

Grocery Retailing in India: Online Mode versus Retail Store Purchase

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Received: April 9, 2016

Accepted: April 25, 2016

Online Published: April 27, 2016

doi:10.5539/ibr.v9n5p180

URL: <http://dx.doi.org/10.5539/ibr.v9n5p180>

Abstract

E-retailing is entering into the Indian retail scenario in a noticeable way and online grocery retailing holds a promise of acceptance by the Indian customers. This paper attempts to discover the market potential of online grocery retailing in India and consumers' perception towards its different aspects. Confirmatory factor analysis proposes that there are five underlying dimensions (*convenience, value for money, variety, loyalty and ambient factors*) governing the selection of mode for grocery purchase. Thereafter Binary-Logistic Regression has been employed to analyze the impact of these five broad perceptual dimensions upon the acceptance/rejection of online grocery retailing. The respondents accorded the highest importance to the factors *value for money* and *convenience*. The study suggested that issues like meeting customer expectations and preferences in terms of delivering value for money, quick and convenient purchasing, smooth delivery process, and reducing risk perceptions are critical for establishing online grocery retailing as an effective alternative to traditional brick and mortar retailing.

Keywords: binary logistic regression, convenience, factor analysis, online grocery retailing, perceptual dimensions of grocery retailing, value for money

1. Introduction

There are several new opportunities in a vast array of commercial areas, due to the all pervasive nature of the internet. It is also a powerful conduit for sharing information and resources. The net has provided a face lift for activities like marketing of goods and services, advertising, promotion, logistics and distribution. The dynamism and competitiveness of the retail sector has increased as a consequence of globalization of markets and phenomenal growth of the internet. The boom in the telecom sector, establishment of electronic kiosks and support from the government has created new avenues in terms of remote purchase and delivery for retailers. Retailers in the Indian market have started imbibing and adapting to the web, and have developed e-retailing models, as a competitive advantage that can be leveraged, with the objective of providing further spatial convenience to consumers. E-retailing i.e. primarily having no physical stores, is a new concept, which has challenged traditional store-retailing (Bevan & Murphy, 2001).

E-retailing has been defined as selling of retail goods through the electronic medium over the Internet platform. It comprises of both Business to-Consumer (B2C) and Business-to-Business (B2B) transactions and can be regarded as the largest marketing activity in the rapidly growing field of e-commerce (Mishra, 2009). Hart et al. (2000) defined the first stage of web retailing as a "communication platform" (communication meant for customer), where information related to allocation of store and the information related to products is made available to the consumer. Additionally, offered interactive features may compel the consumer the user to catalogue ordering or joining a mailing-list etc. (Scott et al., 2003). The second stage of web retailing can be defined as an "electronic shop", as per Hart et al. (2000) it is the virtual place where retailers present their off-line shop in the online mode. Finally, the third stage may be defined as "trading community", wherein retailers move beyond the e-shop model and participate in web-portals, thus creating a prototype of an online shopping mall is created.

Different web-sites provide an array of choices to consumers. Internet shopping is picking up as it satisfies customers more effectively and efficiently, better than conventional shopping (Grewal et. al., 2002). There has been a power shift between retailers and consumers as a consequence of e-retailing (Dunne & Lusch, 2005). From the perspective of consumers, presence and use of internet has changed the relationship of customers with sellers in a variety of ways by providing greater convenience and a vast array of choices (Sheth & Sisodia, 1999). The information overload available to consumers has substantially increased the decision making choices available to them (Alba et. al., 1997), as it

provides efficient tools to search, store and analyze the information required to be processed for decision making. The e-retailing business model is independent of time and location constraints, and can cater to geographically widespread markets at a significantly much lower cost (Brynjolfsson et.al, 2007; Brown & Goolsbee, 2002; Chevalier & Goolsbee, 2003). All the above mentioned factors have contributed in firmly establishing the internet as a viable alternative to store-based shopping especially in the developed nations, in a relatively short span of time.

A large number of consumers are now buying online and consequentially spending higher amounts on online shopping as compared to brick and mortar shopping. According to *Forrester Research Report* in 2015 (Forrester report, 2015), it has been estimated that US B2B e-commerce will reach \$1.2 trillion mark and will be around 12.1% of all B2B sales by the year 2020. By the end of 2015, it had crossed \$780 billion and accounted for 9.3% of total B2B sales in United States. A compound annual growth rate (CAGR) of 7.7% was expected for 2015-2020. European e-commerce is also growing rapidly. According to *Center for Retail Research* (2015), online sales in UK, Germany, France, Sweden, The Netherlands, Italy, Poland and Spain are expected to grow from £132.05 bn [€156.28 bn] in 2014 to £156.67 bn [€185.39 bn] in 2015 (+18.4%), thereby reaching £185.44 bn (€219.44 bn) mark in the year 2016.

1.1 Online Grocery Retailing

The online grocery market, like other e-commerce activities, is expanding with a voluminous growth rate, especially in the developed nations, largely because of internet touching everyone's life in a significant manner, huge variety, and the spatial convenience factor leading to a greater acceptance amongst the time-pressured consumers. With internet pervading our lives in all spheres, e-commerce and consequentially online grocery retailing is bound to grow. The online grocery market constitutes a niche market subset of the overall food and grocery market. It is a combination of e-commerce and grocery selling. In case of online grocery sites, the consumers can choose from an array of products displayed virtually, place an order and these products will then be delivered to the customers address. So, it is performing the functions of a virtual grocery-store and a courier agency (Bell & Song, 2007). The limitation of being 'place-specific' is a major drawback for the traditional retailers, but an online-retailer can reach customers spread across a wide geographical area i.e. no spatial constraints (Bell & Song, 2007). With easy availability of broadband facility, portable-internet devices and increasing ease and familiarity with the internet, accompanied by upcoming retail websites, the online world will definitely have an impact on shoppers and their buying decisions (Chintagunta et. al., 2009). Shoppers are increasingly seeking greater variety in their food and grocery shopping as well, the grocery retailers need to take heed of these changing demand trends and adapt their marketing strategies accordingly. The online grocery retailing scenario in developing nations is quite different vis-à-vis developed nations, India being no exception. Though e-retailing has arrived in markets like India and the consumers are also adopting it as an alternative option, but it has yet to make its presence felt in a substantial manner.

