Lanka, particularly powdered milk, has experienced a substantial growth over the last few decades. Average monthly household expenditure share on milk and milk products in 2010 was 7.8%, ranking third in food expenditure (Economic & social statistics of Sri Lanka, 2012). As such, it is evident that milk powder has become an essential item the food basket of Sri Lankan consumers. Despite the attempts made by the Sri Lankan government to fulfill the on-going demand for this commodity, milk powder imports account for more than 80% of the domestic requirement. Meantime due to urbanisation and increased income, the preference and expectations of consumers for milk food have been altered.

In Sri Lanka, milk powder market is led by a few reputed imported brands and one local brand. In this context, a study was organised to understand which attributes of powdered milk consumers prefer the most and their willingness to pay for these attributes, based on conjoint analytical framework.

Conjoint Analysis is a powerful technique to measure and understand buyers' preference for consumer products (Green and Rao 1971; Johnson 1974; Srinivasan and Shocker 1973b; Wittink and Cattin 1989). A highly marketable product can have multiple attributes and it could be difficult to state consumer preference, trade off and their relative importance, with regard to an isolated attribute. The advantage of using conjoint analysis method over other methods is that the products are decomposed into different attributes with different levels and consumer preferences for the products are measured by partial contribution ("part worth") of product features. The approach is generally believed to better reflect the real decision-making situation of consumers.

### **Objectives**

The main objective of this study is to assess consumer preference for various milk powder attributes, to identify the most important product attributes and levels, and to estimate the *part worth* utilities of attributes that consumers place for powdered milk.

## Methodology

At the outset, a several focus group meetings were held with technical experts to select appropriate product attributes and levels. The identified attributes together with their levels are price (High, Medium, Low), Brand (Anchor, Maliban, Highland), Packaging (Aluminum foil only, Aluminum foil with cardboard) and fat content (Full cream, Nonfat).

The second step was to employ an experimental design to reduce the combinations to a manageable number and construct a survey instrument to collect data. A full factorial design yielded 36 profiles and it is almost impossible for a respondent to rate all of them. The number of profiles was reduced to 8 by adopting incomplete fractional factorial design. Pair-wise comparison method was used in conjoint selection. Once the set of product profiles was constructed, a survey was executed to collect the data.

The questionnaire was administered with a random sample of 112 urban middle class consumers in supermarkets of Kandy area. A binomial logit model with dummy coding was used to analyse the data for a pair-wise conjoint experiment and to estimate relative of importance and willingness-to-pay for the different attributes.

## Results

Table 2. Part worth values for attributes and levels, conjoint Analysis results

Attribute/ Level	Part worth utilities
Price - High	-2.34
Medium	-2.77
Low	5.11
Brand - Anchor	2.72
Maliban	2.10
Highland	- 4.82
Fat content- Full cream	1.23
Non fat	-1.23
Packaging- Cardboard	2.66
Aluminum	-2.66

Anchor and Maliban brands have a higher preference and Highland has a negative preference. Full cream and cardboard packaging are also preferred by consumers. Price is the most important attribute (33.96%), whereas the least important attribute is the fat content (10.6%). Brand is also a relatively important attribute (32.5%).

## Conclusion and policy recommendations

Of the four attributes selected, consumers pay a high value on price and brand than other attributes. Price was found to be a significant factor when making purchasing decisions. The market segment has a high preference for Anchor brand compared to other brands. Even though there were some consumers who prefer non-fat powdered milk due to health reasons, most preferred fat content was full cream.

In urban middle class society, preference for powdered milk can be influenced by income growth, technological advancement, changes in lifestyle and urbanisation. The findings of this study can be useful in developing appropriate production plans for local producers.

