

## **4. Research and Design Methods**

### **4.1 Research process and Scale Inquiry**

The validation of measure for research in the business disciplines has received a great deal of attention (Hemmasi et al. 1994), Peter (1979) goes as far as to argue that “Valid measurement is the *sine quo non of science*.” However, academics have largely ignored the very same issues as they pertain to the business practitioner. Academics can make a potential contribution to the applied practices of business by examining, among other issues, the conceptual differences between scale development for the purpose of science and application. In pursuit to this goal, an applied store image scale based on behavioural pattern of shoppers is presented in the research.

A review of the current literature indicates that one area which offers high potential for the development of an applied scale is on store images based on behavioural pattern of the shoppers. Store images as a competitive tool for the retailers and the current controversy surrounding is on the development of the store image scales. From the theoretical standing point, a store image has received a great deal of attention including being the focus of a special issue of the Journal of Retailing (Winter 1974-75). Despite the extensive research in this area, neither the construct nor a universal scale has yet been developed. Nor has anyone attempted to create a scale solely for use by retailers. The development of an applied store image scale is the focus of this research.

#### **4.1.1 Applied Scale development for store images based on behavioural pattern of shoppers**

Research in the applied domain is different from scientific research (Calder et al. 1983). Applied research is more concerned with correspondence and not necessarily theoretical measures. In addition to meet the traditional considerations of construct validity, applied scales must also be actionable, cost efficient, and generalizable.

Managers must be able to interpret measures, use them for diagnosis, and take action as inadequacies are indicated by the measures. For the measure to be functional, the manager needs to be able to take action to improve the current situation. It does little good for a manufacturer to find that the customer is unsatisfied due to uncontrollable environmental factors such as the general state of the economy. Instead, the manager needs to focus on actionable and controllable variables.

#### **4.1.2 Store Image as a strategic Tool**

Store image has emerged as a major strategic tool in the highly competitive retailing environment of the 1990s for number of reasons. Steenkamp and Wedel (1991) argue that it is one the retailers' more valuable assets. Image is one basis used by consumers to determine how suitable they are as customers for a particular store (Dickson and MacLachlan, 1990). Images affect shopping

behaviour and the ultimate choice of retail store to be patronized (Donavan and Rossiter, 1982). Increased competitive pressures are challenging retailers to determine current images based on behavioural pattern of shoppers, make necessary changes, and tailor a marketing strategy to attract and develop loyalty among the targeted customer group.

Despite the critical role of store image, store managers are often frustrated by their inability to alter individual store images to a significant degree. Yet, this ability to identify and, if necessary, modify store images is critical managerial skill in the present retail environment, where targeted store image has become a key competitive tool.

#### **4.1.3 Store Image Measurement**

While store image has traditionally been measured using bi-polar scales (Doyle and Fenwick, 1975), it has been suggested in the literature that content analysis and other open-ended or unstructured elicitation techniques should be used to measure store images (Zimmer and Golden, 1988), (Keaveney and Hurt, 1992). These methods offer advantages in the measurement of store images including: 1. the researcher does not impose structure on the respondent through language or dimensions, 2. each respondent is able to describe dimensions of the store images in a unique fashion, thereby, reducing errors of omission on the part of the researcher, and 3. the researcher captures a more robust picture of the images of the store.

Open-ended elicitation techniques for measuring store image exhibit several disadvantages including: 1) results may be difficult to interpret because subjective assessments by the respondent depend heavily on their frame of references, making generalization very difficult; 2) coding by the research often introduces bias into the results; 3) the nature of the data makes powerful statistical analysis difficult, requiring use of special analytical techniques or nonparametric statistics; 4) variations in the capability of the respondents to articulate their thoughts and feelings affects the quality of the data; 5) the technique allow a more gestalt measurement but often give no measurement of the degree to which an attribute or feeling is present; and 6) the results obtained from this type of elicitation method may not be actionable by the retailer, perhaps the greatest fault of open-ended elicitation technique. While it is arguable that the construct for store image should be measured using open-ended elicitation techniques for the purpose of scientific research, this is hardly practical for applied use. The development of this store image scale focuses on application.

## 4.2 Methodology

### 4.2.1 Scale criteria

Four criteria were used in the development of the scale: validity, actionability, efficiency and generalizability. Each of these was considered in relation to the practical utility of the scale to retail managers.

**1) Validity:** In development of the current scale, construct validity was a primary concern and included the assessment of convergent, discriminant, and face validity. Applied scale should meet strict validity requirements. Hirschman et al.

(1978) indicated that “little has been done to evaluate the reliability and validity of store image components... “They continue, “it would appear that a minimum of scientific rigor is to be found in many studies of store images.” One purpose of the research was to address these issues.

**2) Actionability:** A positive image is very important to a retailer’s survival.

However, measuring store image without being able to identify specifically what is being done well and what poorly is inefficient. The retailer must be able to interpret the survey results and take corrective action to improve the store’s image if deficiencies are found. The purposed scale concentrates on specific aspects of the store images that are under the direct control of the store manager. These aspects include merchandise, store atmosphere, store value, service level, the target market of the store, and customer convenience. These elements were chosen after extensive review of work such as May (1981). She noted that “stores possess

less potential for change (than products) because neither their physical properties nor surrounding trade environment are easily changed.” Hence,, inclusion of unalterable items that measure the holistic view of store image will only add to the theoretical construct, not bring meaningful information to the manager.

