

MARKETING HOUSEHOLD DURABLES IN EMERGING MARKETS: EMPIRICAL EVIDENCE FROM INDIA

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ABSTRACT

The growing population and incomes of emerging markets have captured the attention of marketers of durable goods who have introduced a wide variety of models and features in rapid succession. In this paper, Indian household data is analyzed to describe a forward-looking consumer actively acquiring durables in a particular order. Despite the differences in market contexts and time periods, the observed hierarchy in India is similar to those reported earlier in other markets indicating some stability in priority patterns. The implications for market entry and adaptation are explored in the concluding section of the paper.

Keywords: Household durables, consumer behavior, India, acquisition patterns, emerging markets, Item Response Theory, priority pattern

INTRODUCTION

Household durables – their production and consumption – constitute an important element of macro-economic activity and ownership of household durables is indicative of the standards of living in various economies. In affluent markets, ownership of major household durables has become extensive and even essential (Higgs, *et al.* 2006). With high ownership, the consumer emphasis in these mature markets has shifted to adoption of multiple models (e.g. 2nd and 3rd TVs) or newer features (e.g. Plasma TV, front-load washing machines).

Today, it is the newer markets of Brazil, China, and India that hold the promise for many of these durable products. In India, for instance, consumer durable goods have doubled its weight (between 1980-81 and 1993-94) in the item-basket composition of All India Index of Industrial Production (IIP) and specific items such as TV receivers, refrigerators, washing machines contribute heavily to the consumer durable component (mospi.nic.in/stat_act_t2.htm).

One key distinction of these emerging markets is in terms of product and brand availability. Both early innovations such as television and newer ones such as microwave ovens are all available simultaneously. In comparison, western markets experienced waves of new product introductions staggered over several decades. For instance, microwave ovens and VCRs are both available in India today when per capita incomes, even measured in terms of purchasing power parity (PPP), are significantly lower than countries such as U.S. or U.K. when these durables were introduced in 1970s and 1980s. In addition, the rate of new product introduction is at a faster pace over a shorter period of time. In the Indian market, the flat TV segment now accounts for over 60 percent of total domestic TV production.

Because of their late entry, emerging markets have been able to skip stages of product development such as iterations of the refrigerator or washing machine. In 1920, very few U.S. households owned a refrigerator but by 2009, 82 percent of U.S. homes used a washing machine at home, and nearly 20 percent owned the latest front-loading machine (EIA 2011, Table HC3.5). As a result of these differences, emerging market consumers have a choice of not only the latest durable (such as a convection microwave oven) but also

multiple brands within a product category as well as multiple products, all of which compete for a share of their wallet.

Given the contextual and historical differences, the question, therefore, is whether patterns of durable acquisition in these emerging markets resemble past priority patterns. Specifically, the research questions of interest are:

- do consumers in emerging markets, experiencing simultaneous introduction of household durables, acquire them in any specific order?
- what explains the observed priority patterns? And
- what are the implications for marketers of these durables?

This paper attempts to answer these questions in order to address the gap that exists in our understanding of consumer behavior in emerging markets. The paper is organized as follows. After a literature review, two possible theoretical explanations of observed hierarchical orders are advanced. Next, analysis of secondary data is used to identify priority patterns in India. Following a discussion of the findings, the paper ends with international marketing implications.

HIERARCHY OF DURABLE ACQUISITION

Household durables are not only markers of affluence at the macro level, they are also signals used to communicate their status. Durable goods, as more 'visible' goods, are particularly useful to both build and signal lifestyles. As early as 1950, three 'nonfunctional' external effects on consumer utility – the Veblen effect, the snob effect and the bandwagon effect – had been identified (Liebenstein 1950). Complete historical and comparable data on household ownership of durable products is limited but we do know that over the years, the stock of household appliances has expanded considerably. In the U.S., for instance, no household owned a refrigerator in 1900; but by 1970, almost all households owned one (Lebergott 1984, p. 369). There have been similar increases in ownership of household durables in other parts of the world such as Australia (Bittman, Rice and Wajcman 2004) and U.K. (Bowden and Offer 1996).