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**Agricultural Export Diversification in Sri Lanka:  
An Analysis of Intensive and Extensive Margins during 2000-2010**

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*Key words: Export Diversification, Intensive and Extensive Margins, Agriculture, Sri Lanka*

**Introduction**

Trade theories, from Adam Smith and David Ricardo to the Heckscher-Ohlin-Samuelson model, emphasised the importance of specialisation in producing and exporting goods based on their comparative advantage to achieve economic development. However, diversification in the export sector generated much attention in the trade literature later on. The seminal contributions including the Prebisch-Singer thesis (Prebisch, 1950, Singer, 1950) and the “big push” arguments advocated by Rosenstein-Rodan (1943) viewed economic diversification rather than specialisation as a determinant of economic development.

There exists ample empirical evidence to suggest that export diversification had led to stabilisation of export earnings, upgrading of value addition and enhancement of economic growth of many developing countries (Ali et al., 1991; Ghosh and Ostry, 1994; Bebczuk and Berrettoni, 2006; Hesse, 2008). The experiences in many developing countries reveal a switch from import substitution strategy (which was characterised by heavy import controls) to export promotion and outward orientation strategy, in order to reap benefits of export diversification.

The Sri Lankan experience is no exception. The country followed an import substitution strategy up until 1977 and switched on to an export promotion strategy there onwards. The policy framework of the current government, *Mahinda Chinthana*, directs the

country to diversify from traditional agricultural exports, *i.e.*, tea, rubber and coconut, to non-traditional agricultural exports such as vegetables and fruits. The structural change in the overall export basket of the country, primarily due to the above shift in policy regime, is well documented. The ways in which agricultural exports got diversified however have not been well investigated in the literature.

## **Objective**

The objective of this paper is to analyse in detail the pattern of agricultural export diversification in Sri Lanka. The concentration across product-lines and export markets and penetration into new markets and development of new product lines are examined for the period 2000-2010 using disaggregated data at Harmonised System (HS), 6-digit levels for the chapters 1-24 obtained from Sri Lanka Customs. The data set comprises of 516 product lines and 233 destinations of Sri Lankan exports.

## **Concepts and Measures**

### *Concentration Ratios*

Export concentration ratios reflect the degree to which a country's exports are concentrated on a small number of products or a small number of trading partners. The value of exports of the top 3, 5, and 10 products and markets as a percentage of total exports are presented to depict the concentration among products and markets respectively.

### *Extensive Margins*

Extensive margin depicts the number of country-product relationships an exporting country possesses (Besedes and Prusa, 2008). A country can experience a change in its extensive margin by exporting to a country that had never been serviced, by exporting a product that had never been previously sold abroad, or by exporting an already exported product to a destination country previously not served. The extensive margins were presented using the number of new markets penetrated into with existing products and with new products. The average export values between two periods, for a given product line (a 6-digit level of HS code), were compared to ascertain whether there was a penetration or not.

### *Intensive Margins*

Intensive margin depicts the extent of relationships that survive and deepen over time (Besedes and Prusa, 2008). Diversification at the intensive margin occurs when the distribution of trade across existing export lines become even. The intensive margins

were presented using the number of product lines that were in existence from period 1 to period 2 irrespective of the export market.

### **Results of the Analysis**

Concentration ratios calculated at HS 2-digit level show that, out of the 24 categories, 98%, 94% and 90% of exports were occupied by the top 10, 5 and 3 product lines in 2010, indicating a significant concentration in exports. The product line “HS 09: Coffee, tea, mate and spices” is on the top accounting for an average of 67.65% of total agricultural exports. This product line is dominated by black tea. The geographical concentration of exports seems to be lesser than that of product concentration. The share of the top ten countries was around 60%.

The results of extensive and intensive margins reveal that the diversification of the agricultural export basket has predominantly occurred through strengthening of the existing relationships, *i.e.*, intensive margins. Of the 516 product lines (HS-6 level) exported during 2000-2004, 441 (83.52%) product lines were sustained, 87 (16.48%) new product lines entered and 75 product lines lost their existence during 2006-2010 (irrespective of the destination). Of the 195 export destinations in 2000-2004, 178 (85.58%) markets were sustained, 30 (14.42%) new markets entered and 17 markets were lost (irrespective of the product line) in 2006-2010.

### **Conclusions**

The above results indicate that the diversity of the agricultural export basket in Sri Lanka is narrow and is limited to a few products and few markets. Despite the policy influence, the country has been relying more on intensification than on diversification of its agricultural export basket.

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## Technical Efficiency of Paddy Farmers in Batticaloa District of Sri Lanka

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**Key Words :** *Paddy farmers, Frontier Analysis, Batticaloa District, Productivity, Technical Efficiency*

### Introduction

Batticaloa District in the Eastern Province of Sri Lanka is heavily dependent on agriculture for its economic survival. The majority of the population is engaged paddy production and approximately 58,374 hectares are utilized for paddy production. However, experiencing a low productivity in the agriculture sector, especially in paddy farming, is the major factor causing poverty in the District (Eastern Development plan 2012-2016, Eastern Provincial Council). In considering poverty issues in Sri Lanka, Batticaloa District require more attention which has been identified as the country's poorest District in 2009/10 (HIES, 2009/10). Therefore, timely more studies in productivity and efficiency of the farming activities in the District are needed. Technical efficiency is the form of productive efficiency and is concerned with the maximization of output with a given set of input. Productivity is defined as the ratio of output to input for a particular production situation. Increase in productivity reveals that either more output is produced with the same amount of input or less input is required to produce same level of output. Thus, the concept of productivity is closely associated with efficiency, which means if a production unit is operating with full of efficiency, its production process is operating on the production frontier (Masteron, 2007). In literature several scholars have already addressed this issue. Radam et al. (2010) studied technical efficiency of Malaysian wooden furniture industry, and concluded that many firms are still operating below the efficiency level. Lambarra et al. (2007) investigated technical efficiency and decomposition of productivity growth of Spanish Olive farm found that farm location, age of manager and composition of work force affect efficiency level. Omonona et al. (2010) studied technical efficiency in Cowpea production in Nigeria, and concluded that the inputs used in production process is appreciable level and however, the authors further emphasized for more attention to enjoy optimum level of productivity. Kyei et al. (2011) analysed efficiency in Coco farming in Ghana, and found that most of the important factors such as labour, age of farms and capital would lead better output if they are properly managed.

In that line, this paper also estimates production function and technical efficiency of paddy farmers in Batticaloa District.

## Objectives

The principal objectives of the study are to explore the potential for improving production efficiencies of farmers in Batticaloa District, and to identify the socio-economic factors that influence such efficiencies.

## Methodology

The data were collected in the area of *Eravur Pattu* and *Manmunai West* D.S Divisions of Batticaloa District because these D.S Divisions consist of significant paddy growing farmers. A structured questionnaire was used to collect relevant information from hundred randomly selected paddy farmers. Incorporating cross-section data from a sample of 100 small-and medium-scale farmers, stochastic frontier analysis and Tobit regression were employed to obtain an efficiency score and the factors that determine the efficiency of the farmers respectively.

Assuming a Cobb-Douglas production function, we define the stochastic production frontier as:

$$\ln y_j = \ln \beta_0 + \sum_{i=1}^m \beta_i \ln x_{ij} + \varepsilon_j$$

Thus, the empirical model specified as:

$$\ln y = \ln \beta_0 + \beta_1 \ln x_1 + \beta_2 \ln x_2 + \beta_3 \ln x_3 + \beta_4 \ln x_4 + \varepsilon$$

where, y is level of output for jth farmer, x is a vector of input i used by farmer j, and  $\beta$  is a vector parameter.  $\varepsilon_j = v_j + u_j$  indicates the composed error term, and  $v_j$  is the two-sided error term whereas  $u_j$  is the one-sided error term. The independent variables in the vector are as follows:

$x_1$ = size of land in acres

$x_2$ = number of labour

$x_3$ = quantity of fertilizer

$x_4$ = quantity of pesticide

The linear Tobit regression model was employed to obtain an efficiency score and the factors that determine the efficiency of the farmers respectively. The model was employed because the dependent variable technical efficiency scores are censored having values ranging between 0 and 1. The model specification is given as:

$$Te = f(x_1, x_2, x_3, x_4, x_5, x_6, x_7, e_i)$$

Where,

Te = technical efficiency index for farmer i

x<sub>1</sub>= training for farmers (yes =1, otherwise = 0)

x<sub>2</sub>= age of farmer

x<sub>3</sub>= fertilizer subsidy (yes =1, otherwise = 0)

x<sub>4</sub>=irrigation (tank =1, otherwise = 0)

x<sub>5</sub>= farmers experience (in years)

x<sub>6</sub>= family size

x<sub>7</sub>= house hold head (female headed =1, otherwise = 0)

e<sub>i</sub>= the error term

## Results

Table 1 gives the results of stochastic production frontier analysis incorporating inputs for paddy production such as land, labour, fertilizer and pesticide.

The finding reveals that 10% increase in the factors of land, fertilizer and pesticide would correspond to an increase in output of paddy with 0.01, 4.92 and 3.59 percent respectively. It is noted that the labour factor is not significant anymore, which means that an increase in number of labour in the field would not support for more paddy yield.<sup>3</sup>

Table 1. Results of Stochastic Production Frontier Analysis

Variables	Coefficients	t-statistics
<i>Inland</i>	0.001***	14.78
<i>Inlabour</i>	0.05	0.89
<i>Infertilizer</i>	0.492***	10.81
<i>Inpest</i>	0.359***	6.29
Intercept	1.003***	2.37
Log Likelihood		-31.095
Wald Chi-square		632.08

\*\*\* indicates statistically significant at 1% level

<sup>3</sup> This is what is reflected in the Lewis model where he considered the rural agrarian sector as having surplus labour, and thus, its marginal productivity of labour could be zero.

Technical efficiency of paddy farmers ranges from 0.274 and 0.945 with a mean value of 0.732, implying that on average the paddy farmers in the study area incur about a 27 percent of loss in output reported due to technical inefficiency.

Table 2. Results of Determinants of Technical Efficiency

Variables	Coefficients	t-statistics
<i>Training</i>	0.117***	2.17
<i>Age</i>	0.002	0.13
<i>Fertilizer subsidy</i>	0.175***	2.74
<i>Irrigation</i>	0.140*	1.61
<i>Farmers experience</i>	0.003*	1.51
<i>Family members</i>	0.010*	1.60
<i>House hold head</i>	0.044	0.90
Intercept	-0.093	-0.37
Log likelihood function	26.417	
LR Chi-square	14.20, N= 81	

\*\*\* and \* indicate statistically significant at 1% and 5% level respectively

Taking the determinants of efficiency into account, Table 2 reveals the results that training for farmers and getting fertilizer subsidies are statistically significant at 1% level whereas irrigation, farmers experience and number of family members are statistically significant at 10% level. The factors of farmers' age and household head are found to have no significant effect anymore.

## Conclusion

This study estimates stochastic frontier production for paddy farmers in Batticaloa District. The analysis shows that land, fertilizer and pesticide have positive effect on the paddy yield. However, the labour factor is not effective. This implies that for greater yield, fertilizer and pesticide needs to be intensified. Training for farmers, fertilizer subsidies, irrigation system, farmers experience and family size are the major contributing factors to the efficient production of paddy in the region. In comparing with other determinants of efficiency, extension services by giving training for farmers, and the fertilizer subsidy program are much effective. The inefficiency components such as household head and farmers' age also have positive characteristics that show a positive relationship.



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## **Efficiency Comparison of Farmer Field School Approach and Small Scale Irrigation Rehabilitation Schemes in Rain-Fed Farming in Kurunegala District**

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*Key words: Technical efficiency, rain-fed farming, farmer field schools*

### **Introduction**

Rain-fed farming is a backward production systems in Sri Lanka mainly due to water scarcity, low level of input and technology use associated with low productivity. A number of programs have been implemented by government agencies to upgrade the rural livelihoods under rain-fed farming through enhancing the agricultural productivity. Of these, the Dry Zone Livelihood Support and Partnerships Program of the International Fund for Agricultural Development aimed at raising upland farm productivity through two participatory extension methodologies. One is Farmer Field School (FFS) approach that promotes active participation of the beneficiaries in designing, implementation and monitoring of the interventions. The other is rehabilitation of small-scale irrigation schemes where small tanks were rehabilitated to provide irrigation facilities in the Maha season and to increase effective irrigated area of Yala season by around 30%.