**3) Efficiency:** Researchers operate under strict budgets, especially for research and data collection. For a scale to be useful for the retailer, it must be cost effective. The researcher must able to measure the store image construct, customer demographic and other information of concern in a single, concise survey. Open-ended elicitation techniques obviously do not lend themselves to these restrictions. Based on discussions with retailers, it was decided the store image construct should consist of no more than a total of 18 to 21 questions. A survey of this length also appeal to respondents as they are less likely to suffer fatigue and more likely to maintain interests, Also, a parsimonious scale allows the retailer to ask other questions such as demographic and behavioural attitudes towards specific operating procedures. It can be added to any customer survey or be administered at the point of purchase, and exit mall interception interview in a short time. Finally, the results of this type of survey allow for simple and meaningful interception of the results.

**4) Generalizability:** The last priority used to develop the scale was that of external validity. In order to widely accepted, a store image scale must be applicable for several different types of retailers in different geographic locations. As indicated by Hirschman et al. (1978). Store images need to be tested “among

stores, among markets and within the measurement instruments themselves.” Further, they state that “Few (store images studies) have been cross validated internally or reolicated in a different setting or time.” Most store image scales concentrate on specific type of retailers, such as departmental store, in a single geographic area. However, the goal in the current research was to build a scale that could be used by retailers in diverse environments, not merely a single type of store.

#### **4.2.2 Scale Development Process**

Utilizing the four major criteria, the store image scale was constructed and tested in several steps in accordance with previous guidelines of Churchill’s (1979), and Gerbing and Anderson’s (1988) recommendations. Following Churchill (1979), the basic steps included 1) Development of typology and theme for shoppers based on behavioural aspects by observational methods, 2) specifying the domain of the construct, 3) generation of sample items, 4) measurement purification, and 5) assessing reliability and validity.

##### **1. Shoppers typology development**

This study has used a methodology that involved observation of the shoppers for gathering the data. Participant observation was chosen as it puts the researcher where the action is and experiences the lives of informants (Bernard, 2000:318). The steps involved in the process are outlined below (Schutt, 1999:285):

**a. Selecting a Role:** The observation study began with the decision about the role to be played by the researcher. These roles lied on the continuum of a complete observation where the researcher does not disclose the identity to complete participant where the researcher is also an active member of the group and the group is aware that it is being researched. The decision was taken in the light of the situation being studied, socio-political context, researcher's background and personality and ethical concerns. It was felt that the informants may be reactive to the researcher and would not be their natural self. Hence, covert observation was followed. It is the candid camera approach where the informants are not disturbed during the process. Also no questions were asked to the respondents till the observation is over.

**b. Entering the Field:** It was important that the researcher was not singled out in the field. A vantage position was decided after evaluating the store as the researchers were carrying scratch pads. They were the "Mystery Shoppers" in most cases. In some cases where the store layout did not facilitate movement, the researchers took a position on the counter next to the salesperson.

**c. Relationship Development:** The context and the researchers had to relate very well so as to continue to observe diverse tourist shoppers at the store. This was achieved by taking the shopkeeper into confidence. The storeowner was approached and briefed about the project. He was requested to introduce the researchers to its staff. Honest explanation for the researcher and the study, with support from documents endorsing the study, was developed.



**d. Sampling Informants and Events:** There are two approaches to sampling in observational research. These can be classified into breadth and depth. In the latter part a smaller number of informants are observed allowing for a more intensive portrait of actors and activities but generalization may be questioned. The intended study tried to bring depth as well as breadth by increasing the sample size and choosing a mix of stores. The stores were chosen on the information search as exhibited by the tourist shoppers reflected in the kind of product bought and the format of the stores. The study was conducted across time band as it was expected that the behavior might differ with the time of shopping. The study involved a stratified random sampling. The stratification was based on the type of store. A total of 358 responses were collected. The study focused on the tourist involved in shopping and not the accompanying person, unless the latter was actively involved in shopping.

**e. Recording the Observations:** A track sheet was prepared that included space for noting down the observation. However, the observations were recorded as field notes. These notes were jottings, as it was difficult to write down everything without disrupting the observation. Wherever it was possible to hear possible, the conversation was noted. This process was hindered, as the researchers had to maintain a “safe” distance. This was also affected as many stores were playing music. Movement of every informant was mapped. The researchers recorded everything they had observed before choosing the next informant. This helped in reducing lapses due to loss of memory.

**f. Analysis of Observation Findings:** The text was analyzed using a Grounded Theory Approach. It has found its use across social sciences including management (Bernard, 2000:443). It was used in identifying categories and concepts that emerged from the text and linking the concepts into substantive and formal theories. Content analysis was not used as there were no hypotheses to be tested and there was no a priori categorization of behavior (Arnould and Wallendorf, 1994). The analysis followed the following steps:

- a) Produce transcripts and read through a sample of text
- b) Identify possible themes (categories) that arise out of the text
- c) Compare the categories after pulling all the data
- d) Explore linkages among categories
- e) Build conceptual models and check with the data – especially the non-conforming cases.

