

**Impact of Out-of-stock Situations in Retail Store on
Consumer's Attitude about the Retail Store**

THESIS

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By

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ABSTRACT

Problem of retail out-of-stock is chronic and has substantial impact on tangible variables (like sales and profits) and intangible variables (like satisfaction and attitude) of importance to business. Given that services possess credence and experience attributes, which can be assessed only during or after consumption; evaluation of service offering is neither easy for consumers nor is it easy for marketers and retailers to understand consumers' evaluations. However understanding consumers' evaluation of service offering is a crucial task for marketers and retailers.

This study attempts to examine empirically how retail stockout impacts 'consumer's attitudinal and behavioral responses' and checks on attitude-behavior consistency. One part of the study is designed to understand how situational, consumer, store and product characteristic variables affect consumers' attitude towards retail stores in retail out-of-stock situations. In second part of the study, impact of situational, consumer, store and product characteristic variables on consumers' behavioral reactions in retail out-of-stock situations is examined empirically. Survey method for data collection was used for both parts. Data was collected from a sample of 1207 retail customers in India's unorganized retail sector across 5 product categories in Varanasi, India. Cluster sampling was employed for the main study.

For part examining influence of independent variables on consumer's store attitudes in retail out-of-stock, results showed that 6 out of 13 independent variables considered, namely, shopping attitude of respondent, store loyalty, perceived store prices, store distance, shopping frequency, and brand loyalty (in order of importance of impact) significantly influenced consumers' attitude towards retail store in out-of-stock.

For another part examining influence of independent variables on consumer's behavioral responses in retail out-of-stock, results showed that 11 out of 13 independent variables had significant impact on at least one of the 3 behavioral responses considered.

Overall, findings and discussion for showed that Indian consumers in unorganized retail sector differ from consumers in other countries' organized retail sector in many aspects. While initial part of the study sets the stage for why "attitudinal responses" are

more important to consider than “behavioral responses”; findings and discussion show how this preference of attitudes over behavior can be tackled.

The behavioral response part of this study shows how empirical research helps develop understanding about consumer behavior, which differs widely across settings. Since attitudes towards retail outlets are very important in determining future store loyalty and subsequent profitability, understanding of consumer store attitudes in negative events like stockout is importantly for retailers.

This study is one of the first studies in unorganized retail in India. It provides crucial insights to retailers by identifying independent variables, which impact consumer’s store attitudes and behavioral responses in out-of-stock situations in retail and which must be considered while designing retailer’s strategies, operations and tactics to handle out-of-stock.

Since data was collected only for 5 product categories and for unorganized retail setting, results and findings are not generalizable to beyond these boundaries. Further research is suggested in more varied set-ups in terms of: population, product categories and in organized sector. Researchers can also consider impact of multiple out-of-stock and its impact on constructs like consumer’s store image.

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LIST OF ABBREVIATIONS

-2LL	-2 Log Likelihood
AAAI	Availability of acceptable alternative items
AAAS	Availability of acceptable alternative store
ATT	Attitude towards retail store
AVE	Average variance extracted
B	Beta estimate
BEHOP	Behavioral option
BL	Brand loyalty
CPG	Consumer packaged goods
deff	Design effect
DEV	Deviance
DP	Deal proneness
EAP	Exploratory acquisition of products
ECR	Efficient Consumer Response
EDI	Electronic Data Interchange
EIS	Exploratory information seeking
ESS	Effective sample size
Exp (B)	Odds ratio
FMCG	Fast moving consumer goods
FPC	Finite Population Correction
GDP	Gross Domestic Product
GFI	Goodness of fit index
GTCONS	General time constraint
HILO	High low
ICC	Intraclass correlation coefficient
L^2	Chi-square
MNL	Multinomial logistic regression
N	Number of respondents

O	Opportunity cost
OLS	Ordinary least square
PISDIST	Perceived inter-store distance
PSPRICE	Perceived store prices
R ²	Coefficient of determination
RFID	Radio Frequency Identification
S	Substitution cost
SDIST	Store distance
SDL	Substitute, delay, leave
SHOPATT	Shopping attitude of consumers
SHOPFREQ	Shopping frequency
SKUs	Stock keeping units
SL	Store loyalty
SPSS	Statistical Package for the Social Sciences
SPTC	Specific time constraint
ST	Type of shopping trip
T	Transaction cost
VIF	Variance Inflation Factor

CHAPTER 1

INTRODUCTION

"...We who lived in concentration camps can remember the men who walked through the huts comforting others, giving away their last piece of bread. They may have been few in number, but they offer sufficient proof that everything can be taken from a man but one thing: the last of the human freedoms -- to choose one's attitude in any given set of circumstances, to choose one's own way..."

_____ **Viktor Emil Frankl**

(March 26, 1905 - September 2, 1997)

Viktor Frankl was one of the greatest minds of the 20th century: the Austrian neurologist, psychiatrist, psychologist and philosopher. Life of Frankl was not a usual life. In his 1946 book, "Man's Search for Meaning", Frankl chronicles his experiences as a concentration camp inmate and describes his psychotherapeutic method of finding a reason to live. In aforementioned quote from the book (page 104), he seems to imply the most infallible freedom available to man- the freedom to form attitudes. Attitudes we all hold are innumerable. Attitudes are also useful. Attitudes have important consequences. The concept of attitudes is indispensable.

1.1 Topic and motivation

Present study is titled as, "**Impact of out-of-stock situations in retail store on consumer's attitude about the retail store**". Keywords underlying topic are: consumer's store attitude, consumer behavior, services marketing, retailing and out-of-stock. Motivation for undertaking this topic for research can be understood in importance of each of the underlying concepts, relationship between and among them and gap in literature that prompted this area for study.

As individuals we all hold innumerable attitudes. Virtually anything that is discriminable can be evaluated and the 'evaluative response' any entity elicits is called "attitude". Conceptual definition of attitude for this study has been adopted from Eagly and Chaiken (page 1): "Attitude is a psychological tendency that is expressed by evaluating a

particular entity with some degree of favor or disfavor”. For example, some endorse ideologies like religious tolerance while others disapprove of them. Social psychologists have understood and described such individual differences using concept of attitude. Thus, a person who favors religious tolerance is said to have a positive attitude towards religious tolerance while another person who disfavors religious tolerance is said to have a negative attitude towards religious tolerance.

Exploration of attitudes as type of ‘schemas’ shows usefulness of attitudes and implications of attitudes for information processing (Landman and Manis, 1983). This view holds that schemas are useful as they allow people to represent and organize information they encounter and facilitate both input and output side of information processing (Brandson and Johanson, 1972; Higgins and Bargh, 1987; Stangor and Mcmillan, 1992). Eagly and Chaiken point to another important theme about ‘functions and needs’ attitudes serve, given by Daniel Katz. Katz identified four types of functions relevant to attitudes: knowledge function, adjustment or utilitarian function, ego-defensive function and value-expressive function. All these functions proposed by Katz presume that certain general needs or motives energize and direct attitudinal functioning. Additionally, attitudes direct and energize behavior. In crux, attitudes as evaluations have major consequences: they (1) motivate behavior, (2) exert selective effects at various stages of information processing (Eagly and Chaiken, page, 1) (3) cause attitude-consistent behavior and selective perception (4) cause societal phenomenon like social conflict; making “attitude” a fundamental construct for most social scientists.

Eagly and Chaiken emphasize ‘discreteness and indispensability’ of attitude, by first quoting Allport’s assertion, made in 1935, that “the concept of attitude is probably the most distinctive and inseparable concept in contemporary American social psychology” and then adding that Allport’s quote was valid fifty years thereafter when Eagly and Chaiken wrote their book. Research on attitudes has therefore remained popular throughout social sciences. ‘Attitude’ occupies a central position in ‘consumer behavior’ research too (Engel and Blackwell, 1982; Kassarian and Kassarian, 1979). Attitude construct has been related to a whole range of constructs and processes, for example, persuasion process (Boyd, Ray and Strong, 1972; Petty, Cacioppo and Schumann, 1983; Lutz, 1975), advertising (Edell and Bruke, 1987; Bruke and Edell, 1986; Calder and Sternthal, 1980; Mitchell and Oslon, 1981; Wells, Leavitt and McConville, 1971; Belch, 1982; Lutz, MacKenzie and Belch, 1983), store

choice (Monroe and Gultinan, 1975), brand loyalty, satisfaction (Fitzsmons, 2000; Grace and O’Cass, 2004; Oliver, 1981), service experiences (Grace and O’Cass, 2004) , shopping behavior (Miller and Kean, 1997), mood construct, relationship between attitudes and subsequent behavior (Day and Deutscher, 1982; Ryan and Bonfeild, 1975) and attitude-behavior consistency (Fazio, R.H., Zanna, 1981; Fazio, Chen, McDonel and Sherman, 1982; Fazio, Powell and Herr,1983). Overall, research showed ‘attitudes’ significantly impact many of these constructs.

A prominent and important issue in “attitude literature” is relationship between attitude, and behavior. The relationship is bi-directional in impact: both attitude and behavior influence each other. Earlier studies found very weak relation (Corey, 1937; Wicker, 1969; LaPiere, 1934). Social psychologists developed “attitude-behavior consistency” further and came up with a number of ideas- like single act v/s multiple act criterion, generality, subjective norms, attitudinal qualities, scale compatibility and direct v/s indirect experience- to understand the relationship better. Studies by Fishbein and Ajzen (1974), and other after him showed moderate to high correlations between attitude and behavior.

1.2 Services marketing context

In many respects service organizations in general and service marketers in particular face different challenges to those faced by their counterparts in manufacturing goods. Communication of an intangible offering, maintaining standardization of service delivery, accommodating fluctuations in demand, managing many intangible marketing mix elements of service delivery process, all present a formidable task to marketer. Accordingly service marketers make unique marketing strategies. These differences between goods and services also present consumers with unique challenges. Due to nature of service offering, which is high on experience and credence qualities (Comm and LaBay, 1996) purchase process and post purchase evaluations are often difficult for service consumers (Grace and O’Cass, 2004). Understanding how consumers cope up with such problems is important as often a service business is not so much what it does as what consumer experiences (Martin, 1999).