When academic researchers started to focus on consumer behaviors regarding durables, an average western household already owned a large variety of durables. Paroush (1965) was the first to publish such research with data from Israel and McFall (1969) identified patterns in the U.S. The available evidence generated from multiple countries seems to suggest that there exists an apparent hierarchy of durables; a fridge, for instance, has been acquired before a washing machine in Israel (Paroush 1965), USA (McFall 1969 and Kasulis, Lusch and Stafford 1979) and Australia (Soutar, Bell and Wallis 1990).

Explanations of Durable Ownership

Explanations of priority patterns in durable ownership are lacking. Availability is, of course, a major determinant which is affected by technological developments; radio was developed before TV and was therefore acquired earlier in the hierarchy. Marketing choices such as waterfall or sprinkler strategies determine which country or part of a country receives distribution (Takada and Jain 1991) and advertising also affects ownership patterns. Heavy advertising of household appliances during the 1940-60 period (Atwan, McQuade and Wright 1979, Fox 1975), have also contributed to some of the observed differences in priority patterns over time.

From the demand side, there are two possible explanations : conspicuous consumption and forward-looking consumer behavior. These explanations are particularly relevant when consumer choices are being made among several durables available simultaneously, as in the case of emerging markets today.

Conspicuous Consumption Behavior Theory

In international markets, researchers have examined symbolic value in terms of foreign vs. local brands (Chee 2000; Yan 2000; Zhou and Hui 2003) but have not yet looked at household durables even though they are strong carriers of social significance (Bourdieu 1984; Veblen 1953). The average cost of a consumer durable also implies that a household's stock of durable goods is indicative of the household's structural position in society (Lastrapes and Potts 2005).

Status of goods is determined by a host of factors including scarcity, novelty, social visibility and communicability. During the last century, the sewing machine was a status symbol but Jewish immigrants from Russia considered the piano as a greater status symbol because the sewing machine was widely owned in Russia (Heinze 1990, p. 134). The positional status of the rooms affects the status of goods placed in the room. Over the decades, there has been a shifting status in the rooms and led to redesign of durables such as the sewing machine, so it could sit "as an article of furniture, something found in the best of sitting rooms alongside the piano" (Calder, p. 164, footnote 26). Refrigerators became "bulkier and flashier" (Nickels 2002).

Social class also influences status of rooms and therefore which appliances are socially significant; working-class women expressed pride in their large refrigerators and ranges while middle class women emphasized the furnishings in the living rooms (Nickels 2002, p.602). As household penetration of refrigerators, for instance, increased from 1 percent in 1925 to 75 percent in 1948 (Bowden and Offer 1994, p. 729), the refrigerator moved from its visible position in the parlor to the more private location in the kitchen.

Conspicuous consumer behavior theory implies that conspicuous signaling is the primary determinant of consumer acquisition of household durables if:

- the higher status durables are acquired earlier in the hierarchy.
- higher status durables are more dominant in households with fewer durables.
- households intending to purchase durables in the future indicate greater willingness to purchase higher status durables.

Forward Looking Consumption Behavior Theory

According to this theory, consumers maximize expected inter-temporal utility by choosing optimal time paths for the expenditure of household money resources. The expenditures can be for non-durable goods, durable goods, housing and real money balances (Lastrapes and Potts 2005). For durable goods specifically, the assumption is that a consumer maximizes present discounted value of expected utility from consumption of a durable good. According to Browning and Crossley (2001), consumers make decisions "to achieve a coherent (and stable) goal using currently available information as best as they can".

No research has specifically examined adoption of household durables using this perspective but both Freedman (1970) and Gillette (2000) have argued that ownership of modern conveniences such as household durables reflect consumer interest in advancing their own economic progress. McFall (1969) has suggested that the priority pattern is evidence of a "calculating forward-looking consumer who thinks in terms of whole sets of commodities and who actively plans to acquire them in a particular order" (p. 55).

Forward-looking consumer behavior theory implies that:

- Position of a specific durable in the acquisition order is similar across households that have a few or a large number of durables;

- Future intentions to acquire a specific durable is related to the order of durables already in possession of a household rather than novelty, scarcity or other indicators of durable status.

RESEARCH METHODOLOGY

India is the focus of this paper. In 2008-09, the Indian consumer durables market was estimated to be US\$27.38 billion and growing at more than 7 percent annually. Various reports suggest that significant growth in the consumer durable industry has been fueled by increasing levels of affluence, real estate and housing demand and consumer willingness to incur debt in order to purchase and use a variety of modern conveniences.

Given a choice context where many durables are available, our empirical analysis attempts to answer the research questions raised above in the context of the Indian market.

Data Collection and Data Preparation

A commercial research service, Pathfinders, based in Mumbai, India uses stratified sampling to regularly interview an adult female member of selected households. The West Zone data for 1996 (2864 respondents) and 2002 (2686 respondents) are used to describe and examine changes in acquisition patterns over time. Inputted in SPSS format, the 1996 data was transferred to a PC format and data for both years were analyzed using SPSS16.0 for Windows as well as BILOG software.

Questions regarding durables related to possession (yes/no), brand, year of purchase and intentions to purchase in the next 6/12 months. In this research, we only retained data on possession (yes/no) and future intentions for further analysis. Possession data was available for 29 items in 1996 and for 36 items in 2002. The two lists were edited such that items that were used inside the home by household as a whole were retained. Variants of a durable were ignored. For instance, the larger number of items in 2002 reflected variants of a particular durable such as color TV (large/small), refrigerator (ordinary/frost free), etc. Similarly, no distinction was made of ownership of multiple models of a specific durable. One or more models of same durable were coded as one (ownership).

As a result, the list of durables retained for the analysis included a total of 17 durables in 1996 and 19 durables in 2002. It included items common to both years (13 items), items unique to 1996 (4 items) and items unique to 2002 (6 items). Further editing using BILOG software and chi square test statistics (Embretson and Reise, 2000) improved the model. The procedure is similar to the one adopted by Soutar, Bell and Wallis (1990) who used Rasch analysis (Rasch 1966) and chi-square statistic to analyze the fit of 15 durable goods.

In the 1996 dataset, Black and white TV ($\chi^2 = 665$, $df = 7$) and table fan ($\chi^2 = 139$, $df = 8$) were removed and the final model included 15 items and the overall model fit improved substantially ($\chi^2 = 933.8$, $df = 84$). In the 2002 dataset, 17 items remained after editing and the model fit improved ($\chi^2 = 930$, $df = 105$) when the BILOG software automatically discarded Black and white and Color TV ($Adj \chi^2 > 50$).

Table 1 provides descriptive statistics of the two samples. There are some systematic differences in the two samples, some of which reflect the changing socio-economic conditions of the country. For instance, the reported household income is higher in 2002 than in 1996; similarly, women respondents report higher levels of education for themselves and their husbands in 2002 than in 1996. Other characteristics are relatively constant; for instance, the vast majority of the women respondents do not work outside the house and joint families comprise less than 40 percent of all households.

Selected Statistics For 1996 And 2002 - West Zone, India

	1996 Survey Sample	2002 Survey Sample
Age of Respondent:		
Less than 30 Years	44.4%	36.9%
31 – 40 years	40.4%	45.6%
More than 40 years	15.2%	17.5%
Education of Respondent:		
Less than High School	57.4%	27.4%
H.S. but not college	24.3%	49.6%
College Graduate	18.3%	23.1%
Respondent's Working Status:		
Full time	8.7%	9.2%
Part time	9.7%	8.5%
Not working	81.6%	82.2%
Education of Husband:		
Less than High School	34.8%	14.1%
H.S. but not college	30.5%	42.7%
College Graduate	34.7%	43.1%
Household Size:		
1-3 members	12.7%	17.3%
4-6 members	60.1%	67.6%
> 6 members	25.2%	15.1%
Family Type:		
Nuclear	63.9%	60.2%
Joint	36.1%	39.8%

Table 1. Descriptive Profile Of Survey Sample

Data Analysis

Since pure penetration (% owning) scores do not distinguish among durables, we used the two-parameter Item Response Theory (IRT) to detect the priority pattern. For instance, penetration scores (%) equates a person owning five inexpensive durables to one owning five expensive durables. IRT, on the other hand, estimates acquisition difficulty and household acquisitiveness as two independent parameters and each durable (or item) has a specific position in the priority pattern which conveys its significance to the household (Schmidt and Embretson, 2003).

The generalized version of IRT is a three parameter model, but we chose to estimate the two-parameter model as it is more suitable for this context. The two-parameter model represents a family of curves, where each curve looks like a logistic function. The model is as follows:

$$P(\theta) = 1 / 1 + e^{-a(\theta-b)}$$

θ = Possession of a durable (individual/household ability)

b = proportion owning a durable (difficulty of an item)

a = discriminating ability of the durable.

The item difficulty (b) indicates which durables are easier/more difficult to acquire, whereas discriminating ability (a) indicates the increased likelihood of purchase of the durable in response to a unit increase in the household's ability (θ) score. The IRT model was tested among split samples for each of the two years,

servicing as calibration and validation samples. Further random part samples were drawn to validate the generated hierarchies (not shown here; available upon request from the authors).

RESEARCH FINDINGS

The simple average number of durables owned in India increased from **3.65** in 1996 to **4.47** in 2002. In addition, by 2002, all surveyed households owned at least one durable and substantial numbers owned more than six durables. This reflects the growing affluence of Indian households and the increasing importance of durables as a measure of household status and welfare.

Priority Patterns

Since dissimilarities were found to be minimal, we report priority patterns created by the model for the 1996 and for the 2002 data. Tables 2a and 2b report the models' results along with the penetration data.

In terms of priority, radio had the highest priority in 1996 ($b = -2.43$), while the cooking range ($b = 3.2$) was the most difficult item to own. Given that the average number of durables owned by Indian households in 1996 is 3.65, the item analysis suggests that the first four durables in the pattern are radio > pressure cooker > ceiling fan > color TV.

Difficulty (Priority)	Discriminating ability	Penetration (%)	Durable Good
-2.433	0.183	67.7%	Radio
-0.733	1.256	71.7%	Pressure Cooker
-0.448	0.950	62.4%	Ceiling Fans
-0.20	2.068	18.1%	Color TV
0.314	0.370	39.8%	Food Processor
0.405	3.094	44.2%	Sewing M/C
0.679	1.732	26.6%	Refrigerator-
1.265	0.524	27.5%	Cassette Player
1.389	0.764	20.0%	Two In One
1.944	1.818	4.4%	Video (Vcr/Vcp)
2.142	1.390	4.2%	Washing M/C
2.194	0.889	7.6%	Stereo
2.714	1.056	2.8%	A/C
2.876	1.306	1.3%	Vacuum
3.2	0.654	4.4%	Cooking Range

Table 2a. Observed Priority Patterns Among Indian Households (1996)

In 2002, the priority pattern indicated radio had lost its ranking; pressure cooker had the highest priority (-4.5) and the cooking range remained the most difficult item ($b=10.83$). Since the average number of durables owned had increased to 4.47, the item analysis suggests the hierarchy pattern of acquisition to be pressure cooker > food processor/mixer > fridge > telephone > washing machine. (Color TV was not included because it violated IRT model in 2002 but it remains a widely owned durable).