**g. Development of the theme of shopper's typology**

The study brought out several behavioral cues from these informants. The context of these cues are developed and narrated as a theme form. A total of 165 tourist shoppers were observed at stores dealing in grocery, apparels, household appliances, books and music, shoes, lifestyle products like cards and gift items, cosmetics and medicine. This stratification was used since it was found that the store choice depended on the type of product available at the store. This was also followed so as to include buying situations with differing level of involvement. Effort was made to select respondents from the old and the new format stores. The

formats have been distinguished based on the facility provided to the shoppers to browse and choose by themselves.

A store was chosen as belonging to the new format when the onus of information search was on the shoppers. They had access to the merchandise and could touch and feel without the help of the shopkeeper / salesperson, though they could choose to take the help of the salesperson. Other stores belonged to the old format are slightly avoided for the study but included. These stores were chosen from different parts of the city to enable a wider spread of the sample. An attempt was made to choose equal number of respondents from each format and the type of store. It is described here that the 4 major different tourist shopper segments identified on the basis of their behavior. It also draws their profiles as provided below. An attempt has been made to identify the retail mix variable that would help in creating a lasting impression on the tourist shopper and build store patronage and referral.

### **Variety Seeker**

They looked for various options and asked for more variety of the same product. Such shoppers observed all the racks. They would see many items before selecting. They tried each type, one by one, asked for more variety. They also looked at many brands and other products. Some of these shoppers looked at many product categories and kept on shifting between various sections and racks. Sometimes shoppers looked around the shop simply glancing at various shelves without attention to any brand or product in particular. Many of these shoppers went to product and tried to open and test it immediately. They seemed to try to

feel the product. Such shoppers asked for the product, but were not pre-decided on brands. They tend to ask for the merchandise by the product category and not brands. Such shoppers were found in all types of stores. However, they were found more in books and music, cosmetics, and durable outlets. They were almost equally divided among men and women shoppers. More women in this category were accompanied as compared to men. They were found more in new format stores as compared to old format stores. These shoppers would put the store on test. They would like to maximize the returns on the effort expended on shopping. Their behavior can be compared to dissonance reducing behavior. Stores would need to have a good range of merchandise to attract such shoppers. Such shoppers would look for depth than breadth of the merchandise. Large stores would benefit as they are in a position to attract a wider base of shopper through better depth as well as depth of their offer. Since the shoppers look at almost all the offers in the category, they are open to switching from their current brand. In new format stores, good display is essential. Communication of any scheme at the display would also help. Salespersons would have a limited role to play. They may, in many cases, be perceived to be intruding.

### **Familiar**

These shoppers entered the store very confidently. They did not ask for directions. They were moving comfortably. They would go straight to the racks or a particular section of the store. They seemed to know the salesperson. Some of them shared jokes with the salespeople. Many of them shook hands with the shop owner while leaving. While they were seen in most of the stores, they were found more in

grocery stores followed by medicine and books stores. There was more number of men in this segment and they shopped mostly alone. These shoppers were found in both the formats. Such shoppers need to be attended immediately. In most cases even a greeting would help. Stores face the danger of taking them for granted. They could be talked about their views on the store. They should be made aware of any new arrival or event at the store before the announcement to other shoppers.

### **Pre-decided**

The shoppers constituting this group had come to buy a particular type of products. They went straight to the specific racks or a particular section. They would ask for particular product/service without looking around and would leave immediately. They were not interested in surrounding and at times left the shop when the desired product was not found. They seemed to have limited product choice set. They tried and bought the product initially asked for and in most cases did not try anything else. Most of them would ask for particular sizes and products only. Generally did not ask salesmen and started observing and selecting the pre-decided product. In some cases, they did ask the salespersons but only for some clarification. They were the largest segment of shoppers. They were found in all types of stores. However, their number was highest in durable stores followed by grocery and medicine stores. Such behavior was found more among men. Found mostly in new format stores, these shoppers were equally divided between alone and accompanied. These are very informed buyers. They have already assimilated and processed the information. Most of them have decided on the choice set. The retailer can win the favor of such customers by meeting their requirements at the

earliest. They are however open to suggestions from the salespersons, but within their choice sets. The salespersons in most cases would be asked only about the availability of their choice set. Such shoppers are likely to value depth in merchandise more than the width. Neat displays, clear communication will help in bringing these shoppers back.

### **Economic**

Shoppers belonging to this category perceived place to be costly. They would hint at buying at a cheaper place. While selecting or browsing, they looked mainly at the price tags. They would check the price first, keep the merchandise back after reading the price. Price was the first thing they asked the salesperson. Some of the shoppers changed brands when they found that the price was high. These shoppers were found in all stores. However, such behavior was observed more in durable, grocery and shoes stores. They were mostly accompanied and almost equally divided among men and women. The most important thing for these shoppers would be merchandise with their price displayed. Store may like to arrange their merchandise based on the prices. EDLP would be the biggest draw for such shoppers. These shoppers observed discount tags and in most cases bought those. They would ask the salesperson for discounts. They tended to head straight towards the discount section as soon as they entered the shop. They would look around for schemes. Sometimes they were carrying coupons to be redeemed. Stores dealing in durable products witnessed a large number of such shoppers. These shoppers were also found grocery and shoes. A few were also found in cosmetics stores. More men were more in numbers and they were mostly

accompanied. They were found more in new format stores. To provide the best shopping experience, the store should have display communication regarding discounts and schemes inside the store. More prominent would be the banners/boards outside the stores. The announcements of discount or schemes in mass media would also attract these shoppers. These shoppers changed products/brands as they did not fit in the budget. They did not buy anything that exceeded their budget. Durable stores are the most prominent store type in such type of shoppers. They were also found in cosmetic and grocery stores. Number of men exhibiting such behaviour was more. These men generally came alone. The salespersons that help them get the most out of their budget would be like the most. For such shoppers prices of the merchandise need to be displayed prominently.

## **2. Specifying the domain of the construct**

Despite the importance of being able to determine store image, the theoretical construct of store image has not yet been firmly delineated. Some researchers contend that store image is global impression (Zimmer and Golden, 1988), (Dichter, 1985), (Oxenfeldt, 1974). Others address store image as a multiple-attribute based construct (Menzes and Elbert, 1979), (Lutz and Bettman, 1977), (Hirsahman et al., 1978), (James et al. 1976). In either case, there is agreement that store image is essentially the way in which the retailer is viewed by its customers.

The definition of store image as a global impression that includes both judgments' and affect has both advantages and disadvantages. The advantages pertain mainly to the usefulness of this definition for theoretical work by marketing scholars. However, this definition makes it difficult for both retailers and researchers to apply the construct in practice. As indicated by (James et al. 1976), such studies present difficulties for retailers, however, because it is difficult to improve their marketing program based on the information provided by the data collected and because of the analysis requires unfamiliar skills. One of the purposes of this research was to develop a retail image scale based for tourist shoppers' behavior that can be applied by retail managers at the store level.

A review of current store image scales indicates several possible dimensions (Berry, 1969), (Lindquist, 1975), (Zimmer and Golden, 1988). The various dimensions of previous store image can be divided into functional and symbolic (Sirgy and Samli, 1985), (Daren and Babbins, 1994). Symbolic dimensions that were general or overall impressions were dropped as inactionable because of their intangible in nature. For example, honesty could easily refer to pricing policies, service or any management policies. Also, fixed assets, such as location, were deemed to be non-actionable because retail managers are unable to change or act on these in short run (May, 1981). Lastly, those dimensions that were deemed to apply to only specific stores were omitted in the interest of external validity. Only few constructs remained for further analysis. They are, merchandise, product assortment, store atmosphere, value of the store, service level, clientele and convenience.



### **3. Generation of sample items and theoretical scale purification**

#### ***Definition of target population, sampling frame, the size and the design process***

Target Population for the research was determined based on three parameters namely, 1. Element: male or female tourists who all visited the food outlets and retail stores. 2. Extent: The food outlets and retail stores in Puducherry, India. 3. Time: September, October, November and December of 2013.

The sample frame has been effectively generated from the CMIE data-base which provides the details of organized retail stores of various types from various cities from the Nation. The ultimate target group was specified from the using random digit table and a simple random sample of respondents drawn up from each stratum (store) who visited the store for that day, this research excluded children and the respondents who do not know much English.

#### ***Sample Items***

Sample items and dimensions from previously developed scales (Kelly and Stephenson, 1967), (Kunkel and Berry, 1968), (Berry, 1969) (Lindquist, 1975), (McDougall and Fry, 1975), (Pathak et al., 1975), (Hawkins et al., 1976), (James et al, 1976), (Hirschman et al, 1978), (Hansen and Deutscher, 1978), (Pessemier, 1980), (Zelino and Gagnon, 1981), (Kasulis and Lusch, 1981), (Malhotra, 1983), (Mazursky and Jacoby, 1986), (Sirgy and Samli, 1985), (Hildebrandt, 1988), (Dickson and MacLachalan, 1990), (Ohanian and Tashchian, 1992), (Baker et al., 1994), (Darden and Babbitt, 1994) were examined by five seven subject matter

experts includes researchers, teacher of post graduate and retail managers. Items and dimensions were initially screened for duplication and ambiguity, Next, each experts labeled until a consensus was reached on which scale items were appropriate for which dimensions. Scale items on which these were not unanimous agreement were initially eliminated.