Given that services possess credence and experience attributes, which can be assessed only during or after consumption, evaluation of service offering is not easy for consumers. At the same time, understanding which factors influence consumers’ evaluation is a challenging

yet important for marketers. Service providers find evaluative constructs like ‘satisfaction’ and ‘attitude’ important as increasing levels of consumer satisfaction is linked to consumer loyalty and profits (Zeithmal and Britner, page 80). Although constructs satisfaction and attitude are similar and related, they are not same. Consumption of brand determines satisfaction level, which in turn affects revised attitude towards brand as well as intention to repurchase brand (Howard, 1974; Oliver, 1980). Satisfaction is evaluation of surprise inherent in product acquisition and/or consumption experience. Surprise or excitement is of a finite duration, so that it soon decays into attitude towards purchase. Next passage briefly explains how out-of-stock would affect satisfaction and resulting attitude.

Zetihmal and Bitner (page 74) have said that (1) service quality is a component of service satisfaction; that latter is “focused evaluation that reflects the customer’s perception of specific dimensions of service”; and (2) research has identified ‘reliability’ as one of the 5 dimensions of service quality. Reliability in turn relates to core service and is defined as “ability to perform promised service dependably and accurately (Zeithmal and Britner, page 82). Core service provided by retail stores as service providers is to make available a specific brand in a product category that consumer is looking for. All products *must have* a core benefit (coming from core product), as it represents the fundamental benefit that consumer is really buying (Khan, page 9). Failure to provide this core product (like in an out-of-stock) will lower consumers’ perceptions of service quality, which in turn could have deteriorating impact on consumer satisfaction with and store attitude. Ultimately, it is likely that store profitability may suffer. Attitudes about local retail establishments are influenced by dissatisfaction with product selection (Samli and Uhr, 1974) and attitudes about local retailers determine patronage behavior (Samli, Riecken, and Yavas, 1983). Product switching behavior as a result of perceived poor quality and dissatisfaction has been found in Indian context too (Shukla, 2004).

1.3 Importance, prevalence and implications of stockouts

Scahry and Christopher (1979) pointed out that “a very strong but hidden assumption behind marketing decisions is the availability of the product being offered at a time and place relevant to the consumer.... an assumption not always warranted.”; suggesting that successful retail operations depend upon store’s ability to meet consumers’ needs in above-

mentioned way. Retailers typically manage hundreds of individual stock keeping units (SKUs) and are faced with complex task of stocking, pricing, promoting and maintaining an appropriate product assortment. They are also faced with substantial heterogeneity in consumer preference for different product offerings. In such a situation, problem of stockout would be one of the most important considerations for retailers and manufacturers.

Problem of retail stockouts is substantial. A 1996 study estimated that 8.2 % of items in supermarket were out of stock on a typical afternoon (Accenture, 1996). This is an improvement over the average 12.2% obtained in a similar study (National Association of Food Chains and A.C Nielsen, 1968b). While the 2 numbers may not be directly comparable, because of the differences in methodologies employed and the changes in the products sold in the 28-year span separating the 2 studies, these independently obtained results converge in demonstrating importance of retail stockout problem. Anupindi, Dada and Gupta (1998) reported high incidence of stockouts for FMCG in supermarket setting. Another recent research by Grocery Manufacturers of America (2002), into out-of-stock situation in North America has identified a major problem in meeting this shopper satisfaction objective – with 8% of products in a supermarket out-of-stock at any particular time. Even more startling was the finding that 20% of promoted products were out-of-stock.

Retailer must strike an efficient balance between over-stockings {to avoid higher than needed inventory management costs} and risking stockouts {that potentially result in lost sales and possible long-term negative effects}. Implications of stockout are serious to all members of marketing channel; which member actually gets affected and to what extent will largely depend on what consumer does as a response to stockout (Peckham, 1963). If consumer decides to switch item, loss to retailer is much less than loss to manufacturer of stockout brand; while if consumer decides to switch store, loss to retailer is greater (Campo Gijsbrechts and Nisol, 2000) For behavioral options like delay purchase and cancel purchase also negative impact exists: former will result is lesser losses for both retailer and manufacturer (assuming that consumer finds desired item on next trip from same store); latter will negatively impact both manufacturer and retailer.

Walter and Grabner (1975) too showed that stockout leads to sales loss for store. Accenture's research (1996) for the Coca-Cola Retailing Research Council indicates a potential for lost sales of 3% annually to CPG manufacturers due to out-of-stocks – equating

to a \$12 billion revenue opportunity. In yet another study Aguirregabiria (2003) showed that brand's market share is negatively correlated with probability of stockout in that brand. Yet another Indian study, found 37 % of the top SKUs for 6 top FMCG players were out-of-stock on a particular day (Ramanathan, October, 2003; Kamath, Hindu Business Line, October, 30th, 2003). This level of stockout could mean loss of Rs 12-crore sales per year for just FoodWorld counters, and an estimated loss of Rs 6,000 crore (1 crore = 10 million) for organized FMCG industry. Schary and Christopher (1979), also point out implications of out-of-stock condition could be: negatively affected store image, weakened bond between store and consumer, loss of patronage and negative attitudes about store.

1.4 Industry responds

Already in sixties and seventies, importance of out-of-stock and potential threat they present was advocated by practitioners and marketing scholars (Peckham, 1963; Schary and Christopher 1979). Recent evolutions in manufacturer and retailer competition and co-operation have given solid evidence of how industry is attempting to tackle out-of-stock {developments like: Efficient Consumer Response (ECR), Electronic Data Interchange (EDI), Category Management and evolution of technologies like Radio Frequency Identification (RFID), Auto-ID technologies). These technologies offer major breakthroughs {for example, Auto-ID provides clarity around current state of product supply – while dramatically reducing transactional cost to capture real-time, detailed and accurate product supply status data}.

1.5 The Indian context

Retailing is India's largest industry in terms of contribution to Gross Domestic Product (GDP); is highly unorganized: chiefly consists of small, independent, owner-managed shops and comprises around 5 million retail outlets (Kaushik, 2005). Organized retail sector constitutes only 2% (in 2002-2003) of total retail in India (Venkateswarlu and Uniyal, 2005). According to another report by Images Retail and KSA Technopak, titled, "India Retail Report 2005", organized retailing constitutes just 3 % of Rs.930, 000 crore Indian retail market but growing at over 30%; top 6 cities account for 66% of total organized retailing and there is an overwhelming acceptance of modern retail formats. Additionally,

Indian organized retail is expected to form 10% of total retailing by the end of this decade (2010). All these statistics show that both potential and competition is high for Indian retailing sector.

Amidst this Indian consumer is also evolving rapidly, in terms of expenditure, profile, behavior and lifestyles: all this dictating retail offerings. This study focuses on unorganized retail in India. Organized vs. unorganized retailing (or modern vs. traditional format) can be differentiated by the extent to which professional managerial practices are followed for efficient integration with supply chain (Bajaj, Tuli and Srivastava, page 123). Traditional retail formats are of 2 types (1) *kirana* (small independent stores: counterparts of mom and pop stores in US) which in turn is structured around 3 types of retail stores: grocer, general store (stock only branded and packaged FMCG) and chemist and (2) *co-operative and/or government owned bodies*.

1.6 Scope of study

This study focuses on consumer's attitude towards retail store in out-of-stock in "general store" type of retail stores, in 5 product categories: butter, washing powder, toothpaste, tomato sauce and fruit juice. Urban population coming under city municipality of Varanasi (falls in between a large metropolitan and a small town and is quite representative of Indian population), in the state of Uttar Pradesh was covered. Varanasi was chosen because, one: this study attempted to mainly check if expectations formulated as hypothesis are tested positive and not for generalizing the results; and two: all variables in study were found in this city. The objective was to study influence of relevant independent variables on consumer's behavioral responses in out-of-stock and attitude towards out-of-stock store in out-of-stock.

1.7 Procedure of study

This research made use of survey questionnaire method for data collection. An exit interview was conducted at storefront with consumers who were asked to imagine they experienced a stockout on their present shopping trip. Only those consumers who had at least

one of the chosen 5 product categories on their shopping list on that day were interviewed. Sampling method used for main study was cluster sampling.

1.8 Objectives of the study

1. To study influence of independent moderating variables on consumer's attitude towards retail store in a retail out-of-stock.
2. To study influence of independent moderating variables on consumer's behavioral response in a retail out-of-stock.
3. To study consistency between attitude of consumer towards store and behavioral response taken by consumer in retail out-of-stock.

1.9 Organization of thesis

Chapter 1 on "Introduction" ends with this passage after which the thesis is arranged as follows. Chapter 2 reviews literature on retail out-of-stock and generates statements of hypothesis. Chapter 3 discusses method issues; Chapter 4 elaborates on results; Chapter 5 deals with discussion and findings; Chapter 6 is on implications and recommendations. Lastly, chapter 7 enumerates limitations and future scope of work.

CHAPTER 2

LITERATURE REVIEW

2.1 Consumer behavior patterns as a result of stockouts

Substantial research work has been done in the area of consumer's responses to stockout situations in retail. Earlier research in this area has focused chiefly on behavioral responses of consumers as outcomes of stockout situations (Walter and Grabner, 1975; Schary and Becker, 1978; Zinszer and Lesser, 1980; Motes and Castelberry, 1985; Emmelhainz, Emmelhainz and Stock, 1991a; Charlton and Ehrenberg, 1996). Later researchers worked on determinants of behavioral responses (Schary and Christopher, 1979; Emmelhainz, Stock and Emmelhainz, 1991b; Verbeke, Farris and Thurik, 1998; Campo Gijsbrechts and Nisol, 2000; Zinn and Liu, 2001; Campo, Gijsbrechts and Nisol, 2003; Sloot, Verhoef and Franses, 2005; Breugelsmans, Campo and Gijsbrechts, 2006; Miranda and Jegasothy, 2007; Dadzie and Winston, 2007). Till date very few researchers have considered evaluative response of consumers.

One of the earlier studies on stockout, which was based on a survey by A.C. Nielsen Company (Peckman, 1963) tried to find out what consumer would do when specific brand, size or colour was out-of-stock and categorized behavioral response into 3 types: (1) substitute with another brand (2) buy a different stock keeping unit in size/colour (SKU) in the same brand (3) don't buy. A 1968 study (National Association of Food Chains, A.C. Nielsen Company, and Progressive Grocer, 1968a) asked shoppers what they would do if preferred brand were out of stock. They investigated more than 30 items, correlated out-of-stock behavior to demographics, found following shopper reactions: switch store, delay purchase to same store, cancel purchase and ask store manager to order item (order). The most common action taken was to go to another store or delay purchase.

Walter and Grabner (1975) modeled consumer's behavioral reactions to retail stockouts to estimate cost effects; and they identified six possible reactions to a stockout in a liquor store. After recording frequency of stockouts and intended responses, they estimated the cost of stockouts. An important contribution was the schema for systematically classifying behavioral responses to stockouts, which influenced most SDL (substitute, delay, leave) studies that followed. Authors also looked at consumer behavioral responses in

‘repeated stockout situation’, for which they identified six additional measures of consumer’s behavioral responses, namely, request changed item at- higher price, at same price, at lower price, for another size, request special order and select different store. Schary and Becker (1978) also investigated long-term effect of a stockout condition. The opportunity arose from a Teamster strike in Seattle in 1971 that limited supply of beer. Only four brands: 2 national and 2 local remained available to consumers and local brands raised their price. Predictably these 4 brands gained share during shortage and maintained a higher than original share in long run (defined by authors as ‘4 months’). Long-term share was however lower than the peak observed during strike.

Zinszer and Lesser (1981) looked into product characteristics and shopping situations as correlates of stockout, how stockout affects consumers of different demographic characteristics, whether item was on sale and how stockout affects store image and intended future patronage. The study did not, to any significant extent, explain why consumers responded in the way they did. In 1991, Emmelhainz, Emmelhainz and Stock, removed five best selling items from a discount grocery store in following product categories: ground coffee, orange juice, toothpaste, peanut butter and tomato sauce. Consumers were interviewed at checkout lane about intended behaviors following stockout. Authors developed stockout model with fifteen options and determined logistic implications of stockout.

One study that focused on costs of out-of-stock, by Moinzadeh and Ingene (1993), considered long run, profit maximizing strategy of a distributor who holds a good (good 1) in inventory for immediate delivery and offers a second good (good 2) for delayed delivery. When the 2 goods are substitutes, an out-of-stock situation for good 1 will cause some behavioral responses for consumers who want to purchase in particular category. Three possible responses were identified: ‘seek item elsewhere or do without it entirely’, ‘wait for good 1 by accepting a raincheck and take delivery once item is available’ or ‘switch brand by placing an order for the delayed delivery item’. A retail example of such an arrangement given by authors was consumer electronics business.

Charlton and Ehrenberg (1996) approached differently and conducted an experiment. For 25 weeks, 158 consumers were visited at home and given opportunity to purchase from a selection of three brands each for tea and detergent (specially created for the study). Later,

stockouts were introduced and reactions noted. Consumers typically substituted out-of-stock brand but returned to it with restoration of supplies. The authors measured consumer response to stockout only in terms of a brand switch but did not consider the possibility of switching stores in response to the stockout. Motes and Castelberry (1985) replicated Charlton and Ehrenberg (1996) study and obtained the same results. Fitzsimons (2000) undertook a new perspective and provided strong evidence that consumer response to stockouts is related positively to the importance of alternative that is out-of-stock and inversely to change in decision difficulty. He measured both behavioral and evaluative (consumer satisfaction with decision process) responses.

2.2 Determinants of consumer's behavioral responses to stockouts

Later studies explained why consumers responded in the way they did (Schary and Christopher, 1979; Emmelhainz *et al.*, 1991b; Verbeke *et al.*, 1998; Campo *et al.*, 2000; Zinn and Liu, 2001; Campo *et al.*, 2003; Sloot *et al.*, 2005; Breugelsmans *et al.*, 2006; Miranda and Jegasothy, 2007; Dadzie and Winston, 2007).

Schary and Christopher (1979) conducted a large-scale survey in England in which they interviewed 1167 consumers in 2 suburban stores of a London supermarket chain. They developed a process model of a stock-out, which identified six possible behavioral responses to stockout in relation to store and product decisions of consumers. They then related the 6 behaviors to buyer and product characteristics. Behavioral responses were also compared to store image and demographic variables. Some differences in behavior were observed by age group and occupation. Store image was also affected by stockouts. They referred to role of attitudes in stockout without making any empirical estimation stating that there appears to be an attitude difference associated with stockout phenomenon.

Emmelhainz *et al.* (1991b) analyzed impact of product and situational influences on consumer stockout behavior in 5 product categories: ground coffee, orange juice, toothpaste, peanut butter and tomato sauce. They found out-of-stock responses to be influenced by product-related attributes like product risk, and product usage and situational factors like urgency of need and buyer factors like store loyalty and repeat brand purchase patterns. Verbeke *et al.* (1998) related out-of-stock behavior to intensity of retail competition, degree of store loyalty and shopping patterns of consumer.

Campo *et al.* (2000) presented a conceptual framework that integrated major determinants of consumers' reactions to out-of-stock, theoretically explaining the correlations. Majority of stockout studies that came before were empirical in nature; and although related reaction differences to product, consumer and situation characteristics, had offered little or no theoretical explanation. A similar work by Zinn and Liu (2001) explored relationship between SDL (substitute, delay, leave) behavior and selected variables in short-term. They categorized these selected, independent variables into 3 categories, namely, consumer characteristics, situational characteristics, perceived store characteristics.

Additionally, behavioral responses to out-of-stock have also been related to shopper's basket size, shopping regularity, degree of opportunism and use rate (Campo *et al.*, 2003); brand equity, hedonic level of product, stockpiling and impulse buying (Sloot *et al.*, 2005); Stock-out Policy (Breugelsmans *et al.* 2006); shopper orientations (Miranda and Jegasothy, 2007); merchandise information content, vividness of web site content, service speed and a few situational factors (Dadzie and Winston, 2007)

In sum the literature on consumer response to stockouts addresses mainly behavioral aspect of response:

- (1) Various types of responses consumers can come up with
- (2) Relationship between behavioral options and determinant variables of those behavioral options taken
- (3) Relative significance of these independent determining variables of behavioral options taken.

2.2.1 Hypothesis for influence of moderating variables on consumer's behavioral responses to stockouts

Literature survey showed that Campo *et al.*'s work (2000) considered almost all variables influencing consumer behavioral responses. Zinn and Liu (2001) included a few extra influencing variables in a new category 'perceived store characteristics': comprising 2 variables- perceived inter-store distance and perceived store price. It was therefore decided to include in this study all the variables from the 2 studies (Campo *et al.*, 2000); Zinn and Liu, 2001), making adjustments for possible overlapping variables. Accordingly, a list of 13 independent variables (figure 2.1) influencing consumer behavioral responses was generated

and in line with earlier studies 4 categories were made: situational variables, consumer variables, store variables and product variables. Except “store variables”, other categories belonged to Campo *et al.* (2000) study. Hypothesis relating independent variables to dependant variable of “consumer’s behavioral responses in out-of-stock” were based on the logic followed by Campo *et al.* (2000). Campo *et al.*’s logic is briefly outlined in the next passage.

Drawing from then existing literature on consumer decision-making process in context of utility maximization, which in turn rests on principle that “households allocate resources to produce utility”, Campo *et al.* (2000) stated their premise that, “households’ decisions on how to react to a stock-out are based on similar utility maximization principles”. On the other hand they said that in an out-of-stock, a household would have many options to behave, each of which would mean certain costs to the household and that the decision would be take by a process of working out trade offs between costs involved to choose that option that maximizes net benefits or utility, immediately or in future.

They identified all types of cost and categorized them into 3 types: substitution costs, transaction costs and opportunity costs. On one side these costs are associated with influencing utility of behavioral options and would get translated to choice probabilities (an increase in the cost of exercising a certain behavioral response will reduce utility of that option; hence directly decrease probability that it will be exercised and also increase indirectly probability that other options are taken); on other side: costs will be affected by independent influencing variables in same setting. Such independent variables were categorized 3 heads: product-, and consumer- and situation-variables.

Zinn and Liu (2001) did not take the same route as Campo *et al.* (2000), that is, ‘impact of independent variables on dependant variable (option) via cost type’; however their findings were interpreted in terms of ‘cost impact’, for 2 variables picked from their work. Zinn and Liu found that when perceived store price is lower for stock-out store than competing stores, switch item/delay more likely and switch store less likely as there is expectation of greater value via lower prices offered by stock-out store. This implies positive store substitution cost when perceived store price is lower. Such consumers would be more likely to switch item/delay purchase than switch store. Additionally, while Zinn and Liu (2001) did not find impact of perceived inter-store distance to be significant; following

Campo *et al.* (2000)'s logic for 'impact of independent variables on dependant variable (option) via cost type', it can be derived that perceived inter-store distance would impact "switch store" option via transaction cost only.

Table 2.1 lists independent variables; each one's impact on relevant behavioral options; 'type of cost' via which independent variables have impact and 'expected cost effects' (derived from Campo *et al.*, 2000 and Zinn and Liu, 2001).

Following literature and logic (primarily Campo *et al.*, 2000 and Zinn and Liu, 2001) and other literature support, following hypotheses were formulated.

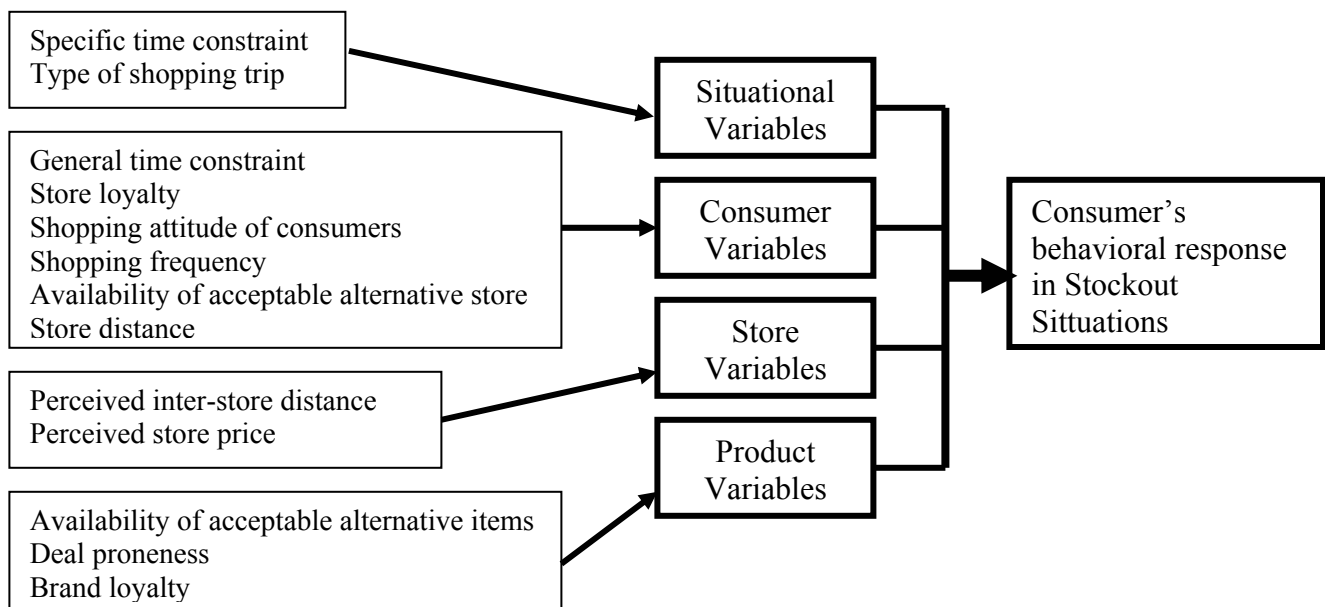


FIGURE 2.1: Variables in study (dependant variable: consumer's behavioral response)

H1b¹: consumers with higher specific time constraint would be less likely to switch store and would rather take other behavioral options.

H2b: consumers on a major shopping trip would be more likely to defer or cancel purchase than switch store.

H3b: consumers facing higher general time constraint would be less likely to switch store and delay.

H4b: consumers higher on store loyalty would be less likely to switch store.

¹ Suffix 'b' is for behavior

H5b: consumers with more positive shopping attitude would be more likely to switch store.

H6b: consumers with higher shopping frequency would be more likely to switch store or delay.

H7b: consumers who perceive acceptable alternative stores are available would be more likely to switch store.

H8b: consumers for whom distance between store and house is more would be less likely to defer purchase.

H9b: consumers for whom acceptable alternative items are available would be more likely to switch brand.

H10b: consumers higher on deal proneness would be more likely to switch brand.

H11b: consumers higher on brand loyalty would be less likely to switch brand.

H12b: consumers for whom inter-store distance is more would be less likely to switch store.

H13b: consumers who perceive overall store price as attractive would be less likely to switch store.

During literature review it was found that only a few studies focused on evaluative responses of consumers in out-of-stock (Fitzsimons, 2000). Researchers have largely missed out on evaluative responses - one of which is “consumers’ attitude in out-of-stock”.

It is more important to understand attitude than behavior for 2 reasons. One, attitude towards store influences behavior (which in turn determines profits) importantly and consistently (this will be elaborated on later in this chapter); two, store attitude can serve as an important measure for effectiveness of retailer strategies and/or practices. For example, in an out-of-stock, retailer can typically face revenue losses; however if attributes/factors which affect how consumers rate/patronize store are appealing/acceptable, store attitudes would stand protected lending support to overall retailer strategy and/or practices. Present study examines empirically how situational, consumer, store and product characteristic variables affect consumers’ attitude towards retail stores when they face retail out-of-stock. Following passages review the role ‘attitudes’ play.

Table 2.1: Independent variables and their impact on behavioral options

Names of variables			
Impact on behavioral option		Impact via cost type	Expected cost effect
Switch brand	Availability of acceptable alternative items	S	-
	Deal proneness	T	-
	Brand loyalty	S, T	+
Switch store	Specific time constraint	T	+
	Type of shopping trip (m)*	S	+
	General time constraint	T	+
	Store loyalty	S	+
	Shopping attitude of consumers	T	-
	Shopping frequency	T	-
	Availability of acceptable alternative store (a)**	S, T	-
	Perceived inter-store distance	T	+
	Perceived store price	T	+
Defer	Type of shopping trip (m)*	O	-
	General time constraint	T	+
	Shopping frequency	T	-
	Store distance	T	+
Cancel	Type of shopping trip (m)*	O	-
*Major shopping trip			
**Availability of acceptable alternative stores			
S = substitution cost, T = transaction cost, O = opportunity cost			

2.3 Brief on attitudes

Attitudes have been defined in a variety of ways, but at the core is the notion of evaluation. Thus attitudes are viewed as summary evaluations of objects (example, oneself, other people, issues etc.) along a dimension ranging from positive to negative (Petty, Wegener and Fabrigar, 1997)

“Attitude is a psychological tendency that is expressed by evaluating a particular entity with some degree of favor or disfavor”, where psychological tendency refers to a state that is internal to a person and evaluating refers to all classes of evaluative responding, whether overt or covert, cognitive, affective or behavioral (Eagly and Chaiken, page1). An attitude develops on an evaluative basis. An individual does not have an attitude until and unless he or she responds evaluatively to an entity on a cognitive, affective or behavioral basis. Attitude being a hypothetical construct is not directly observable and can be only inferred from observable responses. Responses that express evaluation and therefore express people’s attitudes can be therefore divided into three classes: cognition, affect and behavior. Figure no. 2.2 shows the relationship between attitudes as an inferred state with evaluative responses divided into 3 classes.

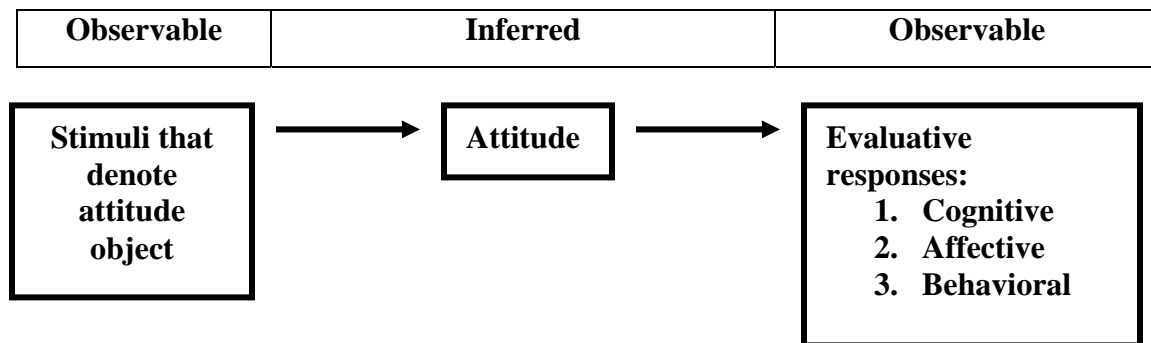


FIGURE 2.2: Relationship between attitudes and evaluative responses

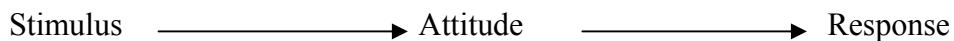
As pointed out by Eagly and Chaiken, attitudes are manifested in cognitive, affective and behavioral responses and formed on the basis of cognitive, affective or behavioral processes; but not all three processes must exist together for a true evaluative tendency to emerge. Under circumstances of indirect experience with an attitude object, affective and behavioral components of attitude are very unlikely to exist and those attitudes are formed

primarily on the basis of cognitive processes. On the other hand, when people directly encounter attitude objects (as in the case of the present study where consumers directly encounter the store which is the attitude object), attitude formation takes place by a variety of processes (Zanna and Rempel, 1988). Following literature, “**overall attitude towards retail store**” has been considered for this study, which is manifested in all 3 types of evaluative responses and formed on the basis of any combination of 3 processes.

2.3.1 Attitudes as an intermediary variable between stockouts and behavior based on S-R model

To understand how consumers respond to service environments, the Mehrabian-Russell Stimulus – Response model, is very briefly discussed here (Lovelock and Wirtz, page 288-289). It holds that environment, its consciousness and unconscious perception and interpretation influence how people feel in that environment. People’s feelings, in turn drive their responses to that environment. Feelings are central to the model, which posits that feelings rather than perceptions or thoughts, drive behavior.

Also feelings about the store can be considered to represent ‘attitude towards store’ (affect component of attitude) and then attitude can be placed in the “stimulus (stockout) – response (behavioral response to the stockout)” framework as:



2.3.2 Impact of attitude on behavior

Eagly and Chaiken have given (adapted from Aizen and Fishbein, 1980) what they call “a representation of the theory of reasoned action”, where they have considered one of the components as “external variables”, which includes all variables not considered by the theory. While Theory of Reasoned Action talks about ‘attitude towards behavior’; “external variables” include among other variables, variable of ‘attitude towards targets’. Literature says that despite the possibility that ‘attitude towards behavior’ influences behavior, ‘attitude towards targets’ plays a directive and dynamic role in exerting an influence on behavior. Many investigators have maintained the traditional approach of predicting behavior from attitude towards targets (Fazio, 1989; Fazio and Zanna, 1981; Miller and Tesser, 1986).

Following paragraph considers the Stimulus – Response model to show how attitude can be understood to drive behavior.

Literature on consumer behavior says that it is because attitudes are an outcome of psychological processes that attitudes are not directly observable but must be inferred from what people say or do. This in turn signals that attitudes have a definite role to play in information processing and direct the behavioral responses of people. At the same time it is said that although attitude would get reflected in how people behave, in most instances, this reflection is far from perfect because of constraints that are present. Constraints mainly consist of non-attitudinal variables (example, anticipated situational constraints), which play a role in influencing behavior. Despite the presence and role played by non-attitudinal variables, it is important to consider that when marketers are interested in understanding why consumers behave as they do, they have to go to the depth of and explore the role played by attitudes in the whole process.

Another issue that needs clarification at this juncture is what researchers have often asked; and it is: “does attitude influence behavior or does behavior influence attitude?”. Research has shown that ‘attitude-behavior relationship’ is bi-directional in nature and both influence each other (Holland, Verplanken and Knippenberg, 2002). Holland *et al.* who investigated the role of attitude strength as a moderator variable with regard to direction of impact between attitudes and behavior found that strong attitudes guide behavior, whereas weak attitudes follow behavior. Given that the strength of attitudes can vary over the innumerable attitudes people hold, it will be incorrect to proceed by generalizing the issue of “attitude-behavior relationship” by simply saying that attitude influences behavior. Rather this issue needs clarification. Therefore, from the passages that follow, a more specific perspective (specific to present study) for looking at “attitude-behavior relationship” is taken.

It thus becomes important to understand if “attitude towards out-of-stock store” can be classified as a strong attitude that can impact behavior. For this, first the issue of what is “attitude strength” is taken up briefly and next if “attitude towards out-of-stock store” should possess enough strength is seen in light of literature.

Attitude strength has been conceptualized as the associative strength of the link between attitude object and its evaluation (Fazio, Zanna and their colleagues, 1981). Attitude strength has also been defined in terms of attitudinal consequences that strong attitudes

are persistent over time, resistant to change, and influence information processing and action (Krosnick & Petty, 1995). Additionally, researchers have focused on several attributes of attitudes that indicate attitude strength, such as, attitude certainty, importance, accessibility, centrality, ambivalence and several others (for an overview, see Petty & Krosnick, 1995).

One of the process by which strength of attitudes develops is when attitudes are based on direct experience (Fazio and Zanna, 1981). Such attitudes are more predictive of behavior as they are more accessible from memory than attitudes based on indirect experience. In the same work they have said that attitudes based of direct experience have greater clarity and are held with more confidence and certainty than attitudes based on indirect experience. Additionally, repeated attitudinal responding strengthens an attitude (Fazio, 1986). “Attitude towards out-of-stock store” is not only based on direct experience as consumers visit store to buy an item; but that this attitude is also likely to be exposed to “repeated attitudinal responding” for example when the consumer explains to family members that item was out-of-stock.

By such standards, “attitude towards out-of-stock store” can be classified as a strong attitude, which would have a greater influence on judgment and behavior because such attitudes are presumed to have the underlying property of increased strength. Another aspect of attitude strength is ‘persistence over time’/ ‘resistance to change’. Eagly and Chaiken have referred to McGuire’s inoculation model and other general theories, which provide insights into motivational and cognitive origins of resistance to change for attitudes (page 679).

2.4 Hypothesis for influence of moderating variables on consumer’s attitudinal responses to stockouts

Independent variables were drawn from literature and related to consumer’s attitude towards out-of-stock retail outlet. As both responses: attitudinal and behavioral happen in the same situation, determinants of behavioral response are considered to be determinants of attitude too. 13 independent variables were identified and clubbed into 4 categories as shown in figure 2.3 below:

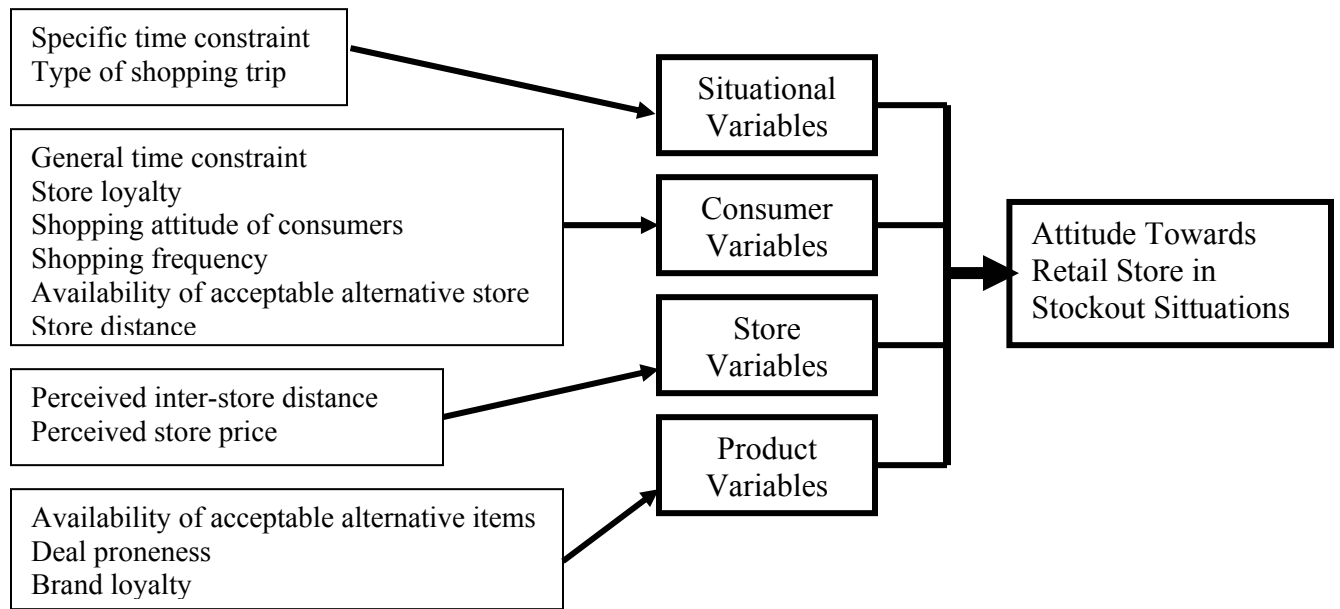


FIGURE 2.3: Variables in study (dependant variable: consumer’s attitudinal response)

Basic premise of following hypotheses is that consumers faced with out-of-stock incur two different kinds of psychological responses:

1. There are feelings of frustration, irritation, or feelings of inequity (brand loyal consumers should be rewarded for their loyalty, not punished) (Corstjens and Cortsjens, 1995).
2. There are behavioral efforts that consumers are willing to invest, in order to attain their preferred brand and so become satisfied with their purchases, which range from visiting another store to get the brand, to switching brands within this store. These behavioral efforts, come at a “price.” The more behavioral efforts consumer has to undertake to compensate for frustrations of not finding the preferred brand, the less willing consumer will be to make these physical efforts. At some point, consumers come to a breaking point and are then willing to settle for a less desirable solution.
3. Whatever are the influencing factors (like, time constraint), which prevent consumers from not obtaining desired item or comparable items, there exists non-attainment of goals or in best case non-attainment of goals as planned which is positively related to negative affect (Babin, Darden and Griffen, 1994; Dawson, Bloch and Ridgeway, 1990; Gardner and Rook, 1988). This leads to expectation in all situations considered in following passages that impact of stock out on attitude toward retail store would always be negative.

2.4.1 Hypothesis relating to situational characteristics

Specific time constraint (SPTC)

Many scarce resources like energy, information, money and time are required to carry out shopping activities by consumers. In the present study, specific time constraint has been defined as: “the perceived constriction in time available for an individual to perform a given task”, following Iyer (1989). A subjective rather than objective measure for specific time constraint has been considered, as it is perception that really matters (Hornik, 1984). Amount of time available to perform a task regulates amount of information that can be processed (Bettman, 1979), decreases demand for additional information (Bronner, 1982) causing lower amount of unplanned purchases (Iyer, 1989) and failure to make intended purchases (Park, Iyer and Smith, 1989). Two studies focused on effects of time pressure on information processing (Wright, 1974; Payne, Bettman and Johnson, 1987). Former found that individuals emphasized negative information more under time pressure and latter translated findings to an advertising context.

Time availability impacts search activity in retail (Beatty and Smith, 1987), in-store browsing (Beatty and Ferrell, 1998) {limited search activity and in-store browsing are forced under time constraint, as information processing is not attempted due to lack of time}, stress (Isenberg, 1981; Revelle, Amaral and Turriff, 1976), and retrieval of ‘not well rehearsed-memory’ (Swensson 1972; Eysenck 1976; Bettman, 1979) required for product/brand search (Park *et al.*, 1989). Item switch/store switch required in out-of-stock which could mean additional brand/product search might not be, therefore too convenient. Additionally, consumers can worsen their specific time constraint if they waste time looking for stockout item. This leads to expectation that such individuals are likely to face unexpected cognitive and/or affective stress leading to substantial negative attitude towards retail store. Therefore, following hypothesis is proposed:

H1a²: in an out-of-stock, consumer’s specific time constraint is directly* related to consumer’s negative attitude towards store.

** Directly is used in the sense of ‘non-inversely related’ rather than ‘impact of independent on dependant without any other in between dependant and independent variables’.*

² Suffix ‘a’ stands for attitude.

Shopping trip (ST)

Shopping trips can be major or fill-in and be defined by amount spent on trip (Frisbie, 1980; Khan and Schmittlein 1989; Kollat and Willett 1967) time between 2 shopping trips (McKary, 1973), and by consumers' self-definition of trip- consumer's perceptions about urgency of needs and/or amount of effort and time commitments involved (Kollat and Willett, 1967). Fill-in-trips are ones in which less is spent per trip and time between shopping trips is shorter. Frisbie (1980) has shown that in general the different trip definitions produce largely consistent results in classification. Unlike major trips, fill-in-trips typically satisfy more urgent needs and generally involve smaller effort, time and commitments. Also, not only can shopping trips be major or fill-in (also termed "regular" or "quick" respectively), but that there are "regular" and "quick" consumers (Khan and Schmittlein, 1989).

Additionally, consumers aim at keeping total shopping costs (fixed plus variable costs) as low as possible³ and choose store accordingly (Bell, Ho and Tang, 1998). Khan and Schmittlein (1992) found that variable shopping utility (which depends on price and quality the store offers products on consumer's shopping list, and is mainly product and situation dependant) is typically higher for major shopping trip. Campo *et al.* (2000) found that type of shopping trip did not have a significant impact on cost of store switch.

Also, Bell and Latin (1998) observed that it is easier for small basket shoppers who visit store more frequently to defer purchase for later trips when conditions in the store are less favorable (stockout being one example of an unfavorable event). However disutility, because of opportunity costs, of deferring or canceling urgent purchase (higher for minor trip), more than negates the advantage due to higher shopping frequency, so that overall loss in utility is greater for minor trip consumers (Campo *et al.* 2000). Therefore, following hypothesis is proposed:

H2a: in an out-of-stock, minor shopping trip would make consumer's attitude towards store more negative as compared to major shopping trip.

³ Total cost of shopping is made up of 2 components: fixed and variable. Variable costs depends on shopping list (which products and what quantities to be purchased), while fixed costs depends on travel distance, store attractiveness, store image, store assortment and service level.

2.4.2 Hypothesis relating to consumer characteristics

General time constraint (GTCONS)

Consumer behavior is often defined to include acquisition and use of products by ultimate consumers requiring use and expenditure of time. In ‘highly industrialized societies’, where time pressure is high as people work for more hours and/or both husband and wife are employed, buyers are under time pressure, less apt to adopt new brands (Howard and Sheth, 1969); place a high value on time (East, Harris, Lomax, Willson and Perkins, 1997); are brand loyalty to reduce perceived risk of time loss (Myers, 1967; Roselius, 1971) and are more averse to switching store and deferring purchase in out-of-stock (Campo *et al.*, 2000). An out-of-stock is likely to inconvenience consumers under general time constraint pressure. Thus, greater the time required to make a purchase, more dysfunctional or less desirable the process of shopping is likely to be for consumers under general time pressure. Dysfunctional outcome and frustration caused are expected to be greater for those who work for more hours and place a greater opportunity cost on time. Therefore, following hypothesis is proposed:

H3a: in an out-of-stock, consumer’s general time constraint is directly related to consumer’s negative attitude towards store.

Store loyalty (SL)

Store loyalty is “the biased behavioral response (i.e. revisit), expressed over time, by a decision-making unit with respect to one store out of a set of stores, and is a function of psychological processes (decision making and evaluative) resulting in brand commitment” (Jacoby and Chestnut, 1978). Brand consumption determines satisfaction and brand attitude (Howard, 1974; Oliver, 1980); and satisfaction is an antecedent to the consumer’s overall attitude (Grace and O’Cass, 2004). Store satisfaction leads to store loyalty (Bloemer and Ruyter, 1998). Store loyalty is expressed over time, so that satisfaction would typically be replaced by positive store attitude. Store loyals stay so in negative event like out-of-stock (Campo *et al.*, 2000). Additionally, other researchers (Emmelheinz *et al.*, 1991b; Schary and Christopher, 1979; Crostjens and Crostjens, 1995) also found that store loyal consumers have higher adherence to their store. Sinha and Banerjee (2004) also point out to inherent

existence of store loyalty towards traditional retail outlets in India, which drives store patronage via factors like shopping experience, and long-standing and/or comfortable relationship with retailer. Thus, it is likely store loyals would only be slightly disturbed by out-of-stock. Therefore, following hypothesis is proposed:

H4a: in an out-of-stock, consumer's store loyalty is inversely related to consumer's negative attitude towards stores.

Shopping attitude (SHOPATT)

Shopping is both- work and fun (Holbrook and Hirschman, 1982; Holbrook, 1986; Babin *et al.*, 1994). Thus, shoppers can be task-oriented (negative shopping attitude) or fun-oriented (positive shopping attitude) (Ng, 2003). Positive shopping attitude leads to more positive affect/mood (Beatty and Ferrell, 1998⁴; Babin *et al.*, 1994); hedonic responses also help in mood management (Baumann, Cialdini and Kenrick, 1981). Additionally, purpose of trip (for fun/work) impacts mood (Mayer, Bowen and Moulton, 2003); mood affects consumers' recall of encounter (Gardner, 1985) and customer dissatisfaction/satisfaction (Bolton and Drew, 1994).

Literature also shows that shoppers in a good mood tend to sustain their mood (Swinyard, 1993) (1) when good mood facilitates retrieval of positive and mood congruent information (Batra and Stayman, 1990; Mackie and Worth, 1989; Worth and Mackie, 1987); (2) when people in good mood avoid or reduce cognitive elaboration, which needs effort and seems to disrupt positive mood (Isen and Levin, 1972), (3) when people form biased evaluations because they have avoided negative thoughts that might undermine their moods (Batra and Stayman, 1990; Schaller and Cialdini, 1990). Consumers with positive shopping attitude are more willing to shop elsewhere or come back on a later trip (Campo *et al.*, 2000). Therefore, following hypothesis is proposed

H5a: in an out-of-stock, consumer's positive shopping attitude is inversely related to consumer's negative attitude towards store.

⁴ Beatty and Ferrell (1998) emphasized that they utilized the orthogonal constructs of positive and negative affect in this study and view them as similar to the positive and negative moods.

Shopping frequency (SHOPFREQ)

Small basket shoppers who have a higher shopping frequency, typically choose HILO (high low) type of stores and show a high level of responsiveness by, for example, buying from product categories where conditions (like price/availability) is favorable and vice versa (Bell and Latin, 1998) as they shop for smaller baskets and more frequently than large basket shoppers. Small basket shoppers are able to obtain out-of-stock items soon on future trips (Campo *et al*, 2000). Higher shopping frequency is likely to cause less stress. Therefore, following hypothesis is proposed:

H6a: in an out-of-stock, consumer's shopping frequency is directly related to consumer's negative attitude towards store.

Availability of acceptable alternative stores (AAAS)

Consumers choose and patronize store on the basis of consumer perceptions, images and attitudes towards store formed from experiences, information (Arnold, Oum and Tigret, 1983) and consumer needs (Bell and Latin, 1998; Khan and Schmittlein, 1992). Accordingly, shoppers develop their own sets of retail patronage criteria (Stephenson, 1969; Sirohi, Mclaughlin, and Wltink, 1998), develop a systematic relationship between shopping behavior and store preference (Bell and Lattin, 1998). Sinha, Bannerjee and Uniyal (2002) found that convenience and merchandise influenced consumers' choice of a store most importantly. Merchandise was indicated as the most important in durables, books and apparel. Another Indian study found that both store choice and image for 'grocery/fruits and vegetables' and 'durable goods' stores were affected by such variables as proximity, merchandise, ambience, how shoppers patronized store, referrals, facilities, perceived risk, convenience, services and parking provisions (Sinha and Banerjee, 2004). Thus, changing store might not be easy. 'Attractiveness' depends on criteria that determine fixed utility and cost (Bell and Lattin, 1998; Campo *et al.*, 2000) so that visiting less attractive store can cause loss. Revisiting store would also cause stress via expense of additional resources. Therefore, following hypothesis is proposed:

H7a: in an out-of-stock, availability of acceptable alternative stores would make consumer's attitude towards store less negative as compared to non-availability of acceptable alternative store.

Store distance (SDIST)

Shoppers are influenced primarily by store location and the associated travel costs while choosing store (Huff, 1964; Craig, Ghosh and McLaffery, 1984; Arnold, Oum, and Tigret, 1983; Brown, 1989; Bell, Ho and Tang, 1998; Rhee and Bell, 2002; Sinha et al., 2002; Sinha and Banerjee, 2004). Industry research also suggests that location of retail store explains up to 70% of variance in people's supermarket choice decisions (Progressive Grocer, 1995). Consumers choose store to minimize total cost (Bell and Latin, 1998) in which case, she would want to revisit store to purchase out-of-stock item. However this would mean extra travel expenses causing disadvantage. Higher the store distance, higher would be the cost (Campo *et al.*, 2000) leading to higher levels of stress. Therefore, following hypothesis is proposed:

H8a: in an out-of-stock event, consumer's store distance is directly related to consumer's negative attitude towards store.

2.4.3 Hypothesis relating to store characteristics

Perceived inter-store distance (PISDIST)

Switching to another acceptable store means transaction costs (expense of time, money and energy) (Campo *et al.*, 2000), due to inter-store distance. Higher this cost, lesser the willingness to switch store (Corstjens and Corstjens, 1995). Perceptual estimate was considered, as it is the perceived distance that actually matters (Zinn and Liu, 2001). Therefore, following hypothesis is proposed:

H9a: in an out-of-stock, consumer's perceived inter-store distance is directly related to consumer's negative attitude towards store.

Perceived store price (PSPRICE)

Overall perceived store price level influences store patronage (Arnold *et al.*, 1983; Progressive Grocer, 1983; Nickel and Wertheimer, 1971; Rhee and Bell, 2002), store attitudes and store choice (Monroe and Gultinan, 1975; Sinha and Banerjee, 2004). Price image has become a particularly important competitive tool for retailers of packaged goods, which is why supermarket retailers are actively engaged in formulating pricing strategies. In

fact retailing pricing strategy is one of the “top 5 priorities in retail management” (Schaeffer, Donegan, Garry and Mathews, 1995). Lower perceived store price inhibit switching store in out-of-stock (Zinn and Liu, 2001). Therefore, following hypothesis is proposed:

H10a: in an out-of-stock, store’s perceived store price is indirectly related to consumer’s negative attitude towards store.

2.4.4 Hypothesis relating to product characteristics

Availability of acceptable alternative items (AAAI)

‘Assortment’ is “the number of different items in a merchandise category” (Levy and Weitz, 1995). Assortment perceptions are positively related to store attitudes (Tigret and Arnold, 1981; Arnold *et al.*, 1983; Craig, Ghosh and Mclafferty 1984; Louviere and Gaeth 1987), store choice (Broniarczyk, Hoyer and McAlister, 1998; Sinha *et al.*, 2002) and store image (Sinha and Banerjee, 2004)) On this basis retailers have resisted suggestions to adopt efficient assortment (Kurt Salmon Associates 1993) suggesting that low perceptions would make buying process difficulty. Here it is very important to understand assortment offered by store is valuable and demanded by customers (Business Today, 1999). It can be understood like this: most purchases entail some amount of involvement for consumer. Consumers develop risk profiles for brand types in buying process; and when a consumer has decided which brand to buy he/she has accepted a certain level of risk in that purchase (Dunn, Murphy and Skelly, 1986). Switching brands is easy when acceptable substitute is present {as consumers tend to switch to particular, acceptable substitutes with similar attributes} (Campo *et al.*, 2003), otherwise decision-making difficulty can increase leading to lower satisfaction {as in case of an out-of-stock} (Fitzsimons, 2000): all this is likely to lead to a negative evaluation of store. Therefore, following hypothesis is proposed:

H11a: in an out-of-stock, availability of acceptable alternative items is indirectly related to consumer’s negative attitude towards store.

Deal proneness (DP)

Variety seeking influences brand switching and therefore interests brand managers. While true variety seeking is intrinsically motivated; derived variety seeking is extrinsically

motivated (McAlister and Pessemier, 1982). It is extrinsically motivated when behavior leads to attaining or avoiding of another purchase or consumption goal {for example, when external environment presents some advantages in case of switching brands or if it is imposed} as in case of out-of-stock/in situation specific preferences (Holbrook, 1984; Van Trijp, Hoyer and Inman 1996) like promotions (Gupta, 1988). This tendency to ‘follow promotions in a product category’ is “deal proneness” (Lichtenstein, Netemeyer and Burton, 1990, page 56; Hackleman and Duker, 1980). Deal prone consumers can be identified by household resource variables (Blattberg, Buesing, Peacock and Sen, 1978); by differences in demographic variables ((Bawa and Shoemaker, 1987) and households behave consistently across product classes and time (Bawa *et al.*, 1987). Deal prone consumers have better choice tactics than brand loyal consumers (Mazursky, 1987; Van Trijp *et al.* 1996); also, they may perceive the deal as an end in itself (Schindler, 1989). Such deal prone consumers would switch item/ store easily and would be less troubled under out-of-stock. Therefore, following hypothesis is proposed:

H12a: in an out-of-stock, deal proneness is indirectly related to consumer’s negative attitude towards store.

Brand loyalty (BL)

On the basis of their experience with a brand and knowledge consumers see perceived differences among brands (Rosen, 1984) which lead to loyalty in favor one brand (Bass, Pessemier and Lehmann, 1972). A brand switch can signal ‘perception of loss’ (Dunn *et al.*, 1986). An extrinsic motivation like stockout could force a choice of brand other than favorite (Van Trijp *et al.*, 1996). Substitution is less likely to if perceived risk is high (Emmelhainz, Stock and Emmelhainz, 1991); ‘strength of preference’ is high (Van Trijp *et al.*, 1996) or brand loyalty is high (Campo *et al.*, 2000). When brand loyalty is high, consumers react substantially and negatively to stockout: they report lower satisfaction in decision process and show a higher likelihood of switching stores on further trips (Fitzsimons, 2000). Resulting satisfaction/dissatisfaction is directly linked to positive /negative attitude (Howard, 1974; Oliver, 1980). Brand loyals also lack consumption and switching experience, making switching difficult (Hoyer, 1984) and are averse to change even when close substitutes are available as he/she is averse to change (McAllister and Pessemier, 1982; Van Trijp *et al.*,

1996). Delaying/store switch would cost extra causing stress. Therefore, following hypothesis is proposed:

H13a: in an out-of-stock, brand loyalty is directly related to consumer's negative attitude towards store.

Next chapter deals with issues relating to method.

CHAPTER 3

RESEARCH METHOD

3.1 Scope and setting

This study focuses on consumer's behavioral and attitudinal responses towards retail store in out-of-stock in "general store" type of retail stores, in 5 product categories: butter, washing powder, toothpaste, tomato sauce and fruit juice. The product categories were chosen such that they represent not too different involvement situations, face frequent stockouts, and be available in many brands. Frequent stockouts were important so that consumers can vividly imagine stockout and probing for their reactions is realistic. Urban population coming under city municipality of Varanasi, in Uttar Pradesh was covered. Objective was to understand influence of independent variables on dependant variables of consumers's (1) behavioral and (2) attitudinal response towards retail store in stockout.

Survey questionnaire method for data collection was used. An exit interview: mall intercept manner, was conducted at storefront with consumers who were asked to imagine they experienced a stockout on their present shopping trip. Only those consumers who had at least one of the 5 chosen product categories on their shopping list on that day were interviewed. Interviews have been used by several other researchers (Peckham, 1963; Walter and Grabner, 1975; Schary and Christopher, 1979; Zinszer and Lesser, 1981; Emmelhainz *et al.*, 1991a & b); more specifically mall intercept method has been used by retail researchers like: Schary and Christopher, 1979; Sudman, 1980; Emmelhainz *et al.*, 1991b; Campo *et al.*, 2000; Zinn and Liu, 2001; Sinha and Banerjee, 2004). Behavioral method of data collection was not used since data on many variables, for example, availability of acceptable alternatives, situation specific constraints, perceived price attractiveness of the store couldn't be obtained via this method.

Out of 4 primary data collection methods available: in-home interviews, mall intercept, mail and telephone; mall intercept was used. Mail and telephone were not used as many respondents could be illiterate and not have a telephone contact respectively. Next, advantages and disadvantages of both in-home interviews and mall intercept were examined (Churchill, page 270). Latter had all advantages of former plus few more. An important

advantage of mall intercept over in-home interviews was that it is less expensive and time consuming. Therefore mall intercept was chosen. As discussed under ‘sample’ section, data collector was required to stay at a particular retail outlet for full day and interview all those consumers who had come to purchase something from one of the five product categories.

3.2 Variable measures

2 dependant variables and 13 independent variables were used in this study as shown in Chapter 2. The measures for all the variables were taken from literature. A list of all the variables is given in table 3.1 (with abbreviated names of variables in brackets) below:

TABLE 3.1: All variables listed

Sl. No	Name of variables
	DEPENDANT VARIABLE
1	Behavioral option (BEHOP)
2	Attitude towards retail store (ATT)
	INDEPENDENT VARIABLES
1	Specific time constraint (SPTC)
2	Type of shopping trip (ST)
3	General time constraint (GTCONS)
4	Store loyalty (SL)
5	Shopping attitude of consumers (SHOPATT)
6	Shopping frequency (SHOPFREQ)
7	Availability of acceptable alternative store (AAAS)
8	Store distance (SDIST)
9	Perceived inter-store distance (PISDIST)
10	Perceived store prices (PSPRICE)
11	Availability of acceptable alternative items (AAAI)
12	Deal proneness (DP)
13	Brand loyalty (BL)

Concept and measures for variables are given below:

3.2.1 Dependant variable measures

1. Behavioral option (BEHOP)

This refers to behavioral reactions that consumer's would take to an out-of-stock of their preferred brand. Following 4 behavioral options were identified from literature to be included: substitute brand, substitute store, delay purchase and cancel purchase.

2. Attitude towards retail store (ATT)

Variable "attitude towards retail store" refers to "overall attitude consumers will have towards the retail outlet where they encounter an out-of-stock of their preferred brand". A self report five-point scale of "very bad/very good", "very nice/very awful", "very attractive/very unattractive", "very desirable/very undesirable" and "extremely likable/extremely unlikable" was used based on Yoo and Donthu (2001).

Consumer's behavioral and attitudinal responses to hypothetical out-of-stock were measured like Campo *et al.* (2000) study for similar reasons. Measuring variables in hypothetical out-of-stock helped to keep number of interviews at a tractable level. Also, since retailers avoid out-of-stock for brands enjoying high brand loyalty (Peckham, 1963) using true out-of-stock could have caused biased choice of items.

3.2.2 Independent variable measures

1. Specific time constraint (SPTC)

Specific time constraint has been defined as, "the perceived constriction of time available for an individual to perform shopping" (Iyer, 1989). Emphasis is on perception as it is perception that influences how shopper feels and processes information during the trip. Measure for SPTC has been taken from Beatty and Ferrell (1998), who constructed the scale by drawing items from Jeon (1990), Beatty and Smith (1987), and Iyer (1989). A five-point scale of Likert type was employed.

2. Type of shopping trip (ST)

Type of shopping trip relates to "if a consumer is on a major or a minor shopping trip". From how Kollat and Willet (1967) have defined the concept, it is evident that the consumer's own perception of whether the shopping trip is of one type or another is

important. This variable was measured by asking consumer if he/she had a long/short-shopping list; accordingly, shoppers were treated as on major/minor shopping trip respectively. Dummy variable equaled 1 for minor shopping trip and 0 for major shopping trip.

3. General time constraint (GTCONS)

General time constraint refers to, “the time pressure that arises from employment of respondent”. Following Campo *et al.* (2000), general time constraint was measured by asking respondents to assess their employment level in terms of number of hours spent in employment activities {this included time spent traveling to and back from workplace}.

4. Store loyalty (SL)

Store loyalty concept has been defined, “as the tendency to concentrate purchases in one store”. Measure for this variable has been taken from Baumgartner and Steenkamp (1996) who say that consumers’ behaviors contain 2 strong exploratory components: exploratory acquisition of products (EAP) from exploratory information seeking (EIS)⁵ (Baumgartner and Steenkamp, 1996). Exploratory activities regulate exposure to sensory and cognitive stimulation (consumers engage in exploratory behaviors primarily for the pleasure inherent in changing the stimulus field). Consumers who are high on EAP enjoy taking chances in buying unfamiliar products/from unfamiliar retail outlets to attain stimulating consumption experiences. All such consumers will be non-brand loyal and/or non-store loyal. Store loyalty measure used was a self-report five-point scale from strongly agrees to strongly disagree based on Baumgartner and Steenkamp (1996).

5. Shopping attitude (SHOPATT)

Shopping attitude of consumers has been defined as, “the perception of shopping that consumers have – shopping as a work or shopping as fun”. For assessing shopping attitude, a

⁵ Sources of exploratory consumer behavior include risk taking in making product choices (Cox, 1967) innovation in adoption of new products and retail facilities (Mittelstaedt, Grossbart, Curtis, and Devere, 1976; Venkatraman and Price, 1990), variety seeking in purchase behavior (McAlister and Pessemier, 1982), browsing, looking at window displays and similar forms of recreational shopping (Bellenger and Korgaonkar, 1980; Westbrook and Black, 1985) and curiosity motivated information acquisition (Price and Ridgway, 1982).

five-point self-report scale based on Babin, Darden and Griffin's "Personal Shopping Value Scale" (1994) and anchored by "strongly agree" to "strongly disagree" was used.

6. Shopping frequency (SHOPFREQ)

Shopping frequency refers to, "the number of times a particular customer goes for shopping in a typical week" (East *et al.*, 1997; Campo *et al.*, 2000) and following them shopping frequency was measured by asking respondent to state "number of times he/she shopped in a typical week".

7. Availability of acceptable alternative store (AAAS)

Availability of acceptable alternative store refers to, "whether acceptable alternative stores (in terms of store image, attractiveness of store assortment and service level) are available to consumer"⁶. Measure for this variable was dummy variable equal to zero in case acceptable alternative store was available while dummy variable equaled one if acceptable alternative store was not available.

8. Store distance (SDIST)

Store distance refers to "the distance between consumer's place of residence and stockout store". Following East *et al.* (1997) and Campo *et al.* (2000), store distance was measured by 'number of minutes spent by consumer to reach retail outlet from house'.

9. Perceived inter-store distance (PISDIST)

This variable refers to, "the consumer's perceptual estimate of distance that has to be traveled in switching store". Following (Zinn and Liu, 2001) respondent was asked "how much time he/she would take to visit another store where he/she would expect to find specific brand sought".

10. Perceived store prices (PSPRICE)

Perceived store price refers to "consumer's perceptions of store's overall price levels". Self report five-point scale (based on Janiszewski and Lichtenstein, 1999) was used to measure this variable.

⁶ Bell, Ho and Tang (1998) divided shopping utility into 2 components: fixed and variable shopping utility components. While former depends on store image, attractiveness of the store assortment and service level; latter depends on price and quality store offers on products in consumer's shopping list. While variable shopping utility is chiefly dependant on the products and the situation, the fixed shopping utility depends on whether acceptable alternative stores are available to the consumer.

11. Availability of acceptable alternative items (AAAI)

Consumers switch to acceptable substitutes with similar attributes; whether available alternatives are acceptable or not will depend on ‘perceived differentiation’ and ‘perceived risk’ in switching from one item to another. Availability of acceptable alternative items refers to “perceived differentiation” among items and therefore to the perceived risk of switching from one item in the category to another. Measure was taken from Jain and Srinivasan (1990) and final measure was built as a self-report five-point scale from strongly agree (1) to strongly disagree (5).

12. Deal proneness (DP)

Deal proneness has been defined following Lichtenstein, Netemeyer and Burton (1995), as, “consumer’s tendency to use promotions in a product category”. A self-report five-point scale of Likert type was used to measure deal proneness based on Lichtenstein, Burton and Netemeyer (1997) who had developed multi item measures to assess deal proneness of consumers in 8 deal segments. While Lichtenstein *et al.* (1997) used a seven-point scale; a five-point scale was used here.

13. Brand loyalty (BL)

Brand loyalty has been defined as, “the tendency to stay with the same brand”. Measure for this variable also was also a self-report five-point scale from strongly agrees to strongly disagree based on Baumgartner and Steenkamp (1996) on similar pattern as store loyalty measure.

3.3 Questionnaire

Questionnaire was bilingual: in English and Hindi. In all there were 30 questions. For translating English questionnaire to Hindi, 2-step process was used in which 4 persons fluent in both languages participated (2 persons for each step). In first step, English questionnaire was given to 2 persons and they translated it to Hindi questionnaire. In the next step Hindi questionnaire was given to remaining 2 persons and they translated it back to English questionnaire. In both the steps problems of vocabulary and varied interpretation were noted and sorted out by discussion. First question on questionnaire was filter question, which asked shopper if he/she had come to purchase something from any one of the 5 chosen product categories. For sequencing questions: first all questions were divided into 4 categories very

easy to very difficult) depending on researcher's own perception of ease of answering. Then, questions were arranged from "very easy" (in beginning) to "very difficult" (in end). A copy of the actual questionnaires (English and Hindi) is given in the appendix 1 and 2 respectively.

3.4 Pretest

Pretest is use of a questionnaire on a trial basis in a small study to determine how well it works in reality. Literature suggests strongly that data collection should never begin without pretest of questionnaire. In their paper on pretest in survey research, Hunt, Sparkman and Wilcox (1982) have enumerated following issues in pretesting:

1. What specific items should be pretested?
2. What method should be used to conduct the pretest?
3. Who should do the pretesting?
4. Who should be the subjects in the pretest?
5. How large a sample size is needed for the pretest?

Details of all steps were conceived and carried out. Passages that follow give a description of how each of these issues was handled:

1. Specific items should be pretested:

3 categories of items were taken:

(a) **Items about the questionnaire itself:** such as, length, layout, sequencing and format of questions. Respondents felt that last part of the questionnaire, which had similar questions, was repetitive and therefore became boring. To rectify items for measuring attitude was kept as such but the manner of asking was changed a bit so as to not repeat common part of sentence after it has been spoken once for first question of the set. Some problems were also encountered about the transition statements in that respondents felt they were incomplete and asked questions to clarify as to what the interviewer wanted them to answer. For such problems the transition sentences were changed to make them complete and understandable. Respondents did not show any difficulty with layout, format and sequencing of questions.

(b) **Items about specific questions:** here objective was to observe respondent to check if respondent does not understand hesitates or finds a particular question ambiguous and confusing. 2 questions presented problem in this context, although questions were complete

in themselves. To remedy this, note was made that actual data collectors would be given a brief note with those 2 questions so as to elucidate in case respondent demands.

(c) In third step, pretesting process was used to code and tabulate results of interview. This step presented no problems.

2. Method to be used to conduct the pretest:

3 methods are often discussed for conducting pretest: personal interviews, telephone interviews, mail self-reports. Hunt *et al.* (1982) have referred to Boyd, Westfall and Stasch (1977) to say that first series of pretest should be conducted by personal interviews, as it makes use of the richest medium of communication: face-to-face medium of communication; providing a definite and crucial advantage over other methods. Therefore personal interviews were used during pretest phase. Another issue in using personal interviews (Hunt *et al.*, 1982) is which of the 2 methods should be used: debriefing method or protocol method⁷. On basis of researcher's self-assessed skills and capabilities to make observations and record respondent verbalizations, the 2nd method (protocol method) was chosen for conducting the pretest interviews.

3. Choice of person to do pretesting:

Hunt *et al.* (1982) refer to (1) Boyd *et al.* (1977) who recommend that only the best interviewers should be used in the pretest process, who can perceive the uneasiness, confusion and resistance among respondents; (2) Backstrom and Hursch (1963) who suggest that at least 3 different interviewers should be used who possess different degrees of competence in interviewing as it is important to determine problems of both interviewers and respondents. Hunt *et al.* (1982) believe that pretest process should involve more issues than simply checking questions, and therefore they favor method recommended by Backstrom and Hursch. Following Hunt *et al.* (1982), interviews were conducted by 3 people: one, the researcher herself; second, a colleague from Management Group of Birla Institute of Technology and Science, Pilani; third, an acquaintance from Electrical and Electronics Engineering Group of Birla Institute of Technology and Science, Pilani. All the 3 people had

⁷**Debriefing method:** respondent is asked to fill questionnaire completely while interviewer makes careful observations, after which interviewer probes respondent for any potential problems. **Protocol method:** respondent is asked to think aloud while filling questionnaire while interviewer records the verbalizations.

different interview competency skills, which were roughly assessed on the basis of number of interviews/ viva they had conducted.

4. Subjects in pretest:

Some writers suggest that pretest must use respondents who are as similar as possible to target respondents (Tull and Hawkins, 1976; Zaltman and Burger, 1975), others (Galtung, 1969) say that for pretesting, a statistically sophisticated probability sample is not needed at all, takes a different and opposing stance; and contends that a heterogeneous sample with extreme cases is what is most appropriate, and that trial must include adverse, favorable as well as typical respondents (Brown and Beik, 1969).

The latter set of views were found quite rational, since if a questionnaire does well with all types of audience, ranging from intellectual to emotional to attitudinal, it can be expected with confidence that the questionnaire does well later on in the actual data collection phase. Accordingly, although pretest was conducted amongst people sharing a common cultural and language background as the actual future respondents; audience profiles was varied (males and females, working and non working people, college students, those who are outwardly more talkative and less talkative, skilled and unskilled workers).

5. Sample size needed for pretest:

While some authors like, Zaltman and Burger (1975) point out that pretest sample be “small”, others give specific sizes. For example, Ferber and Verdoom (1962) suggest a size of 12, Boyd *et al.* (1977) suggest 20, while Backstrom and Hursch (1963) recommend a sample size of 30. Since resources to carry out pretest were not a constraint, a pretest was conducted among 20 respondents.

Both Hindi and the English questionnaires were pretested among people sharing a common cultural and language background as actual future respondents, by personal interview. Later problem areas were examined very carefully to make questions better understandable to future respondents. Pretest helped to make both Hindi and English questionnaires better.

3.5 Sample

Population of interest was all shoppers in urban population in Varanasi under Municipal Corporation of Varanasi. Varanasi is a city in eastern part of state of Uttar Pradesh

in India. Total population of areas being considered was =929270. Pilot study was conducted for determining sample size for main study. Following sampling methods were used:

Sampling for main study: cluster sampling

Sampling for pilot study: 2 stage sampling – first cluster and then quota sampling

Task of identifying sampling frame was taken first. A sampling frame is a list of potential sampling units. Sampling frame development normally involves two steps: (1) selection of first-stage or primary units and (2) selection of elementary sampling units within the primary units. In many applications, for example, villages and/or city blocks will be chosen at the first stage and a sample of households from each at the second. In some cases, individuals from households may need to be selected, adding a third step to the process. Last stage of sample selection must produce small workable units for survey field operations. Development of sampling frame involved a 3-stage sample selection, described below:

Step	Pilot study	Main study
1	Wards were taken as primary selection units and enumerated ