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DIFFUSION OF INNOVATIONS IN THE COLOUR TELEVISION INDUSTRY: A CASE STUDY OF LG INDIA

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ABSTRACT

Economic reforms in India have paved the way for entry of multinational corporations (MNCs) into the consumer durables market. LG Electronics India is the classic case of an MNC which captured the Indian market with wide range of consumer durables such as colour televisions, refrigerators, air conditioners, washing machines, microwave ovens, computers, vacuum cleaners, optical storage devices, and GSM mobile phones with its effective marketing strategies. LG's basic strategy was to quickly and effectively adapt its products and promotions to the Indian market environment. LG's success lies in offering technologically advanced products at an affordable price both in urban and rural India. This study analyses the impact of LG's effective marketing strategies on its position and growth in the Indian CRT colour television market using the Bass model for diffusion of innovations. The analysis has identified the sales potential for LG's CRT colour televisions, and has indicated the peak point and the subsequent decline in sales forecast for the same. It also suggested that LG should change its marketing strategies in order to improve its sales potential in the coming years.

KEYWORDS

LG Electronics, consumer durables, diffusion of innovations, Bass model.

INTRODUCTION

Emerging markets are newly formed or reformed markets, created by factors such as a new technology, the changing needs of buyers, and the identification of unmet needs by suppliers. Porter (1980) suggested that the industrial environment in emerging markets is influenced by the extent of concentration of its firms, the stage of its maturity, and its exposure to international competition. Lambkin and Day (1989) proposed that the most pervasive feature of emerging markets is the uncertainty about customer acceptance and the eventual size of the market, which process and product technology will be dominant, whether cost declines will be realized and the identity, structure and actions of competitors. They also argued that buyers have similar preferences and buying behaviour in emerging markets. This ultimately limits market segmentation and gives limited options in terms of market segmentation strategy. Product usage can be used as a basis to segment the market. Hence, industry development is influenced by the factors such as acceptance of product by buyers, entry barriers, the performance of firms serving the market, and future expectations.

The Indian colour television industry has witnessed a rapid growth during the post-liberalisation period. The sales growth of colour televisions increased from 16.8% in 1992-93 to about 21.6% in 1993-94 to 27.9% in 1996-97, and 32.5% in 1999-2000¹. Some factors contributing to this growth included the increase in popularity of cable television, the significant reduction in prices of colour televisions², the entry of international brands (such as LG, Samsung, Sony, Panasonic, and Akai, among others), the increase in advertising expenditure, and various sporting extravaganzas (such as the cricket and football World Cups). However, more recently, the sales growth of CRT colour televisions has stagnated to around 5.2% in the period 2008-11, perhaps as a result of the economic slowdown and the advent of high-end colour televisions.

The diffusion of innovations³ in the case of colour televisions was much faster in the post-liberalisation era in comparison with the pre-liberalisation period (Gupta, 2010). The entry of MNCs has made the Indian market highly competitive and consumer-driven. In terms of economic and technical substitutability, the colour television industry is also facing intense competition, and in the process, new innovations in the form of additional technological features are taking place. Further, the Indian consumer has become more demanding, seeking not only superior quality at a reasonable price, but also an excellent after-sales service. Also, consumers have become increasingly indifferent towards particular brands due to availability of reasonably close substitutes in the market, and decreased differentiation between brands, in terms of features and prices, though locally-manufactured products tend to be lower-priced (Gupta, 2010). Moreover, the market has become more consumer-centric than product-centric, forcing marketers to adapt their marketing strategies to changing consumer preferences and needs. Consumers now-a-days have become trend-setters and price-setters. Further, the need to access news, information, and entertainment has transformed television into almost a necessity good, in both urban and rural India. Finally, there is an increased need for transparency on the part of producers, so as to allow consumers to match their needs with what they are buying more effectively.

In this backdrop, the present paper investigates the diffusion of innovations in the case of LG Electronics India, a major MNC entrant in the Indian colour television industry using the Bass model. The study takes into consideration the influence of diffusion of innovations on the consumer adoption process and sales performance. The results of the analysis would provide insights into the total sales potential for LG in the Indian colour television market as a consequence of LG's marketing strategy.

¹<http://www.icmrindia.org/casestudies/catalogue/BusinessReports/A Note on the Colour Television Industry in India.htm>

² Colour televisions refer to cathode ray tube (CRT) colour televisions.