Predictive Validity of the Model

We were able to assess predictive validity, which has never been addressed before, because the dataset included willingness to buy each durable during the next 6 to 12 months and we are able to relate the

purchase intentions along the priority hierarchy. We grouped individual households into five categories based on their “ability” scores - from lowest to the highest. As Table 3 indicates, number of households in the first and fourth categories increased over the period of six years, indicating upward movement among Indian households in their “ability” to own durables. This is also evident in the increase in the average number of durables owned. Number of households in the second and third categories marginally decreased as well. Overall, the proportions of individuals in each group did not change drastically.

Difficulty (Priority)	Discriminating ability	Penetration (%)	Durable Good
-4.5	0.298	89.9%	Pressure Cooker
-1.285	0.438	70.2%	Food Processor
-0.305	1.218	59.3%	Fridge
0.325	0.992	41.0%	Telephone
1.141	1.383	18.1%	Washing M/C
1.903	0.586	16.8%	Hi-Fi
2.014	1.189	6.6%	Mobile
2.365	0.800	7.4%	Video (Vcr/Vcp)
2.705	0.336	19.0%	A/C
2.713	0.844	4.5%	Computer
2.979	0.622	6.3%	DVD/CD Player
3.619	0.224	20.8%	Sewing M/C
3.87	0.660	2.3%	Oven
3.93	0.225	19.0%	Radio
6.23	0.572	0.4%	Dishwasher
7.358	0.220	6.3%	Two In One
10.825	0.204	2.4%	Cooking Range

Table 2b. Observed Priority Patterns Among Indian Households (2000)

Ability Range	Ability Categories	1996		2002	
		Frequency	Percent	Frequency	Percent
less than -1	1	307	11.43	462	16.13
between -1 and 0	2	1064	39.61	1032	36.03
between 0 and 1	3	974	36.26	914	31.913
between 1 and 2	4	304	11.32	411	14.35
more than 2	5	36	1.34	45	1.57
		2685	99.96	2964	99.99

Table 3. Household “Ability” Categories

To determine predictive validity, we only looked at purchase intentions of a durable not already owned. Then we performed chi square tests to verify if the different ability groups demonstrated significantly different future purchase intentions for each durable. To further resolve the problem of differences in group sizes, we computed percentage values for each cell. The results are listed in tables 4a and 4b.

The validity of the observed 1996 priority pattern is indicated by the purchase intentions for each durable. For example, in 1996, the highest intention (12.06%) for buying a radio (the highest priority item) in the

next 6 to 12 months was expressed by the lowest ability group (Group 1). The next desired durable in this group is pressure cooker (7.8%). For Group 2, intentions to purchase the pressure cooker are even higher (18.6%). Group 3 expressed higher intentions for purchasing the third durable in the hierarchy (ceiling fan). Finally, for Group 4, purchase intentions for color TV (31.5%) and food processor/mixer (27%) were higher than for lower ability groups.

1996		Ability Categories						
Item difficulty	Durable Good	Group 1	Group 2	Group 3	Group 4	Group 5	CHI SQ	Sig
-2.433	Radio	12.069	6.583	3.306	2.564	0		
-0.733	Pressure Cooker	7.792	18.596	11.112	0	0	35.7	0.00
-0.448	Ceiling Fans	4.762	6.565	10.656	6.25	0	25.9	0.00
-0.2	Color TV	0.649	5.166	15.944	31.507		168	0.00
0.314	Food Processor	1.515	9.019	13.420	27.273		152.2	0.00
0.405	Sewing Machine	5	9.062	8.395	7.692	0	37.4	0.00
0.679	Refrigerator	0.866	8.333	28.878	50		306	0.00
1.265	Cassette Player	1.096	3.176	4.909	2.985	0	28.47	0.00
1.389	Two In One	0.866	2.854	4.498	2.451	0	35.2	0.00
1.944	Video (Vcr/Vcp)	0.216	1.261	3.429	16.422	0	67.9	0.00
2.142	Washing Machine	5.876	13.018	30.769	4.0102		109.36	0.00
2.194	Stereo	0	0.296	2.113	2.632	0	12.07	0.02
2.714	AC	0.433	0.389	1.002	2.926	4.762	14.30	0.01
2.876	Vacuum Cleaner	0	0.097	0.331	2.475	8.696	94.5	0.00
3.2	Cooking Range	0.868	1.281	1.382	3.846	3.333	15.77	0.00

Table 4a. Predictive Validity – Willingness to Buy And Household Ability Scores (1996)

The priority pattern identified for 2002 is similarly validatedⁱ. Intention to buy pressure cooker (16.2%) is highest among the lowest ability group 1; the fridge is most likely to be purchased by Group 2 (7.5%) and Group 3 (11.8%); the washing machine by Group 3 (8.8%) and Group 4 (7.5%). The highest ability group (Group 5) is most willing to purchase more difficult items such as hi-fi (17.6%), and video players (16.7%).ⁱⁱ

2002		Ability Categories						
Item difficulty	Durable Good	Group 1	Group 2	Group 3	Group 4	Group 5	CHI SQ	Sig
-4.5	Pressure Cooker	16.176	5.505	5.952	9.091		8.83	0.030
-1.285	Food Processor	6.343	4.516	5.670	3.704	0	13.47	0.000
-0.305	Refrigerator	5.574	7.5	11.765	0		45.20	0.000
1.41	Washing Machine	3.607	3.977	8.761	7.5		89.68	0.000
1.903	Hi-Fi	2.649	2.780	6.426	8.696	17.6	65.18	0.000
2.014	Mobile Phone	1.629	0.854	4.496	9.502	13.3	65.07	0.000
2.365	Video (Vcr/Vcp)	1.629	1.789	6.510	9.091	16.667	100.9	0.000
2.705	AC	3.583	4.515	7.716	8.696	21.739	102.37	0.000
2.713	Computer	0.654	0.948	3.739	4.743	15.385	60	0.000
2.979	DVD/CD Player	1.634	2.297	5.797	8.230	20.833	69.94	0.000
3.619	Sewing Machine	3.051	1.5128	3.226	3.318		13.04	0.000
3.87	Oven	1.967	1.046	3.657	8.304	4.762	50.208	0.000

3.93	Radio	2.143	1.438	2.365	1.860	5.556	23.04	0.000
6.23	Dishwasher	1.961	0.753	2.163	4.651	11.429	18.03	0.000
7.358	Two In One	1.967	2.379	3.683	3.663	12.5	40.98	0.000
10.825	Cooking Range	1.967	0.194	3.132	4.762	8.571	49.09	0.000

Table 4b. Predictive Validity – Willingness to Buy And Household Ability Scores (2002)

THEORETICAL AND MANAGERIAL IMPLICATIONS OF OBSERVED PRIORITY PATTERNS

Theoretical Implications

The observed acquisition order of Indian household behavior is supportive of forward looking theory rather than the conspicuous consumption theory of consumer behavior. According to forward looking theory, the order of acquisition is expected to be similar across households regardless of the number of durables owned. Similarly, future intentions to acquire a specific durable should be related to the durables already in possession of a household. The empirical evidence supports this pattern.

Households with fewer durables (i.e. lower IRT ability), expressed higher intentions to acquire durables that are part of the priority order followed by other households; they did not express greater intentions to acquire higher status durables despite the availability of more expensive and novel durables. Novelty and scarcity were unlikely reasons to acquire durables such as radio and pressure cooker in 1996 or pressure cooker and food processor in 2002; these durables had higher purchase intention scores among household groups with lower “ability” scores. This acquisition pattern is highly predictive of the durable most likely to be acquired in the next 6/12 months. This is validated by intentions data for 1996 and 2002. Using IRT to discover and validate the priority pattern suggests a “calculating forward-looking consumer who thinks in terms of whole sets of commodities and who actively plans to acquire them in a particular order” (McFall 1969; p. 55).

Utilitarian need is strong in the first set of durables likely to be owned by an Indian (Chinese, Israeli) household; pressure cooker, food processor/mixer, fridge and washing machine – are all durables purchased to reduce the time and effort involved in household tasks. Among hedonic items, only color TV has high priority. Radio lost its prominence and other audio-video systems (2-in-2, vcr/vcp, cassette recorder, stereo hi-fi) are generally lower in priority patterns. This is counter to Bowden and Offer’s (1996) observations that leisure appliances were given priority over housework appliances in western households along both sides of the Atlantic.

The demotion of durables such as radio and sewing machine in the hierarchical order suggests different macro-economic reasons. Radio, as the primary entertainment durable, has been replaced by TV due to technological and infrastructure developments. This has been observed in advanced countries as well (Dickson, Lusch and Wilkie 1983). The sewing machine lost its place in the hierarchy because of social and institutional changes; increased availability and lower prices of manufactured clothing as well as increasing labor force participation of women probably replaced the need for home production. A similar relationship has characterized the demise of the electric iron with the increase in permanent press fabrics and use of dry cleaning facilities (McFall 1969).

Marketing Implications

The findings from this research suggest certain common patterns of diffusion of household durables. The Indian pattern observed in 1996 is similar to the “first” group of durables owned by Chinese households (Fan 2000). The first four durables to be owned in India in 1996 were radio > pressure cooker > ceiling fan > color TV, which are also part of China’s first durables.

By 2002, the hierarchy had become similar to the pattern of durable ownership observed in countries like Israel (radio > cooker > fridge > washing machine; Paroush 1965). Fridge and washing machines are also part of second set of durables owned by households in China (Fan 2000). The purchase intentions of higher ability groups in 2002 also suggest that the next set of durables to be owned by Indian households in 2003 is likely to be hi-fi, mobile phone, video recorder and air conditioning. This list overlaps almost completely with Fan's (2000) "third group" of consumer durables. Given the differences in time periods of study – sixties in Israel, late nineties in India and China - this similarity implies a strong universality in pattern of durable adoption by households in different parts of the world.

This similarity in patterns between India and China as well as between India and earlier markets such as Israel has implications for multi-national segmentation. In the past, country segmentation was according to macro-economic factors which led to choice of markets (lead, follower) and entry strategies (waterfall, sprinkler). Our findings suggest that marketers should also consider diffusion patterns and this paper emphasizes the hierarchy of durable acquisition to suggest an approach. Helsen, Jedide and DeSarbo (1993) had also looked at issues of multinational diffusion patterns for segmentation purposes. In their research, the data was confined to western affluent countries; their analysis found U.S. to be in a different segment based on macro-economic data, but it was very similar to many European countries based on diffusion pattern of three selected durables.

Single product decisions dominated the past, but in the current global environment, decisions have to be made about multiple products at the same time which tend to deter a waterfall strategy. A quick review of appliance marketers in India such as Whirlpool India, Hitachi and Videocon indicates that they are offering a whole range of products, including the most advanced models available in affluent countries. Microwave ovens from Videocon, for instance, are available as solo, grill and convection models.

When consumer acquisition of durables is characterized by a hierarchical order and when that order is better explained by forward looking theory of consumer behavior, it also implies that those marketers who stand to benefit most are those with a product portfolio consistent with the hierarchy. It suggests companies such as LG and Videocon which offer a broader choice of utilitarian (refrigerator) as well as hedonic (TV) products are likely to benefit more from the hierarchy than companies such as Whirlpool India, for instance, which manufactures and markets only kitchen appliances.