Taking into cognizance the status of overall food retailing in India, can help us gauge the market potential of online grocery retailing, with the focus being on organized food retailing, as online grocery retailing essentially comes under the purview of the organized sector.

1.2 Food Retail Format in India

In Indian food retail market, there are various types of formats and models (Gupta, 2009; Anand & Nambiar, 2003)-

1. Unorganized Retailers:
 - 1.1- Road side vendors and hawkers.
 - 1.2- Kirana stores/small retail shops (similar to the mom-and-pop stores)
2. Organized retailers:
 - 2.1- The discounter (*Subhiksha, Apna Bazaar*)
 - 2.2- The value-for-money store (*Nilgiris*)
 - 2.3- The supermarket type (*Foodworld*)
 - 2.4- The home delivery (Fabmart)

The organized food retailing format is firmly establishing itself on the Indian market scenario, and its presence is slowly and gradually becoming substantial. The initial phase was rather slow largely because of the customer-inertia in shifting towards this form from the traditional set up of our neighborhood *kirana* (mom and pop) stores, which substantially fulfil the customers' retail requirements. The biggest factor in favor of the online format is the sheer shopping convenience. However one of the hindrances in the path of growth is lack of supply chain efficiencies and effectiveness. The retail-supply chain has several intermediaries (from farm-processor to distributor to retailer), which results in loss of value, time and cost (Anand & Nambiar, 2003). This when further combined with an under developed food

processing industry has kept the organized chains basically non competitive and out of fray from the main marketing scene. Despite these road blocks, organized food retailing is expanding and making its presence felt in different pockets of the country (Prasad & Aryasri, 2011). Now some savvy customers are making a shift towards this format.

1.3 Organized Food Retailing in India

The growth pattern of the retail-sector in general differs from that of organized grocery retailing. Organized grocery and food retailing has displayed concentrated growth primarily in the southern states of the country (Gupta, 2009; Anand & Nambiar, 2003). In South India, there preexisted traditional family owned retail chains such as *Nilgiri*, but the modern grocery-retail revolution in India started with the establishment of *Foodworld* (chain of food retail outlets) in major cities of southern India. The *Foodworld* chain is a venture of the RP Goenka group (Gupta, 2009). The model followed by this chain attained success in food retailing. Riding on its success, several other business houses also introduced new models of food and grocery retailing in India. Some of the prominent names were *Reliance-Fresh*, *Trinethra*, *Subhiksha*, *Spencers*, *Margin Free* etc which made their foray into the organized food and retailing sector in India (Anand & Nambiar, 2003). According to a *McKinsey* report, the organized food retailing category will grow to \$150 billion by 2025 from the current level of \$70 billion. An 'India Food Vision 2020' report says that food and grocery is the dominant category in the retail sector in India. It is having a market share of 59.5 per cent, which can be valued at \$198.2 billion), clothing and accessories occupies a distant second position with a 9.9 per cent share (\$32.9 billion)¹⁹. But the situation in the organized retail sector is different with clothing and fashion accessories as the predominant category with a market share of 38.1 per cent, valued at Rs.298 billion (\$7.5 billion), food and grocery category occupies the second spot with a market share of 11.5 per cent valued at Rs.90 billion (\$2.3 billion) (India Food Vision-2020,2015)

As per the estimates of Tata Strategic Management Group (TSMG), organized Food and Grocery Retailing in India has grown to Rs. 1750 billion (at current prices) in 2015 representing approximately 11% of overall Food and Grocery sales (Food Retailing in India : Challenges and Trends, 2015). Thus, organized food retailing has a miniscule share in the world of food retailing. However, it is said to be growing at nearly 150% on the back of positive drivers such as higher disposable income, increasing proportion of youth in overall population, steady increase in the share of urban population and a larger proportion of working women professionals (Organized Agri-Food Retailing in India, 2011).

However for organized food retailing to truly create an impact in India, they need to tap into the share of unorganized retail. This is primarily represented by kirana stores and small mom and pop stores. This transition may be possible by achieving the correct balance in the price quality equation, i.e. providing good value for money at reasonable prices (Gupta, 2009; Anand & Nambiar, 2003). The other factor to be taken into consideration is that of convenience while shopping, here supermarkets enjoy an edge over traditional *kirana* stores (Prasad & Aryasri, 2011).

India as a market poses a conundrum for the organized retailers, despite its substantial future potential in the arena of organized food retailing. There is a high level of heterogeneity amongst the consumer groups, both in terms of socioeconomic and cultural background (A project on retail industry in global environment with reference to retail outlets in the market, 2014). Thus in order to appeal to the masses, retail stores would need to cater to different psychographic profiles of consumers. This probably is the underlying reason for prevalence of regional players instead of nationwide successful retail chains in the organized food retail scenario.

2. Literature Review

The subject of online retailing is an extensively researched and analyzed one. However the research on online grocery retailing is still in its nascent stages. A large proportion of the research examining various aspects and characteristics of online grocery retailing has been confined to developed markets only. Some of the select works in this area highlighting the "factors analyzed/key findings" have been summarized and presented in the following table:

Table I. Summary of factors analyzed/key findings

S. No.	Author, Year	Field of Study/Project	Factors Analyzed/Key Findings
1	Cinatl (2000)	Grocery Retailing in Czech Republic	<ul style="list-style-type: none"> • Importance of Quality, convenience. • Important issues: price, assortment and presence of a good supply chain. • Size of market is small.
2	Muriel & Reynolds (2006)	Preference- based segmentation. Customer preference structure (conscious & unconscious prioritization)	<ul style="list-style-type: none"> • Measures for reducing performance gaps • Internal logistics, communication, focus on customer preferences
3	Keh & Shieh (2001)	Success factors & potential pitfalls of the US online grocery market from seller as well as consumer perspectives	<ul style="list-style-type: none"> • Success Factors: lower cost; strategic alliances with firms; better services; relevant and effective information; good warehouse and logistic structures and capturing niche market. • Potential pitfalls: use of senses; delivery; financing; security; internet privacy & seasonal influences.
4	Bevan & Murphy (2001)	Buyers behavior towards online grocery retailing	<ul style="list-style-type: none"> • Immediate delivery, credit facilities, choice of method of payment, display, personal assistance, return services & warranty, cost leadership, past association, risk associated with shopping,
5	Bell & Song (2007)	Online grocery retailing	<ul style="list-style-type: none"> • Convenient shopping, extended hours, home delivery, issue of trust, physical dimensions, overcome individual physical constraints,
6	Chadwick et al. (2007)	E-strategy in retail grocery sector	<ul style="list-style-type: none"> • greater accuracy of billing, Location, Location, easier & peaceful shopping, monitoring spending.
7	Hamstra (2007)	Online Stores: Execution strategies	<ul style="list-style-type: none"> • Level of interaction between sellers & buyers
8	Muriel & Reynolds (2006)	Shoppers' expectations of online grocery retailing	<ul style="list-style-type: none"> • Responsiveness, reliability, ease of use, credibility, and competence. • Delivering on promises is crucial, privacy policies, seal icons.
9	Vrechopoulos et al. (2004)	Grocery retailing in developed markets	<ul style="list-style-type: none"> • Virtual store layout designing. • Simple process- value of navigation, ease, sticking around a Web site.