³ The theory of diffusion of innovations is a framework for exploring the spread of consumer acceptance of new products throughout the economy. It explains how innovations are taken up by a population.

The rest of the paper is organised as follows. The next section gives an overview of LG Electronics India, with special emphasis on its marketing strategies adopted in the Indian colour television market. The subsequent section explains the theory of diffusion of innovations and the Bass model. This is followed by a section presenting the analysis of the data. The next section discusses the findings of the study and its implications for LG's innovations and marketing strategies, followed by the conclusion.

LG ELECTRONICS IN THE INDIAN COLOUR TELEVISIONS MARKET

South Korea-based LG Electronics established its wholly-owned subsidiary LG Electronics India Pvt. Ltd. in India in January 1997. LG is one of the youngest consumer durable brands in the country today. The following paragraphs discuss the marketing strategies adopted by LG Electronics India, with respect to the 4Ps (product, price, place, promotion).

LG's product portfolio includes consumer durables like colour televisions, washing machines, air-conditioners, microwave ovens, refrigerators (direct-cool and frost free), computers, vacuum cleaners, optical storage device, personal computers, and mobile phones. LG enjoys the patent for Golden Eye Technology in CRT colour televisions. It consists of a light sensitive natural algorithm Eye and an advanced circuit which automatically adjusts colour, brightness, contrast, sharpness, tint and white balance in response to any change in ambient light conditions. This ensures unmatched picture quality without straining the viewer's eyes⁴.

LG adopted low pricing in all product categories, which yielded higher volumes. For example, in the initial years LG offered the Sampoorna range of colour televisions, with a price tag of only Rs. 8200, which was targeted at the rural and semi-urban areas. This segment is extremely important for LG as it contributes 60% of its sales. Subsequently, it introduced a premium sub-brand called X-Canvas, targeting the urban affluent segment. LG has priced its 29" flat X-Canvas television at Rs.36,000 against a regular 29" LG flat television of around Rs.29,000, both of which are highly competitive prices, in comparison to those of competitors such as Sony and Samsung. The basic strategy LG offered was technologically-advanced products at an affordable price (Kumar, 2005).

LG's wide distribution network has helped the company in reaching a large customer base spread across different parts of India. LG covers India with 72 regional offices, 61 central area offices and 43 branches, with over 112 area offices at district level. It also helped the company in providing effective after sales service to the consumers. LG follows single-level consumer marketing channel for consumer durables, i.e. Manufacturer-Dealer-Consumer⁵.

LG adopted very aggressive sales promotion and advertising strategy in India, through its media partner Mudra Advertising. The media mix includes print, electronic and outdoor. On an average, LG spends about 5% of its annual sales turnover on advertising (Kumar, 2005).

Brand LG had a CAGR of 23.7%, from a turnover of Rs 1,903 crore in 2000 to Rs 16,000 crore in 2010, of which two product verticals, home appliances and home entertainment, contributed 35% each, and remaining came from three other product verticals, viz. air conditioners (15%), mobile communication (10%), and business solutions (5%). According to estimates by GFK-Nielsen, its market shares in different segments in 2011 were: 30.0% for refrigerators, 27.7% for washing machines, 35.2% for microwave ovens, 27.3% for colour televisions, 28.0% for air-conditioners, and 7.0% for mobile phones⁶.

LG's success can be attributed to several factors: (a) quick understanding of the local needs and reaching the semi-urban and rural markets, often before its Indian competitors; (b) technological supremacy by introducing innovative products; (c) an appropriate combination of products at all levels; (d) a steady and updated pipeline with high-decibel marketing and advertising; (e) impetus on R&D and new product development, helping the company to launch all products within five months of conception of idea; (f) competitive pricing; and (g) sponsorship of major events such as cricket, football, music concerts, fests, among others.

LG changed its business strategy in 2007, reinventing itself as a brand that gives happiness and enriches life, with a new punchline "Life's Good". This was implemented through a series of advertising campaigns, focusing on new features and benefits in its products. For example, the Golden Eye campaign for colour televisions highlighted eye protection. Similarly, the refrigerator was positioned as a machine that not only prevented food from decaying but also preserved its nutritional value. The air-conditioners focused on healthy air, washing machines on fabric care, and microwave ovens on healthy cooking⁷.

DIFFUSION OF INNOVATIONS AND APPLICATION OF THE BASS MODEL

The theory of diffusion of innovations is a framework for exploring the spread of consumer acceptance of new products throughout the social system. It explains how innovations are taken up in a population. An innovation is an idea, behaviour, or object that is perceived as new by its audience. The theory of diffusion of innovations provides three valuable insights into the process of social change: which qualities make an innovation spread successfully, the importance of peer-peer conversations and peer networks, and understanding the needs of different user segments (Schiffman and Kanuk, 2010).

The theory of diffusion of innovations takes a radically different approach to most other theories of change. Instead of focusing on persuading individuals to change, it sees change as being primarily about the evolution or "reinvention" of products and behaviours so that they become better fits for the needs of individuals and groups. In the theory of diffusion of innovations, it is not people who change, but the innovations themselves. Diffusion theorists recognise five qualities that determine the success of an innovation: relative advantage; compatibility with existing values and practices; simplicity and ease of use; trialability; and observable results. Reinvention is a key principle in the theory of diffusion of innovations. The success of an innovation depends on how well it evolves to meet the needs of more and more demanding and risk-averse individuals in a population (Wright and Charlett, 1995).

The Bass model (1969) of diffusion of innovations suggests that the rate of adoption of an innovation depends on three parameters: p , the coefficient of innovation (i.e. the percentage of initial triers); q , the coefficient of imitation (i.e. the percentage of imitators); and M , the total market potential. Bass model proposed a quadratic relationship between the rate of adoption (x_t) of an innovation and the cumulative rate of adoption (y_t), i.e.

$$x_t = p(M - y_t) + (q y_t / M). (M - y_t) = pM + (q - p).y_t - (q/M).y_t^2$$

Estimation of the Bass model involves a quadratic regression $x_t = a + by_t + cy_t^2$. The Bass model parameters are estimated from the regression coefficients using the relationships:

$$a = pM, b = q - p, \text{ and } c = -q/M.$$

In the subsequent section, the Bass model is applied to analyse LG's diffusion in the Indian colour television market. However, instead of sales volume and cumulative sales volume, the Bass model is applied with sales revenue and cumulative sales revenue, assuming a fixed product portfolio and fixed prices over the relevant period.

ANALYSIS

The data considered for the study was LG's sales revenue in the colour television segment for the period 2001-08. The sales revenue figures are presented in Table 1 below.

⁴ <http://www.lg.com/in/about-lg/corporate-information/business-domains/tv-audio-video.jsp>

⁵ *ibid*

⁶ <http://www.businessandeconomy.org/12052011/storyd.asp?sid=6128&pageno=1>

⁷ <http://www.managementparadise.com/forums/marketing-management-rm-im/25916-case-study-lg.html>

TABLE 1: LG SALES REVENUE IN THE COLOUR TELEVISION SEGMENT

	Sales revenue (Rs. Crore)
2001-02	812.30
2002-03	1095.70
2003-04	1447.10
2004-05	1932.60
2005-06	2018.60
2006-07	2195.60
2007-08	2118.00
	11,619.90

(Source: Indiatat.com)

LG's sales revenue in the colour television segment grew at rates of 34.9%, 32.1%, and 33.6% respectively between 2001-02 and 2004-05. However, it levelled off to 4.5% and 8.8% between 2005-06 and 2006-07, and declined by 3.5% in 2007-08. The high growth rates in the first three years indicate that LG's initial penetration strategy was highly successful in launching LG's growth trajectory. However, the levelling-off of LG colour television sales revenue in the years 2005-07 suggests that LG's initially-successful penetration strategy may be losing edge against competitors. This dip in sales in 2007-08 may have been partially due to the global financial crisis and the subsequent 'demand crunch.' The Bass model was used to provide deeper insight into LG's growth trajectory.

The results of the quadratic regression of LG's colour television sales revenue on cumulative sales revenue are given in Table 2 below:

TABLE 2: QUADRATIC REGRESSION OF LG SALES REVENUE ON CUMULATIVE SALES REVENUE (IN THE COLOUR TELEVISION SEGMENT)

Model Fit					
Multiple R	0.9928				
R Square	0.9857				
Adj R Square	0.9786				
ANOVA					
	df	SS	MS	F-stat	p-value
Regression	2	1756471	878235.6	138.1897	0.000204
Residual	4	25421.16	6355.291		
Total	6	1781892			
	Coefficients	t-stat	p-value		
Intercept	824.217951	13.47436	0.000176		
yt	0.380026	11.12838	0.000371		
yt2	-0.000026	-7.35371	0.001821		