Marketing Mix Decisions

Market adaptation is also a major issue in multi-national marketing. In the current global environment, domestic and global brands are taking varied approaches to emerging markets. Manufacturers are offering models more suited for emerging markets and currently considered obsolete in affluent markets. Washing machines from Whirlpool are available in semi and fully automatic models and refrigerators are available in direct cool, frost control and frost free models. Direct cool is the dominant model sold although frost control and frost-free models are growing rapidly, particularly in urban markets.

Marketers have to also consider the unique characteristics of these markets where consumers, despite growing affluence, are still income constrained and highly price sensitive. Price considerations include issues of ownership and operating costs in an environment where the infrastructure such as roads, electricity and modern retail outlets are limited and unequally distributed. Product design also must consider these structural limitations. With restricted or erratic electricity, consumer durables have to function differently. A refrigerator, for instance, has to keep food cool over a longer period of time when the power is out. Durables designed for low power consumption, low service requirement and low cost of operation will have high appeal.

Because our data is from an emerging country, it shows how adaptation in an emerging market is relevant for other similar emerging markets. Products designed specifically for the Indian market such as Nokia's 110, the first made-for-India mobile phone with a built-in torch, is also likely to be attractive to other markets with similar energy constraints. The dominance of durables such as pressure cooker and food processor in the Indian hierarchy over a cooking range, a durable designed for western kitchens, reflects cultural practices regarding meal preparation. Indian domestic brands such as TTK Prestige has innovated the first microwave pressure cooker in India which will also be useful to households in markets where cooking is as time consuming an activity as it is in India. Experience in India thus has great relevance for all the emerging markets where the majority of the world's population resides.

Limitations and Future Directions

This research used secondary data but limitations of data collection and coding are unknown. The Item Response Theory (IRT) is a more sophisticated measure than aggregate ownership (%), but its use led to dropping of certain durables – such as black and white TV in 1996 and color TV in 2002 – which may have affected the observed hierarchy. In order to compare data from two years, we further limited the list of durables to include in the analysis. Future research needs to consider these and other methodological issues.

Since our focus was on the hierarchical order, we included certain variables but ignored others. For instance, we overlooked how specific variants maybe used to communicate status. As Chaudhuri and Majumdar (2006) note, Indian society has become integrated into a global system where the 'sign' economy and consumption orientation dominates. Our emphasis on quantitative measurement limited the insights gained from the consumption pattern, specifically in terms of the meanings attached to them. Furthermore, the market for durables includes original and replacement demand. In our research, we did not consider multiple models owned by a particular household or intentions to purchase a durable already owned; therefore, we underestimated the total market for consumer durables. Finally, we did not examine the characteristics of households and their influence on ownership of durables. The influence of demographic and geographic characteristics of Indian households and implications for target marketing remains to be explored.

CONCLUSION

Our research indicates that Indian households adopt durables in a particular order and this order appears similar to the pattern in China, the other large emerging market. It is also similar to patterns observed in earlier markets such as Israel. This is the first time statistical data from a large scale sample survey identified the pattern; prior research findings are based on small samples or qualitative interpretations. This is also the first study to test the predictive validity of a hierarchical pattern from the purchase intentions expressed by each respondent. The priority pattern offers additional approaches to diffusion-based market segmentation for international marketing. This research contributes to our understanding of consumer behavior in emerging markets and is one of the first to focus on consumer durables which are important determinants of family status and welfare.

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ⁱ Landline telephone was removed from the hierarchy because in 2002 the mobile phone ownership became a significant status symbol for households, and examining mobile phones within the including hierarchy would add substantial relevance and value. Including landlines into the picture would violate the statistical condition of local independence (Embretson & Reise, 2000). Local independence is one of the assumptions of IRT where no two or more items should be related to a common problem or need.)

ⁱⁱ The position of Color TV in 2002 was not included in the pattern because it disrupted the hierarchy; it generated poor item quality in terms of point-biserial correlations. The program BILOG checks for minimum item-total correlations before including items into the priority patterns.

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