### **Study Framework**

The objectives of the study were to estimate and compare technical efficiencies of the farmers under these two programs. The necessary data were collected from a representative sample of 120 beneficiaries in Kurunegala District using a structured questionnaire. Galgamuwa, Mahawa and Polpithigama Divisional Secretariat Divisions (DSDs) were selected out of nine DSDs where the project was operational. Representative samples were drawn from the beneficiaries of Farmer Field Schools and Rehabilitation of small irrigation schemes from these selected DSDs.

Maximum Likelihood (ML) estimates of the of the stochastic production frontier functions as well as Ordinary Least Square (OLS) estimates of the average production functions were obtained under Cobb-Douglas specification using land, labour and material as inputs. Since the socio-economic context was similar, a common (i.e., pooled) frontier and individual frontiers were estimated and accordingly partial production elasticities, returns to scale parameters as well as technical efficiencies were

obtained. Appropriate statistical tests were employed to compare these estimates of the two project approaches with respect to the common frontier and individual frontiers.

## Results

The results revealed that ML frontier functions were better representations of the production systems over OLS, implying that there were substantial inefficiencies in the system. The mean technical efficiency of the farmers under FFS approach was 88.78% while that for the farmers under small irrigation rehabilitation schemes was 83.42% with respect to individual frontiers. With respect the common production frontier, mean technical efficiencies of the farmers under FFS approach and small irrigation rehabilitation schemes were 88.28% and 87%, respectively. Therefore there is scope for further enhancing the output by 11.22 % and 11.72% with respect to individual and common frontier in Farmer Field School approach. Similarly, the scope for incremental output due to small irrigation rehabilitation schemes is 16.58% and 13% with regard to individual and common frontiers.

Output elasticities of FFS approach in terms of land, fertilizer, seed and labour were 0.9964, 0.0286, 0.0441 and 0.0182 respectively. The elasticity values for land and seeds were statistically significant at  $P=0.05$ . Output elasticities of small irrigation rehabilitation schemes in terms of land, fertilizer, seed and labour were 0.1703, 0.7032, 0.2058 and 0.1188 respectively. However, only the elasticity related to fertilizer was statistically significant at  $P = 0.05$ . Output elasticities of common scenario (FFS approach and small irrigation rehabilitation schemes combination) for land, fertilizer, seed and labour were 0.5347, 0.2534, 0.0066 and 0.0894; of these, elasticities for land and fertilizer were statistically significant at  $P = 0.05$ .

The mean technical efficiencies were statistically different between two schemes in the individual scenario, implying that farmers in FFS approach were more efficient within the individual scenario ( $T = 2.95$ ,  $p = 0.004$ ). The mean technical efficiencies were not statistically different between the two schemes in the common scenario indicating both approaches achieved similar efficiencies in that scenario.

There are long-term gains in rehabilitation of small scale irrigation schemes by helping farmers to overcome water scarcity in Yala season. On the other hand, in FFS approach, the water scarcity problem in the Yala season could easily be surmounted since the crop water requirement for other field crops such as ground nut is relatively low.

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## **Factors Affecting the Demand for Mobile Phones by University Students (An analysis based on the Rajarata University of Sri Lanka)**

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*Key words: Demand, Mobile phone, University Students*

### **Introduction**

A large majority of people all over the world are using telephone facility for communication. Mobile phone in particular, has revolutionised telecommunication, and has become a very important and essential instrument in an age marked by severe competition. It helps those who frequently travel, commute to work and maintain busy schedules in life and has thus become a necessity. Puro (2002) noted that Finland has one of highest mobile phone densities in the world, reaching over 90% of the people less than 30 years of age. Taylor and Harper (2001) noted that young people use text messaging on mobile phones as forms of gifts to cement social relationships. Aoki and Downes (2004) focused on the behavioral and psychological aspects of cell phone usage among college students. They tried to find the reasons behind why a technology was adopted in a particular way. They identified several attitudinal factors including “the necessity” in modern times, cost efficiency when compared to landline phones, safety or security, and dependability.

### **Problem statement**

Most university students in Sri Lanka still depend on their parents for their day to day expenses and very few students are working even on a part-time basis. It was found that many university students were using mobile phones even if they come from low income families. Therefore, it is important to examine “why they need mobile phones?, what factors affect the demand for a mobile phone?” and “the current trend of mobile phone usage among university students?”. This study investigates into the causes and situational factors behind the demand for mobile phones among university students, while examining the motivational and behavioral characteristics of mobile phone usage.

### **Methodology**

This study mainly used primary data. Relevant primary data were collected through a field survey using a pre tested questionnaire and group discussions. The questionnaire included 10 open and closed ended questions. Stratified random sampling method was

used to select 80 students. Under this scientific selection method, equal chance was assigned to the five faculties, batches and gender. Total population was divided in to five faculties, each faculty was divided in to four batches and each batch was divided into male and female categories. Secondary data were obtained from related literature. The data collected, both quantitative and qualitative, were digitised using Likert Scale method before subjecting to analysis. Tabulated data were summarised in the form of graphs and tables to understand the relationship and association whenever necessarily. Multiple regression analysis was employed to investigate factors contributing to demand function for mobile phones.

## **Results and Discussions**

The dependent variable of this study was the demand for mobile phones by university students. The study found a number of independent variables including the usefulness, monthly income, taste, convenience, facilities and monthly expenditure. The usefulness, facilities in phones and students' monthly expenditure were found negatively influencing the demand for mobile phones. The monthly income of the University students' and taste positively affected the demand. Monthly income was the most important factor for university students' demand for mobile phones. With a coefficient value of 0.446, the first hypothesis of the study could be accepted. Facilities in mobile phones were found negatively affecting the demand for mobile phones, with an associated coefficient value of -0.207. Therefore, the second hypothesis could not be accepted. 50% of students (half of the sample) agreed that price of the phone would affect the demand. About 12% did not agree and 38% were neutral about effects on demand of price of the phones.

Many students (44%) agreed that the cost of the sim card affects the demand for mobile phone, but about 37% of them were neutral on the price of the sim card. 42% of the sample did not have an idea as to whether the price of other instruments affected the demand for mobile phones. Most of the students (77%) thought that imitation affected the demand as well. About 75% of university students believed that ease of connectivity through phones affected their demand for mobile phones. More than a half of the population (51%) agreed that multipurpose function of mobile phone also influenced the demand.

About 26 % of students used phones worth 3000 rupees and below with limited options, while 24% of them used phones priced above 18000 rupees. 40% of students spent 200 rupees or less on mobile phone per month and 45.8% spent within the range between 250 rupees and 450 rupees per month. About 6% spent more than Rs. 1000 per month on their mobile phone. Very high share of students (87%) used mobile phones for vary basic facilities, mainly to make a call to someone, but about 13% used other facilities



such as SMS, MMS, Radio or Internet. About 99% of students were of the view that the predominant advantage of having a mobile phone was to make a call to somebody; that is, the communication function. 7 %, 2% and 1% of students used mobile phones for other resources "ease of use", "knowledge" and "happiness" respectively. Many of the students (64%) used *Nokia* phone, 9% of them used *Sony Ericson* and 27% used other brands. 55% of students used phones with limited options but only about 31% were happy to use limited option phones. About 45% of students used high facility phones. The data show that about, 69% of students prefer to use high facility phones. The lack of signals cost some extra money and seemed to be the major problem associated with mobile phone usage by university students at the Rajatata University of Sri Lanka.

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