The quadratic regression of LG's colour television sales revenue on cumulative sales revenue was found to be statistically significant, explaining 98.57% of the variation in LG colour television sales revenue. From the results of the quadratic regression above, the Bass model parameter values were estimated as follows:

TABLE 3: BASS MODEL PARAMETERS

P	0.04975
q	0.42977
M	16,568.38

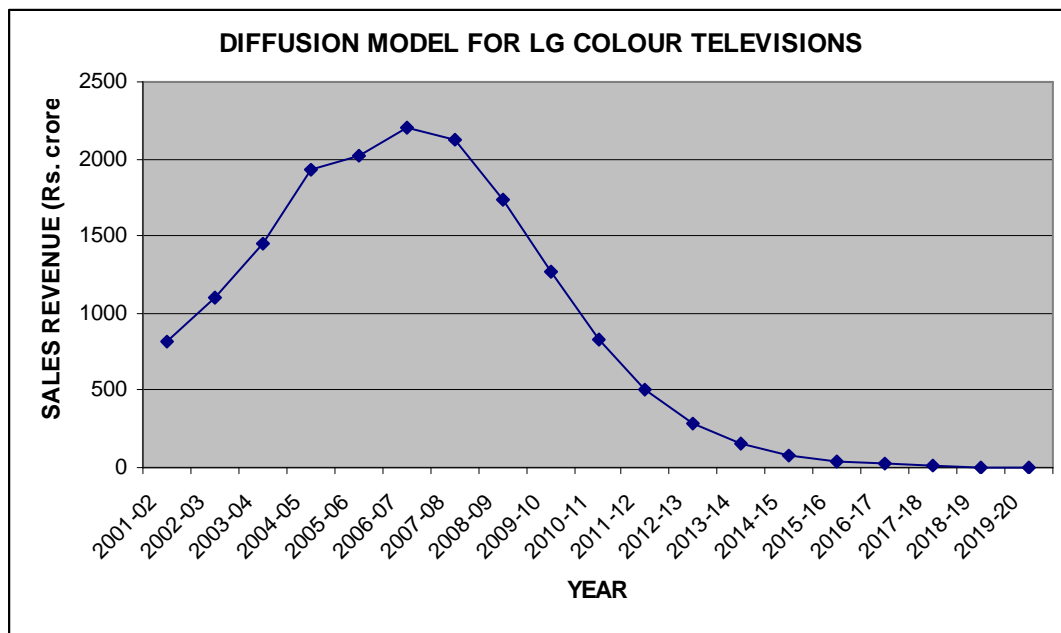
The coefficient of innovation (p) was found to be 0.04975, which is relatively high compared to usual empirical results (Chandrasekaran and Tellis, 2007). The coefficient of imitation (q) was found to be 0.42977, which is moderate. Finally, the total sales potential (M) was found to be Rs. 16,568.38 crore. Thus, between the years 2001-02 and 2007-08, LG had already tapped 70.1% of its total market potential in colour televisions.

Using the estimated Bass model, the diffusion trajectory of LG's colour televisions was projected for the period between 2008-09 and 2019-20. The projections are shown in Table 4 followed by a graphical representation in Figure 1.

TABLE 4: LG COLOUR TELEVISION SALES REVENUE PROJECTIONS

Year	Sales revenue (Rs. Crore)	Year	Sales revenue (Rs. Crore)
2001-02	812.30	2010-11	832.1
2002-03	1095.70	2011-12	498.81
2003-04	1447.10	2012-13	281.80
2004-05	1932.60	2013-14	153.5
2005-06	2018.60	2014-15	81.88
2006-07	2195.60	2015-16	43.17
2007-08	2118.00	2016-17	22.62
2008-09	1737.70	2017-18	11.82
2009-10	1272.22	2018-19	6.16
2010-11	832.10	2019-20	3.21
			16,564.89

FIGURE 1: LG COLOUR TELEVISION SALES REVENUE PROJECTIONS



The projections of LG's CRT colour television sales revenue using the Bass model indicate that peak sales revenue was reached in 2006-07; compensating for the effect of the global financial crisis in 2007-08, the peak shifts at most to 2007-08. This indicates that LG's initial strategies do not offer much potential for further growth. More generally, pre-global financial crisis markets had started to stagnate, and factors such as price erosion, stiff competition, spiraling input costs, and tight profit margins may have contributed to low value growth across all consumer durables firms, leaving them no option but to look for profits and value growth from the premium segment. This is perhaps why LG has undertaken a change in strategy in 2007. This coincided with proliferation of the high-end colour televisions⁸ which cannibalised the market for CRT colour televisions.

Thus, it may be suggested that LG should adopt a two-pronged strategy. For urban markets, LG should focus on marketing high-end colour televisions at an affordable price to increase its profit. On the other hand, for rural markets, LG should continue to focus on marketing CRT colour televisions.

CURRENT SCENARIO- CHALLENGES FOR LG ELECTRONICS IN INDIAN MARKET

LG is planning to change its price warrior image to a premium image. It has understood the need to cater to an emerging up-market demographic profile of consumers. Since it has already achieved market leadership across product categories, the only way forward is to grow the size of the market.

In more recent years, post-global financial crisis, the colour television industry has seen a revival. The changing consumer life styles and preferences, coupled with the convergence of information, communication and entertainment have given momentum to the Indian colour television industry. While the demand for high-end colour televisions is increasing in the urban market, the demand for low-end colour televisions is also continuously increasing in rural India. This increase in demand in both urban and rural markets may be due to a significant increase in the per capita income and a substantial growth in purchasing power of the people.

LG is looking for an investment between Rs 1,351 crore and Rs 2,252 crore in the next five years in India. The Indian operation is doing well, currently contributing 6% to LG's global turnover, and expected to contribute twice as much by 2015. LG India is looking at maintaining the momentum and the high growth. LG is optimistic of a huge demand arising for smart appliances as consumers look for products that enhance their lifestyle⁹.

LG is also all set to expand its base in rural markets in the next one-and-a-half years on the back of aggressive R&D activities. Rural India currently contributes to about 20% of LG India's annual revenue. The company has formed a special team, which will undertake an extensive study to introduce "the right products for rural markets." Interestingly, this is in line with other consumer durable companies such as Godrej and Samsung, which have recently come out with products for rural markets¹⁰.

LG India has recently announced its entry into the business solutions segment, from which it aims to garner Rs.1,000 crore revenue by 2014. LG estimated that the total size of the business-to-business (B2B) solution for integrated display market is around Rs. 2,500 crore and growing at the rate of 20-25% per annum. The company, under its new business segment, will offer digital devices and solutions for quick service restaurants, education, retail, hotel, office and banking businesses¹¹.

CONCLUSION

The paper attempts to throw new insights into the consumer durables/electronics industry through the perspective of diffusion of innovations. The case presented highlights the impact of marketing strategies on the diffusion of innovations for LG Electronics India. In particular, the application of the Bass model identified the sales potential for LG's CRT colour televisions, and indicated that sales have reached a peak in 2006-07, and is subsequently expected to decline. The results also suggested that LG should change its marketing strategies in order to improve its market potential. Thus, the Bass model can be used as a tool for effective marketing strategy.

However, there are several limitations of the application of the Bass model of diffusion of innovations. The most severe limitation is that the Bass model does not take into consideration changes in technology and changes in consumer buying preferences. In particular, post-global financial meltdown, there was a steep rise in the demand for high-end colour televisions in urban areas, and increase in demand for CRT colour televisions in semi-urban and rural areas.

Another factor that the Bass model overlooks is the effect of changing economic conditions, such as business cycles. The business cycle can perhaps be incorporated into the Bass model. More generally, other relevant parameters such as market structure and product life cycle stage can be introduced as determinant factors.

Furthermore, there is a vast scope for study in the area of diffusion of innovations and consumer adoption process. In particular, the same methodology can be used to compare the trends for other players in the colour television industry with that of LG India. Also, the relation between marketing strategies and diffusion

8 High-end colour televisions refer to liquid crystal display (LCD), light-emitting diode (LED), and plasma colour televisions, as opposed to CRT colour televisions.

9 "Taking life's good to the masses," Financial Chronicle, Delhi, March 27, 2011.

10 "LG charts plans for rural market," Financial Express, Delhi, June 8, 2011.

11 "LG India to enter b2b market," Business Standard, Delhi, June 8, 2011.

parameters (i.e. the innovation rate p and the imitation rate q) should be systematically analysed. Similarly, the impact of macroeconomic factors on the diffusion and consumer adoption processes should also be systematically studied.

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