#### **4. Measurement Purification**

##### ***Face Validity - Content and Construct Validity***

Later, the store images aspects were ascertained with the behavioral pattern derived typology of shoppers and a basic instrument was developed which aimed that the items should tap the theoretical construct related to store images aspects and all behavioral pattern that are included in the shopper typology. The various store image dimensions like merchandise, product assortment, store atmosphere, value of the store, service level, clientele and convenience, store layout and design are blended with major four shoppers typology of Pre-determined, Economic, Variety seeking, and Familiar with the typological guidelines how retail shopper behaved based on store image aspects, initially 87 items were generated. To clearly state 21 items on pre-determined 29 items on economic, 20 items on variety seeking and 17 items on familiar. All 87 items are initially measured at seven point Likert scale with anchoring range from strongly disagree (1) to strongly agree (7) were pre-tested with an in-depth interview conducted with 8 subject matter experts from academic and practicing managers. They were evaluated on all the 87 items on how they understand, interact and respond to the content and structure, wordings and ease of answering as well as the time taken to

complete the questionnaire in all respect. Suggestion through feedback regarding the format and the content of the questionnaire were considered and changes were made to the questionnaire to reflect respondents' recommendations. During this process the items were reduced to 58. Then a pilot study conducted with 30 samples to further test the inter correlation among the items. The correlation score of each inter items are estimated and the score which are less than 0.5 are summarily deleted from the constructs and finally 25 items were selected.

### ***Initial sampling decision and Sampling***

After developing the instrument, further a pilot test (among retail managers, merchandise managers, and other academicians) was conducted to estimate the sample size with the measures related to the 25 attributes, which were measured on a 7-point Likert-type scale. The ratings range from 1 to 7 (1- strongly disagree, 7 – strongly agree). The estimated confidential interval from the pilot study is 4.8 and maintaining the confidential level at 95% as arbitrary value, average the population size was estimated to near 2600 shoppers per store type who visit the store per month, the estimated sample size is 358.

To measure the sample size adequacy rate, it was decided to follow the guidelines by David J Bartholomew and Martin Knott in their work of "Latent Variable Models and Factor Analysis" that there should be at least four or five times as much more observations (sample size) as there are variables to be studied for performing Exploratory Factor Analysis. (London, UK: Edward Arnold Publishers, 1999). By considering 25 variables to be factored for the study, it's

found satisfactory that, estimated sample size exceeds the value of required sample adequacy rate (260 samples).

### ***Data Collection***

The data was collected through mall intercept interview schedule during shopping and after the shop, which is by means of exit interview; this is made for the convenience of the shopper who visits the store or mall. The target respondents for the survey are male and female tourists' who visits the store. A total of 358 questionnaires were returned from all sources. Hair et al. (2006) states that structural equation models containing five or fewer constructs, each with more than three items (observed variables), and with high item communalities (0.6 or higher), can be adequately estimated with a sample as small as 100–150. The measurement model for this research has four constructs, each with three or more observed items. The sample size of 358 is, therefore, considered adequate to support the structural equation analysis necessary to assess this measurement model.

### **5. Assessing Reliability & Validity**

After determining the face validity through the experts and further to ensure convergent and discriminant validity, the exploratory factor analysis and correspondingly the confirmatory factor analysis was performed and respective factors are taken for item analysis to measure the reliability of the scale items. Given these results, we have evidence that the measures are unidimensional, with each items reflecting one and only underlying construct.

## **Reliability of Measures**

### ***Internal Reliability for pre-determined dimension of shopper typology***

The Cronbach's  $\alpha$  estimated for pre-determined dimension of shopper typology is 0.879 and the Cronbach's  $\alpha$  based on the standardized items also represents 0.879 with the total number of 6 items of 358 sample members (See Table 4.1. Reliability Statistics for pre-determined dimension of shopper typology). The mean score for the various dimensions of predetermined shopper typology ranges from 4.48 to 4.64 and the standard deviation of the items are  $\leq 2.0$  (See Table 4.2. Item Statistics for pre-determined dimension of shopper typology). The Inter-Item Correlation Matrix of the pre-determined dimension of shopper typology reflects all the item correlations are  $\geq 0.50$  which indicates that all the items are well correlated among them (See Table 4.3. Inter Item Correlation Matrix for pre-determined dimension of shopper typology). The Item total statistics replicates that even one if the items are eliminated from the model, the coefficient  $\alpha$  remains  $\geq 0.80$  which indicates the items are possessing high measures of reliability score (See Table 4.4 Item total statistics for pre-determined dimension of shopper typology).

### ***Internal Reliability for Economic dimension of shopper typology***

The Cronbach's  $\alpha$  estimated for economic dimension of shopper typology is 0.795 and the Cronbach's  $\alpha$  based on the standardized items also represents 0.795 with the total number of 7 items of 358 sample members which indicates high level of internal reliability among the measures (See Table 4.5 Reliability Statistics for economic dimension of shopper typology). The mean score for the various

dimensions of economic shopper typology ranges from 3.62 to 3.91 and the standard deviation of the items are  $\leq 2.0$  (See Table 4.6 Item Statistics for economic dimension of shopper typology). The Inter-Item Correlation Matrix of the economic dimension of shopper typology reflects all the item correlations are  $\geq 0.30$  which indicates that all the items are moderately correlated among them (See Table 4.7 Inter Item Correlation Matrix for economic dimension of shopper typology). The Item total statistics replicates that even one if the items are eliminated from the model, the coefficient  $\alpha$  remains  $\geq 0.75$  which indicates the items are possessing high measures of reliability score (See Table 4.8 Item total statistics for economic dimension of shopper typology).

#### ***Internal Reliability for Variety -Seeking dimension of shopper typology***

The Cronbach's  $\alpha$  estimated for Variety -Seeking dimension of shopper typology is 0.797 and the Cronbach's  $\alpha$  based on the standardized items also represents 0.797 with the total number of 7 items of 358 sample members which indicates high level of internal reliability among the measures (See Table 4.9 Reliability Statistics for Variety -Seeking dimension of shopper typology). The mean score for the various dimensions of Variety -Seeking shopper typology ranges from 3.71 to 3.89 and the standard deviation of the items are  $\leq 2.0$  (See Table 4.10 Item Statistics for Variety -Seeking dimension of shopper typology). The Inter-Item Correlation Matrix of the Variety -Seeking dimension of shopper typology reflects all the item correlations are  $\geq 0.30$  which indicates that all the items are moderately correlated among them (See Table 4.11 Inter Item Correlation Matrix for Variety -Seeking dimension of shopper typology). The Item total statistics

replicates that even one if the items are eliminated from the model, the coefficient  $\alpha$  remains  $\geq 0.750$  which indicates the items are possessing high measures of reliability score (See Table 4.12 Item total statistics for Variety -Seeking dimension of shopper typology).

#### ***Internal Reliability for Familiar dimension of shopper typology***

The Cronbach's  $\alpha$  estimated for familiar dimension of shopper typology is 0.781 and the Cronbach's  $\alpha$  based on the standardized items also represents 0.781 with the total number of 5 items of 358 sample members which indicates high level of internal reliability among the measures (See Table 4.13 Reliability Statistics for familiar dimension of shopper typology). The mean score for the various dimensions of familiar shopper typology ranges from 3.81 to 3.93 and the standard deviation of the items are  $\leq 2.0$  (See Table 4.14 Item Statistics for familiar dimension of shopper typology). The Inter-Item Correlation Matrix of the familiar dimension of shopper typology reflects all the item correlations are  $\geq 0.30$  which indicates that all the items are moderately correlated among them (See Table 4.15. Inter Item Correlation Matrix for familiar dimension of shopper typology). The Item total statistics replicates that even one if the items are eliminated from the model, the coefficient  $\alpha$  remains  $\geq 0.730$  which indicates the items are possessing high measures of reliability score (See Table 4.16 Item total statistics for familiar dimension of shopper typology).

## **Assessing Validity of the Model**

To assess the validity of the measurement model, it was decided to go for both exploratory factor analysis and confirmatory factor analysis, to ensure and define the common underlying dimension for store image based various typologies of shoppers based on behavioural aspect. Primarily EFA was performed, the results of EFA follows.

Factor analysis was used to summarize the variables by examining correlations between the variables, and to create an entirely new set of variables to replace original variables. Factors were derived using principal components, which summarize the original information into factors for prediction. Only factors with latent roots or eigenvalues greater than 1 were included.

Factors were rotated using the varimax rotation method. According to Hair et al., factor loadings at  $\pm .30$  are considered minimal,  $\pm .40$  more important,  $\pm 0.50$  or greater practically significant. In tune with this concept the variables with loadings greater than or equal to  $\pm 0.50$  were retained for this study. However, those with several high loadings on more than one factor have been deleted, and more so variables with low loadings and those that were not loaded on any factor also were evaluated for possible deletion. Exclusion of variables was dependent upon their overall contribution to the research. In addition to the variable loading, the communality and the total amount of variance shared with other variables were evaluated duly before deleting the variables. Variables with loadings less than  $\pm 0.50$  and variables that did not load with communalities less than .50 were deleted.



After the factors were formed, they were named according to those variables with higher factor loadings.

As for the “Instrument reliability”, the degree of consistency between multiple measures of a particular variable was tested using Cronbach’s alpha coefficient.

The scales measuring the importance and perceptions of environmental dimensions as well as shopping orientations were tested. Cronbach’s alpha is the most widely used reliability coefficient and assesses the consistency of an entire scale (Hair, et al., 1998). The size of a reliability coefficient is based on the average correlation among test items and the number of items (Nunnally, 1978). According to Hair et al., the acceptable lower limit is 0.70; however, 0.60 is acceptable for exploratory research. Scales for this study were considered to have good reliability if it had an alpha value of 0.60 or greater.

Exploratory Factor Analysis and the Item Analysis for reliability were performed in SPSS and NCSS statistical packages respectively.

#### ***Appropriateness factor model and Sample size adequacy***

The result of Appropriateness of the Factor Model indicates that the population correlation matrix is an identical matrix. The Bartlett's Test of Sphericity is based on approximate chi-square statistics transformation of the determinant of the correlation matrix. The approximate chi-square statistics is 3.102 (larger value) with 300 degree of freedom, which is significant at the 0.05 level (  $p\text{-value} \leq 0.05$ ) proves the factor model is appropriate. Kaiser-Meyer-Olkin Measure of Sampling

Adequacy compares the magnitudes of the observed correlation coefficients to the magnitudes of the partial correlation coefficients. The Value of the KMO statistics is 0.884, which is a larger value (  $p\text{-value} > 0.5$ ) and indicates the sample size as adequate (See Table 4.17 KMO and Bartlett's test).

### ***Communalities assigned to the variables by the factor model***

Table 4.18 exhibit, the communalities indicates the amount of variance in each variable that is accounted for. Initial communalities are estimates of the variance in each variable accounted for by all components or factors. For principal components extraction, this is always equal to 1.0 for correlation analyses. From the Table 4.18, it can be seen that the communality for all the variables is 1.0 as unities are inserted in the diagonal of the correlation matrix.

Extraction communalities are estimates of the variance in each variable accounted for by the components. The communalities in this Table 4.18 are all high, which indicate that the extracted components represent the variables well.

### ***Obtained factors***

In the Table of "Total Variance Explained", which is exhibited in Table 4.19, the column of "Initial Eigenvalues" gives the Eigenvalues. The Eigenvalue for the factors are expected, in decreasing order of the magnitude as we go from factor one to last. The Eigenvalue for a factor indicates the total variance attributed to that factor. The total variance accounted for all the 25 variables is 52.764, which is

near to the number of variables. Factor 1 accounted for 19.92 percent of the total variables, Factor 2 accounted for 15.36 percent of the total variables, Factor 3 accounted for 13.91 percent of the total variables, Factor 4 accounted for 3.55 percent of the total variables.

In the second column “Extraction Sums of Squared Loadings” under “Total variance explained” Table 4.19, gives relevant information after the desired numbers of factors have been extracted. The variances associated with the factors were retained. Note that these are same as “Initial Eigenvalues”. This is always in the case of “Principal Component Analysis”.

In the second column “Rotation Sums of Squared Loadings” under “Total variance explained” Table 4.19, gives the final statistics. The interpretation of the output is to look at the factor extracted, eigenvalue, percentage of variance and cumulative percentage of variance. There are four factors extracted accounted for 52.76 percent of the total variance. Factor 1 accounted for 18.38 percent of the total variables, Factor 2 accounted for 15.24 percent of the total variables, Factor 3 accounted for 14.88 percent of the total variables, Factor 4 accounted for 4.24 percent of the total variables, and this is a pretty good bargain with the total variance explained, because we lost 47.23 percent.

### ***Comparison of factor loadings***

By comparing the varimax rotated factor matrix (See Table 4.20) with the unrotated matrix we can see the rotation achieves simplicity and enhances interpretability.

### ***Labelling the Latent Factors***

Finally, the following variable Ambience, Prior information, Availability of merchandize, Specific product Variety, Low interaction with sales personnel are accounted for factor one and the factor is theoretically labelled as „Pre-determined“. Followed by, the following variable Price, High influence of price on brand switching, Price display, Seek discounts, Prefer discounts, Indoor display and outdoor promotions related to discounts, Seeks help from sales personnel are accounted for factor two and the factor is theoretically labelled as „Economic“.

Next, the following variable of Intensive search, Stress on product category, Seek value for money, Seek depth in merchandise, Limited role for salesman, informed about promotions, Examine the product thoroughly are accounted for factor three and the factor is theoretically labelled as „Variety-Seeker“. And last, the following variable of Influence of store image, Priority over other customers, Friendly attitude of sales personnel, Recommendation to others, Brand conscious are accounted for factor three and the factor is theoretically labelled as „Familiar“.

## **The results of Confirmatory Factor Analysis**

**Confirmatory factor analysis** (CFA) seeks to determine if the number of factors and the loadings of measured (indicator) variables on them conform to what is expected on the basis of pre-established theory. Indicator variables are selected on the basis of prior theory and factor analysis is used to see if they load as predicted on the expected number of factors. The researcher's *à priori* assumption is that each factor (the number and labels of which may be specified *à priori*) is associated with a specified subset of indicator variables. A minimum requirement of confirmatory factor analysis is that one hypothesize beforehand the number of factors in the model, but usually also the researcher will posit expectations about which variables will load on which factors (Kim and Mueller, 1978b: 55). The researcher seeks to determine, for instance, if measures created to represent a latent variable really belong together.

To, theoretically prove the measurement model, CFA was performed. The scale purification and calibration procedures rely on an iteration of confirmatory factor analysis, with the goal to improve congeneric measurement properties of the scale. A 25 item, four dimension confirmatory factor analysis was estimated and inspection of the model fit revealed in this section.

The confirmatory factor analysis provides various information. This analysis compares the average variance extracted with the variance shared (i.e., squared phi correlation ( $\phi^2$ )) between the construct and other constructs in the model and

found that the average variance extracted estimates were greater than the squared correlations between all constructs. Thus, we found the evidence of **discriminant validity**.

The covariance matrix of the model is exhibited in the Table 4.21. The analytical process of Confirmatory factor analysis produces following matrix. They are 1) Lamda -X Matrix (See Table 4.22), 2) Theta-delta Matrix (See Table 4.23), 3) Phi Matrix (See Table 4.24).

The factor loading scores (standard score) have gained high loadings, which indicate a good convergent validity (more than 0.50). Moreover, the factor estimate and its respective t-values prove that all the variables attained significance level at  $p - \text{value} \leq 0.05$  and this is shown in the Table 4.25.

The measurement equation for the measurement model is provide for predictive purpose.

$$P1 = 1.40 * p, \text{Errorvar.} = 1.84, R^2 = 0.52$$

(0.093)	(0.16)
15.15	11.82

$$P2 = 1.41 * p, \text{Errorvar.} = 1.68, R^2 = 0.54$$

(0.090)	(0.14)
15.65	11.66

$$P3 = 1.39 * p, \text{Errorvar.} = 1.59, R^2 = 0.55$$

(0.088)	(0.14)
15.75	11.63

$$P4 = 1.47 * p, \text{Errorvar.} = 1.56, R^2 = 0.58$$

(0.089)	(0.14)
16.40	11.38

$$P5 = 1.48 * p, \text{ Errorvar.} = 1.78, R^2 = 0.55$$

(0.094)	(0.15)
15.86	11.58

$$P6 = 1.47 * p, \text{ Errorvar.} = 1.80, R^2 = 0.55$$

(0.094)	(0.15)
15.76	11.62

$$E1 = 1.03 * e, \text{ Errorvar.} = 2.26, R^2 = 0.32$$

(0.096)	(0.19)
10.67	12.16

$$E2 = 1.14 * e, \text{ Errorvar.} = 2.32, R^2 = 0.36$$

(0.099)	(0.19)
11.49	11.91

$$E3 = 0.95 * e, \text{ Errorvar.} = 2.52, R^2 = 0.27$$

(0.099)	(0.20)
9.61	12.43

$$E4 = 1.18 * e, \text{ Errorvar.} = 2.14, R^2 = 0.39$$

(0.097)	(0.18)
12.18	11.68

$$E5 = 1.22 * e, \text{ Errorvar.} = 2.00, R^2 = 0.43$$

(0.095)	(0.18)
12.80	11.43

$$E6 = 1.27 * e, \text{ Errorvar.} = 2.04, R^2 = 0.44$$

(0.097)	(0.18)
13.6	11.32

$$E7 = 1.08 * e, \text{ Errorvar.} = 2.40, R^2 = 0.33$$

(0.099)	(0.20)
10.85	12.11

$$V1 = 1.05 * v, \text{ Errorvar.} = 2.38, R^2 = 0.31$$

(0.098)	(0.19)
10.67	12.23

$$V2 = 1.12 * v, \text{ Errorvar.} = 2.18, R^2 = 0.37$$

(0.096)	(0.18)
11.71	11.94

$$V3 = 1.18 * v, \text{ Errorvar.} = 2.53, R^2 = 0.35$$

(0.10)	(0.21)
11.46	12.01

$$V4 = 1.10*v, \text{ Errorvar.} = 2.36, R^2 = 0.34$$

(0.099)	(0.19)
11.16	12.10

$$V5 = 1.18*v, \text{ Errorvar.} = 2.36, R^2 = 0.37$$

(0.100)	(0.20)
11.76	11.92

$$V6 = 1.20*v, \text{ Errorvar.} = 2.03, R^2 = 0.42$$

(0.095)	(0.18)
12.68	11.60

$$V7 = 1.09*v, \text{ Errorvar.} = 2.10, R^2 = 0.36$$

(0.094)	(0.18)
11.58	11.98

$$F1 = 1.28*f, \text{ Errorvar.} = 1.89, R^2 = 0.46$$

(0.094)	(0.17)
13.65	11.33

$$F2 = 1.29*f, \text{ Errorvar.} = 1.93, R^2 = 0.46$$

(0.094)	(0.17)
13.61	11.35

$$F3 = 1.22*f, \text{ Errorvar.} = 2.11, R^2 = 0.41$$

(0.096)	(0.18)
12.67	11.72

$$F4 = 1.15*f, \text{ Errorvar.} = 2.52, R^2 = 0.34$$

(0.10)	(0.21)
11.33	12.14

$$F5 = 1.19*f, \text{ Errorvar.} = 2.07, R^2 = 0.41$$

(0.095)	(0.18)
12.55	11.76

The CFA model is portrayed in various figures. Figure 4.1 exhibits the general estimate of the model, Figure 4.2 exhibits the standard solution of the model, Figure 4.3 exhibits the t-value of the model, which proves the model is fit.



Further CFA proves the model is appropriate and it proves with the various goodness of fit indices, which is shown in Table 4.26. The test of the model has achieved a reasonable fit. The  $\chi^2$  test is highly significant ( $\chi^2 = 321.32/269$ , RMSEA = 0.0235,  $p < 0.01$ ), other fit indices indicated a good fit. The Factor score of the EFA and CFA is given in the Table 4.27. This shows the data fit and theoretical fit of the construct. Thus, the scale is valid for further analysis.