3. Objectives of the Study

Online retailing at large has made a successful foray into the Indian retail scenario in a big way. In the near future it will establish its presence in the Indian retail market. Hence the need for a systematic study with an aim of exploring the online grocery retail potential in Indian the market accompanied with an insight into consumer perceptions towards grocery purchase gains importance. It will provide an insightful understanding to upcoming online retailers. Accordingly, the objectives of this paper are to:

- Unearth broad underlying dimensions guiding the mode of selection in case of grocery purchase.
- Prioritize underlying dimensions determining the acceptance/rejection of online mode of grocery purchasing.
- Analyze the acceptance of online mode of grocery retailing vis-à-vis the brick and mortar retail store.
- Examine the effects of psychographic attributes on its potential.

4. Research Methodology

Cross-sectional Descriptive Research design has been employed for the study with the survey instrument being a 'closed questionnaire'. The variables have been identified by using exploratory research study consisting of focus group discussions, depth interviews and secondary survey of the existing literature. A Pilot survey (with a sample size of 30) was used to find out potential errors that can creep into survey-administration. The survey instrument (questionnaire) basically consisted of two sections, first asking information about different psychographic criteria and the second section concentrating on various aspects and perceptions related to different formats of grocery retailing.

Shopping Mall Intercept (Market Intercept) sampling was employed to gather data. Questionnaires were sent to around 1100 respondents across various cities in India, out of these, 875 questionnaires were found complete in all respects, thus having a response-rate of 79.5 %. So, the effective sample size is 875. It was determined apriori that respondents have some online shopping experience. Different category of respondents were included in the sample to make it representative of the variety of users (Table 1). The sample is sub-divided into two parts, 400 observations were used for Exploratory Factor Analysis (EFA) and the rest 475 observations for Confirmatory Factor Analysis (CFA).

Table 1. Demographic Characteristics of the Respondents

No.	Respondent's characteristics	% of respondents
1	Gender	
	Male	54.4
2	Female	45.6
	Age Group	
	<30	37.6
	31-45	40.7
	46-60	13.8
3	>60	7.8
	Education	
	Upto HSC	9.4
	Graduate	35.0
	Post graduate	35.9
4	Professional and others	19.6
	Occupation	
	Salaried	41.2
	Professional	27.8
	Business	13.1
	Student	2.8
	Retired	7.4
5	Housewife	6.9
	Income	
	<10,000	11.8
	10001-20000	15.0
	20001-30000	34.6
	30001-40000	23.0
>40000	15.6	

5. Analysis and Results

5.1 Factors Driving Mode Selection of Grocery Purchase

Exploratory factor Analysis was employed to explore the underlying dimensions present in consumers' perceptions about grocery retailing. The subsample of 400 was chosen for this purpose.

The factor analysis results are shown in Tables 2.1-2.3. The results from Table 2.1 shows that value of KMO statistic is very high (.875) and Bartlett's test of Sphericity is significant (sig =.000), indicating the appropriateness of data for factor analysis. The total variance extracted by the five factors (having Eigen values greater than one) amounts to 79.3 per cent (Table 2.2). The Rotated Component Matrix (using Varimax Rotation with Kaiser Normalization) indicates five factors derived from the 20 original perceptual variables. The variables constituting various factors have been expressed as follows (Table 2.3).

Table 2.1. KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.875
Bartlett's Test of Sphericity	Approx. Chi-Square	10568.886
	Df	190
	Sig.	.000

Table 2.2. Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	6.692	33.460	33.460	6.692	33.460	33.460	5.487	27.435	27.435
2	4.129	20.645	54.105	4.129	20.645	54.105	4.231	21.155	48.590
3	2.21	11.050	65.155	2.21	11.050	65.155	3.012	15.060	63.650
4	1.7	8.500	73.655	1.7	8.500	73.655	1.941	9.705	73.355
5	1.13	5.650	79.305	1.13	5.650	79.305	1.19	5.950	79.305
6	0.788	3.940	83.245						
7	0.633	3.165	86.410						
8	0.496	2.480	88.890						
9	0.429	2.145	91.035						
10	0.394	1.970	93.005						
11	0.271	1.355	94.360						
12	0.222	1.110	95.470						
13	0.166	0.830	96.300						
14	0.137	0.685	96.985						
15	0.132	0.660	97.645						
16	0.112	0.560	98.205						
17	0.099	0.495	98.700						
18	0.095	0.475	99.175						
19	0.094	0.470	99.645						
20	0.071	0.355	100.000						

Table 2.3. Rotated Component Matrix

	Component				
	1	2	3	4	5
Sales assistance	0.864	0.229	0.201	0.095	-0.096
Placing order on phone	0.919	0.148	-0.119	0.027	-0.078
Home delivery	0.751	0.163	0.314	-0.075	-0.16
Location	0.892	-0.337	0.267	0.122	0.033
Credit facility	0.716	0.595	-0.325	0.052	0.032
Better available offer	-0.339	0.703	0.133	0.201	0.112
Overall saving	0.296	0.829	0.126	-0.107	-0.102
Quality of the products	0.373	0.683	0.047	-0.086	-0.172
Various schemes	-0.385	0.938	0.207	-0.108	0.029
Discounts	0.322	-0.672	-0.165	0.001	0.281
All brand under one roof	0.342	0.276	0.755	-0.132	-0.032
Variety of products	0.462	0.269	0.763	0.11	0.318
Much option to choose from	0.245	0.484	0.812	0.023	0.244
Product comparison	0.429	0.312	-0.613	0.106	0.095
Trust worthiness	0.306	-0.081	0.211	0.666	0.206
Understanding my need	-0.319	0.086	0.305	-0.657	-0.017
Long term association	0.398	-0.183	0.264	0.632	-0.107
As a matter of my habit	-0.324	-0.277	0.204	0.721	0.036
Good ambience	-0.447	0.228	0.313	-0.041	0.624
Attractive display	0.444	0.164	0.205	-0.013	-0.096

Factor 1 incorporates the variables- ‘sales assistant guides you for purchase from a specific store’, ‘the facility of placing an order on phone guides you for purchase from a specific store’, ‘the provision of home delivery guides you for purchase from a specific store’, ‘the location of the store guides you for purchase from a specific store’ and ‘the provision of credit facility guides you for purchase from a specific store’. Since all these variables are related to convenience associated with grocery shopping, hence this dimension can be labeled as ‘convenience’.

Factor 2 comprises of the variables-‘provision of better offers guides you for purchase from a specific store’, ‘the overall monetary saving in grocery purchase guides you for purchase from a specific store’, ‘the quality of the products provided by the store guides you for purchase from a specific store’, ‘the various schemes on offer (by the store) guide you for purchase from a specific store’ and ‘the discounts offered by the store guide you for purchase from a specific store’. Since all these components are related to consumer’s perception of value derived from his overall monetary spending (during grocery purchase), hence this factor can be labeled as ‘value for money’.

Factor 3 comprises of the variables- ‘the availability of all brands under one roof guide you for purchase from a specific store’, ‘the variety of products present in the store guide you for purchase from a specific store’, ‘the presence of many options (to choose from) in the store guide you for purchase from a specific store’ and ‘the availability of different

products for comparison in the store guide you for purchase from a specific store'. All these variables are related to the presence of a large variety of products under one roof (so as to provide an array of options to the customer), so this factor can be labeled as '*variety*'.

Factor 4 incorporates the variables- 'the perception of trust and reliability (of the store) guide you for purchase from a specific store', 'the understanding of your needs guide you for purchase from a specific store', 'the long term association with the store guides you for purchase from a specific store', and 'the familiarity and habit of going to a particular store guide you for purchase from a specific store'. All these variables are indicative of a loyalty based relationship with the grocery store, so this dimension can be labeled as '*loyalty*'.

Factor 5 comprises of the variables- 'good ambience of the store guides you for purchase from a specific store' and 'attractive display of items in the store guides you for purchase from a specific store'. These two variables are associated with the ambience of the store, so this factor can be labeled as '*ambient factors*'.

Reliability analysis has been performed for the above factors, as suggested by EFA, by running reliability test. The least value of Cronbach's alpha obtained for any factor have been 0.652 that is even higher than 0.6, this is indicative of the fact that the data is satisfactorily internally reliable (Table 3).

Table 3. Reliability Analysis

Dimensions of Mode Selection	No. of Items	Cronbach's alpha
Convenience	5	.861
Value for Money	5	.803
Variety	4	.726
Loyalty	4	.744
Ambient Factors	2	.652

5.2 Confirmatory Factor Analysis

Confirmatory factor analysis (CFA) has been employed to confirm and validate the above five factors. For CFA, the subsample of size 475 was chosen and these respondents are different from the first 400 considered for EFA.

The software employed for this purpose was LISREL. CFA was used to assess unidimensionality with much better control and the measures so obtained will have higher construct validity (Ahire et.al., 1996)

5.2.1 Validity Analysis

In order to examine the validity of CFA results (Table 4), various goodness of fit criteria have been considered as follows:

Table 4. CFA Results-Construct Loadings

	Components (Latent Construct)				
	Convenience	Value for money	Variety	Loyalty	Ambient Factors
Sales assistance	.704 (3.878)	.000	.000	.000	.000
Placing order on phone	.717 (3.752)	.000	.000	.000	.000
Home delivery	.787 (4.008)	.000	.000	.000	.000
Location	.845 (6.241)	.000	.000	.000	.000
Credit facility	.806 (5.683)	.000	.000	.000	.000
Better available offer	.000	.707 (3.680)	.000	.000	.000
Overall saving	.000	.688 (3.448)	.000	.000	.000
Quality of the products	.000	.851 (6.034)	.000	.000	.000
Various schemes	.000	.797 (5.487)	.000	.000	.000
Discounts	.000	.640 (3.968)	.000	.000	.000
All brand under one roof	.000	.000	.758 (4.518)	.000	.000
Variety of products	.000	.000	.739 (4.372)	.000	.000
Much option to choose from	.000	.000	.768 (4.366)	.000	.000
Product comparison	.000	.000	.792 (4.467)	.000	.000
Trust worthiness	.000	.000	.000	.818 (6.214)	.000
Understanding my need	.000	.000	.000	.781 (4.005)	.000
Long term association	.000	.000	.000	.780 (4.211)	.000
As a matter of my habit	.000	.000	.000	.854 (5.571)	.000
Good ambience	.000	.000	.000	.000	.783 (3.769)
Attractive display	.000	.000	.000	.000	.685 (3.548)

Note: Figures in parentheses are t-ratios

5.2.1.1 Overall Model Fit

The overall goodness of fit for the proposed model has been performed through absolute, incremental and parsimonious fit measures (Table 5).

Table 5. LISREL Goodness-of-Fit Measures for CFA

Chi-square	Chi-square	234.6
Absolute Fit Measures	Degrees of freedom	170
	Goodness of Fit Index (GFI)	.944
	Adjusted Goodness of Fit Index (AGFI)	.920
	Root Mean Square Residual (RMSR)	.083
	Root Mean Square Error of Approximation (RMSEA)	.092
Incremental Fit Measures	Tucker-Lewis Index (TLI)	.951
	Normed Fit Index (NFI)	.900
Parsimonious Fit Measures	Adjusted Goodness of Fit Index-Parsimonious (AGFI)	.902
	Normed Chi-Square	1.38

For absolute fit measures, we examine the values of GFI (0.944) and AGFI (0.920), they are above the recommended value of 0.90. Further, values of RMSR (0.083) and RMSEA (0.092) are also over the recommended value of 0.08 although these values are less than the upper threshold value for the measures i.e. 0.10.

Similarly, the values of TLI (0.951) and NFI (0.900) are satisfying the recommended value of 0.90, satisfying the validity with respect to incremental fit measures. The values of AGFI-parsimonious (0.902) and normed chi-square

(1.38) indicate parsimony of the proposed model. Hence, it can be said that various goodness of fit criteria of the proposed model have been satisfactorily satisfied.

5.2.1.2 Measurement Model Fit

Thereafter for measurement model fit, the variable loadings are examined (Table 5). The results clearly shows that all the considered variables are significantly for their specified dimension ($\text{sig} < 0.05$). This collaborates and establishes that the proposed relationship among variables and their dimensions exists.

Table 6.1. LISREL Measurement Fit Model

Dimension (Construct)	Construct Reliability	Average Variance Extracted (AVE)	Comparative Fit Index (CFI)	Bentler-Bonett Goodness of fit Coefficient	Goodness of Fit (GFI)
Convenience	.917	.881	.965	.972	.975
Value for money	.891	.821	.925	.954	.948
Variety	.832	.740	.906	.920	.921
Loyalty	.778	.679	.912	.931	.944
Ambient Factors	.732	.548	.910	.912	.902

Table 6.2. LISREL Measurement Fit Model- Average Variance Extracted (AVE) and Correlation Matrix

Dimension (Construct)	AVE	Correlation Matrix				
		Convenience	Value for money	Variety	Loyalty	Ambient Factors
Convenience	.881	.939				
Value for money	.821	.631	.906			
Variety	.740	.467	.677	.860		
Loyalty	.679	.508	.584	.603	.824	
Ambient Factors	.548	.572	.420	.568	.507	.740

(Values on the diagonal of the correlation matrix is the square root of AVE)

The Construct Reliability results indicate that reliability coefficients of all the dimensions (Composite Reliability Coefficients) exceed the recommended level of 0.700 (Table 6.1), establishing the reliability and representativeness of the proposed dimensions. Table 6.2 indicates that all Average Variance Extracted (AVE) values are higher than 0.50, so all the dimensions, the majority of variances is because of consolidated utility dimensions. This substantiates unidimensionality i.e. the substantial representativeness of the considered constructs.

Here, we observe that all the Comparative Fit Indices (CFI) exceeds the recommended level of 90% (Table 6.1). This corroborates the good fit of the proposed model.

The Convergent Validity of the model has been ascertained by Bentler-Bonett coefficient (Bentler & Bonett, 1980). We observe that all five dimensions exceed the recommended 90% level (Table 6.1). Similarly, all Goodness of Fit (GFI) indices exhibit values exceeding the recommended 90% level substantiating the best model-fit (Joreskog & Sorböm, 1990).

Results from the Table 6.2 show that the correlation coefficients of all the pairs of constructs (dimensions/factors) are less than their respective square roots of Average Variance Extracted (AVE) of respective constituents. This indicates that Discriminant Validity has been achieved.

So, considering the above discussion, we can say that all goodness-of-fit results as well as measurement model fit results corroborate the validity of the proposed five-dimensional model of the consolidated utility factors.

5.2.2 Factors Extraction Results

Confirmation for the five factors (representing five broad perceptual dimensions of store selection criteria) is achieved by CFA. These were the factors that were revealed by Exploratory Factor Analysis (Table 2.3). Construct Loadings (as obtained by CFA Results) are expressed in the Table 4.

5.3 Analysis of Factors Determining the Acceptance/Rejection of the Online Grocery Purchase Mode

Binary-Logistic Regression has been deployed in order to empirically analyze the impact of the five broad perceptual dimensions (representing store selection criteria of the consumers) upon the decision of accepting/rejecting the online grocery retail format. Logistic regression is a useful technique for contexts where one wants to predict the presence or absence of a characteristic (or outcome) based on values of a number of predictors. Hence the dependent variable should be dichotomous in nature. We have attempted to examine whether the five perceptual dimensions of store selection sufficiently predict acceptance of online grocery retailing and thereafter prioritize these dimensions according to the respondents' perception. Further, the regression coefficients (of the logistic regression model) are used for construction of the regression model for predicting acceptance/rejection of online grocery retailing.

The validity of the binary logistic regression model has been ascertained by Hosmer and Lemeshow goodness of fit test statistic (0.674), accepting the goodness of fit of the proposed model (Table 7.3). The value of Cox & Snell R Square and Nagelkerke R Square are 0.643 and 0.725 respectively (Table 7.2), these values are showing that the proposed model explains most of the variation in the predicted variable (acceptance/rejection of online grocery retailing).

This has been further corroborated by a high Hit Ratio of 90.2% showing that our proposed binary logistic regression model accurately predicts 90.2% of responses (Table 7.4). Further, considering Table 7.1, the significant value of Omnibus Tests of Model Coefficients (sig. = 0.000) shows that our regression model performs well in predicting the discrimination (acceptance/rejection) on the basis of the considered predictors. Thereafter in order to determine the relative importance of the broad perceptual dimensions driving grocery store selection, values of the regression coefficient (B), Wald's statistic and significance have been taken into account (Table 7.5). Except *ambient factors*, all other factors like *value for money*, *convenience*, *variety* and *loyalty* were significant in deciding about the mode of grocery purchase. The respondents accorded the highest priority to the factor *value for money*, closely followed by *convenience* sought in grocery purchasing. Grocery purchase is an integral part of every customer's day to day life and takes up a substantial amount of money and time, hence the desire to purchase quality products at economical prices. This probably is the reason for *value for money* being the top priority out of the factors responsible for selection of mode of grocery purchase. Customers also accord a great deal of importance to the factor of *convenience*, especially in case of high frequently and repetitive activities. Next in the hierarchy, figures the factor *variety*. Consumers typically like to browse amongst a large variety of brands, before coming to a final decision. At the end of the hierarchy, is *loyalty and trust* that a consumer has towards a store with which he or she has been associated. This loyalty plays a significant role in acceptance/rejection of an alternative shopping format.

The proposed logistic regression model for predicting response (acceptance/rejection of online grocery shopping) of a respondent, based on considered predictors will be as follows:

$$\text{Response} = -15.572 + 2.093 * (\text{Convenience}) + 2.769 * (\text{Value for money}) + 1.442 * (\text{Variety}) + 1.442 * (\text{Loyalty}) + .381 * (\text{Ambient Factor}).$$

Table 7. Logistic Regression:

Table 7.1. Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.	
Step 1	Step	112.413	5	.000	
	Block	112.413	5	.000	
	Model	112.413	5	.000	

Table 7.2. Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	3.342	.643	.725

Table 7.3. Hosmer and Lemeshow Test

Step	Chi-square	df	Sig.	
1	5.167	8	0.674	

Table 7.4. Classification Table

Observed	Predicted	Will shift towards/Prefer online grocery retailing		Percentage Correct
		No	Yes	
Step 1	Will shift towards/Prefer online grocery retailing	No	Yes	
		302	41	88.0
		45	487	91.5
	Overall Percentage			90.2

Table 7.5. Variables in the Equation

		B	S.E.	Wald	Sig.	Exp(B)
Step 1(a)	Convenience	2.093	0.713	8.6171	.025	4.879
	Value for money	2.769	0.601	21.227	.000	7.643
	Variety	1.442	0.563	6.5601	.032	3.650
	Loyalty	0.754	0.334	5.0962	.042	2.119
	Ambient Factors	0.381	0.276	1.9056	.099	2.003
	Constant	-15.572	13.586	1.3137	.143	1.672

5.4 Comparison: Retail Store Format vs. Online Format

For the purpose of analyzing the differences in perception, with reference to the various parameters of grocery-shopping

(between brick and mortar retail stores and online stores), Non-parametric Wilcoxon Signed Ranks Test was used. Barring *product availability*, there was a significant difference in consumer perception with respect to offline and online grocery shopping (Table 8.1). Respondents perceive both offline and online formats similarly with respect to the *availability of grocery products*. As far as *convenience* is concerned, respondents consider online grocery shopping more convenient than shopping in the brick and mortar format (Table 8.2-8.3). Moreover customers perceive online shopping to be stress free and hassle free. However with reference to *security issues*, respondents carry certain apprehensions about online grocery shopping (Table 8.2-8.3). They harbour the belief that financial transactions are more secure in the offline format. This behavior is quite similar to the concern of shoppers regarding the issues of privacy and security in online retailing (Forsythe and Bo, 2003; Shim et. al., 2001). Respondents perceive online grocery shopping format to be more time saving than the traditional retail-store format (Table 8.2-8.3), as customers can shop without actually going to the store so they do not waste time in commuting, parking etc. Despite the *security issue*, the payment process is perceived as more convenient in the online format (Table 8.2-8.3), since they offer several payment options like credit card, online money transfer etc.. However with reference to the *touch and feel* factor, consumers decidedly prefer the offline retail shopping format (Table 8.2-8.3). Their grocery shopping decisions are substantially affected by the need to satisfy their sensory or experiential needs. A general consumer perception is that appearance, touch, smell and such related attributes would be absent in shopping through online mode.

Table 8. NPar Tests- Wilcoxon Signed Ranks Test

Table 8.1. Test Statistics

	Convenience: Store-Online	Security: Store-Online	Time Saving: Store-Online	Convenient Payment: Store-Online	Product Availability: Store-Online	Product touch & feel: Store-Online
Z	-13.227	-7.626	-13.179	-13.190	.000	-13.691
Asymp. (2-tailed)	.000	.000	.000	.000	1.000	.000
Sig.						

Table 8.2. Descriptive

	Convenience	Security	Time Saving	Convenient Payment	Product Availability	Product touch & feel
Store: Mean	2.0920	3.1840	2.2840	2.2360	3.2640	4.4000
Online: Mean	4.4520	2.3720	4.4240	4.4240	3.2640	1.7680

Table 8.3. Ranks

	N	Mean Rank	Sum of Ranks
Convenience: Store-Online	Negative Ranks	791	126.48
	Positive Ranks	49	24.00
	Ties	35	
	Total	875	
Security: Store-Online	Negative Ranks	161	65.98
	Positive Ranks	480	100.74
	Ties	234	
	Total	875	
Time Saving: Store-Online	Negative Ranks	788	117.52
	Positive Ranks	16	24.50
	Ties	71	
	Total	875	
Convenient Payment: Store-Online	Negative Ranks	780	116.69
	Positive Ranks	18	17.00
	Ties	77	
	Total	875	
Product Availability: Store-Online	Negative Ranks	0	.00
	Positive Ranks	0	.00
	Ties	875	
	Total	875	
Product touch & feel: Store-Online	Negative Ranks	21	10.50
	Positive Ranks	833	125.32
	Ties	21	
	Total	875	

5.5 Impact of Demographic Profile of Respondents on Their Perception about Factors Guiding the Selection of Grocery-purchase Mode

5.5.1 Age as a Factors Guiding Selection of Grocery-purchase Mode

On drawing line-graphs, representing respondents' perceptions (Figure 1), it was found that there was a significant

difference in the perception towards *convenience* and *variety* with reference to different age groups. Respondents aged 45 years and above and younger respondents (less than 25 years) attached significantly more importance to *convenience* in grocery purchase; whereas these two groups did not accord so much importance to *variety*. The results revealed that the respondents of these two age-groups are more comfort seeking and not highly involved in the mundane task of purchasing grocery items. Whereas middle aged respondents were more involved and had the objective of extracting *value for money* and also sought *variety* in purchasing grocery items; they were willing to sacrifice *convenience* for the sake of a good bargain.

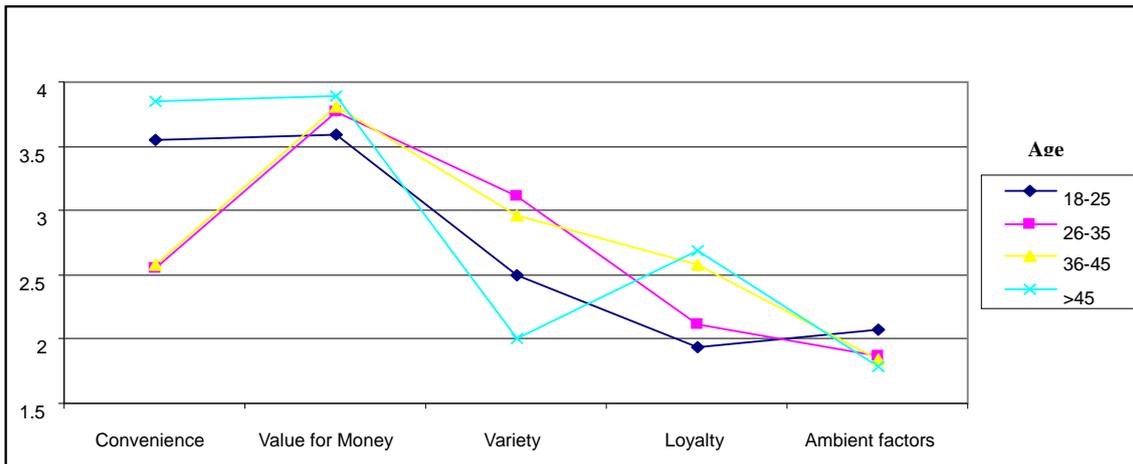


Figure 1. Perception Map: Age vis-à-vis Factors guiding selection

5.5.2 House Hold Income as a Factor Guiding Selection of Grocery-purchase Mode

The line-graphs (representing perceptions) between monthly household income and the factors responsible for selection of preferred mode of grocery purchase clearly indicated that there is a significant difference in perception towards *value for money* and *convenience* with respect to different household income categories (Figure 2). Higher income group respondents allotted significantly higher importance to *convenience* and were less concerned about *value for money* in grocery purchase. This reflects that with increase in disposable income respondents tend to be more inclined towards a shopping-mode which is convenient, less stressful and hassle free.

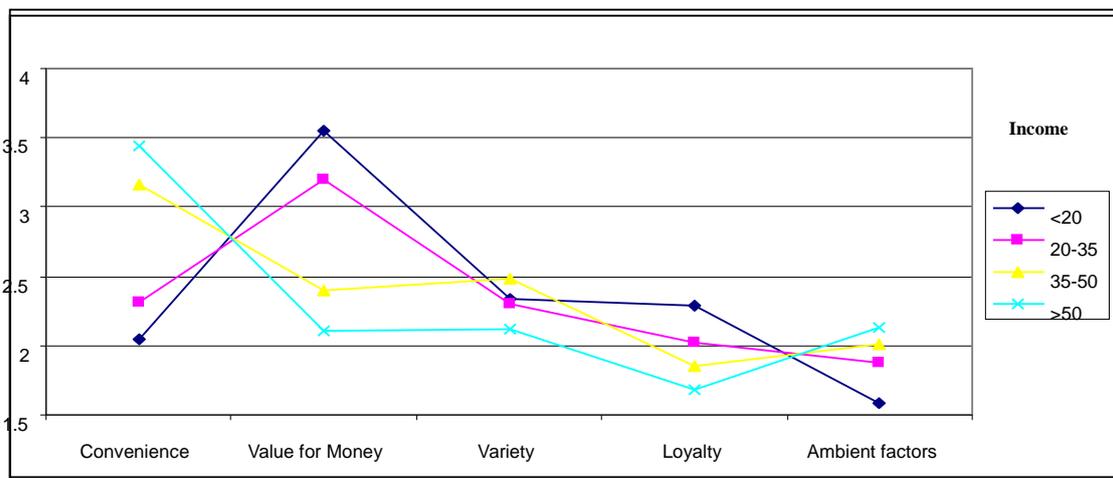


Figure 2. Perception Map: Income vis-à-vis Factors guiding selection

5.5.3 Gender as a Factors Guiding Selection Of Grocery-purchasing Mode

Non-parametric Mann Whitney-U test (Two-Independent samples test) was performed to examine whether there is a significant difference in the perception towards various factors guiding the grocery-purchase mode selection with respect to the two genders (Table 9.1-8.2). Results revealed that there is significant difference (asypm. sig. < .05) in perception regarding *value for money* and *variety*. Women attached relatively greater importance to *value for money* and *variety* in grocery purchase as compared to their male counterparts. This is largely reflective of the tendency of women to be more involved in grocery purchase vis-à-vis men.

Table 9. NPar Tests- Mann Whitney Test

Table 9.1. Test Statistics (a)

	Convenience	Value for Money	Variety	Loyalty	Ambient factors
Mann-Whitney U	6087.000	7680.000	7319.000	5487.500	6785.500
Wilcoxon W	17214.000	19321.000	17845.000	15428.500	16056.500
Z	.675	2.888	2.626	.726	1.267
Asymp. Sig. (2-tailed)	.425	.021	.037	.234	.135

a. Grouping Variable: Gender

Table 9.2. Mean Rank

	Convenience	Value for Money	Variety	Loyalty	Ambient factors
Male: Mean Rank	123.85	106.34	118.98	151.55	133.38
Female: Mean Rank	127.56	176.98	167.42	139.76	146.67

6. Discussion and Managerial Implications

Retailers are constantly experimenting and evolving innovative product and format related strategies, in order to keep pace with the highly competitive and dynamic Indian retail scenario. Various technological interventions like Internet and other related technologies have given birth to online shopping. Fast growth of the internet in India has significantly impacted the Indian shopping environment (including retailing) and the trend has made possible the substantial entry of online grocery retailing. This paper attempts to discover the market potential of online grocery retailing and the consumer perception towards different aspects of grocery purchase in markets like India. It attempts to provide useful insights for those retailers who are considering going for a *hybrid* channel strategy.

Results from confirmatory factor analysis have proposed that there are five underlying dimensions affecting the choice of medium for grocery purchasing. These underlying dimensions are *convenience*, *value for money*, *variety*, *loyalty* and *ambient factors*. The results of binary logistic regression showed that the proposed model, consisting of the above discussed five predictors significantly explains the selection of grocery retail format by customers. In order to explore market potential of online grocery retailing these dimensions of *convenience*, *value for money*, *variety*, *loyalty* and *ambient factors* should be sufficiently taken care of by retailers and appropriate marketing strategies devised so as to provide the requisite value additions to the customers. Results also suggested that factors like *value for money*, *convenience*, *variety* and *loyalty* (except *ambient factors*) are significant in deciding about the acceptance/rejection of online format of grocery retailing. Respondents accorded the highest importance to the factor *value for money*, closely followed by *convenience* as the criteria for selection of grocery purchasing format. So, to establish online format as an effective alternative to the currently prevalent brick and mortar retail-store format of grocery purchasing, marketers need to convince customers that the online mode has something extra to offer that is over and above the traditional format (of grocery shopping). For instance customers perceive *value for money* in terms of 'better available offers', 'overall savings', and 'quality of the products'. Hence the value addition for the customers can be provided in these specific terms.

Second guiding factor in the selection of mode of grocery purchase is *convenience*. Since grocery purchase is a high frequency and low involvement chore for customers, hence the high importance accorded to *convenience*. Customers seek *convenience* in terms of user friendly ordering, payment and delivery procedures. Then there are time-saving features such as ease of website functionality (accessibility and use) and customized shopping lists which are increasingly essential in creating a compelling online offering.

Burroughs and Sabherwal (2001) found that acceptance of online purchases increased when users perceived a streamlined transaction process. The features of primary importance (for users) being ease of order placing, payment, and delivery procedures. The web site should be designed keeping customer convenience in mind, so that customers can quickly locate product choices. This should be further supported by different product-navigational tools etc. This in turn will consequentially increase the acceptance of online grocery retailing as the convenience increases.

At the third place in the hierarchy, is the dimension of *variety*. This is a desirable feature by customers in the current scheme of things, especially in case of grocery purchase because after comparing among different brands and choices the customer feel more empowered and satisfied.

Thereafter, in the hierarchy, is the attribute of *loyalty*. In traditional brick and mortar retailing, the shopping relationship is primarily between the buyer and the seller that give the feeling of 'acquaintance and family', whereas in online format this interaction occurs between the buyer and a remote unknown 'thing' (Hoffman et. al., 1999). Customers while purchasing grocery usually prefer a mode with which they have a long term association, as that constitutes their comfort zone. Also they harbor the belief that such a retailer will understand their needs and requirements. The nature of online channels is complex and the service providers in internet-related businesses are anonymous, hence the

relationships with trusted networks have become more important (Aldrich, 1999; Coe & Yeung, 2001). It is this feeling of trust that makes shopping from that particular mode a habit (with customers displaying habitual buying behavior) and acts as a strong deterrent towards shifting to a different mode or format. In order to capture the Indian grocery market, online retail players need to develop a transparent and totally trustworthy relationship with the customers so that this obstruction can be taken care of.

In the subsequent analysis, in order to compare the two grocery shopping formats (offline vs. online) on the basis of different parameters as perceived by customers, Non-parametric Wilcoxon Signed Ranks Test was employed. The results indicated that customers perceive traditional store-formats as being more *secure* as compared to the online format. Besides the apprehensions they harbor about online payment/money transfer, they also have concerns about the quality of the grocery products (that may be delivered) and the timeliness of the delivery. Customers also feel the need to *touch and feel* the products they purchase. However the online medium deprives them of this satisfaction. Hence, in order to establish online grocery retailing as an effective alternative, retailers should dedicate some serious effort towards removing these lacunae and develop strategies so as to minimize customer dissatisfaction. Privacy policies, offering added information and some certification by credible third-party, have been recommended to address these concerns. These measures have been found effective leading to enhanced consumer patronage in online retailing (Miyazaki, 2002; Haynes & Taylor, 2006). These retailers can follow an exemplary model used by banks to establish ATMs, mobile and internet banking modes as successful alternatives to traditional retail banking practices. Hence the first task would be to establish a fool-proof and secure online payment mechanism and reassuring customers by means of appropriate channels of marketing communication. The online retailers can compensate the absence of the *touch and feel* factor by providing high quality, and a good variety of grocery products in a convenient mode and charging economical prices.

Results from line-graphs (perception-graphs) suggest that there are some differences in the level of importance accorded to various factors driving the selection of preferred grocery purchase mode among different demographic category of respondents. Online retailers may use this information to offer customized online grocery-packages to different demographic groups, which may prove useful in making further inroads into enlarging their customer base.

7. Conclusions

Customers, in India, are now indulging in food and grocery shopping in a more enthusiastic and involved manner than ever before. A large section of customers have adopted organized food and grocery retail outlets as their preferred destination for grocery shopping. They primarily desire that their time and money should not be wasted but optimized while shopping (Prasad & Reddy, 2007). Rise in disposable income, paucity of time, increased desire for convenience, changing life style along with substantial growth in the number of Internet and smart phone users promises a rosy picture for greater adoption of the online mode of grocery shopping. This can be corroborated with the high growth of e-commerce activity in the emerging market of India. These issues are critical for establishing online grocery retailing as an effective alternative to traditional brick and mortar retailing i.e. the success factors can be: meeting customer expectations and preferences in terms of delivering value for money for their shopping. The factors to be focused upon are: convenient purchasing in minimum possible time, smooth and error-free delivery process, reducing their financial risk perceptions and concerns of fraud. The framework suggested in the study will provide some useful insights for those retailers who are considering the multichannel strategy or online grocery retailing as a new business venture.

8. Limitations and Scope for Future Study

The primary focus of this study has been on gauging expectations and perceptions (of Indian consumers) towards online food and grocery retailing. However these insights are applicable to other similar markets (of developing countries) and third world economies where organized retail is making a foray. Obviously for this purpose, some modifications in perceptual and attitudinal variables as per the socio-cultural context of the market under study would be required.

There were certain limitations to our study. The primary one being a time constraint, due to which the research design used for the study was descriptive cross sectional, meant for a one time study. However the advent of technology and its adoption is a continuous and ongoing process. Hence a longitudinal research study (at multiple points of time) would have presented a better picture of the dynamic nature of customer perceptions and expectations with reference to online grocery retailing. Further, a detailed study based on segmentation of customers could have been attempted to gauge perceptions and expectations of different clusters of customers. These limitations carve the path for future research on these pertinent issues.

Also from the perspective of enhancing the depth of analysis, some mediating and moderating variables could have been incorporated, thus broadening the scope of the study by analyzing the multi-layered relationship of the customer decision making process. This detailed study would have revealed further interesting and actionable deliverables for both the stakeholder, namely academicians and practitioners.

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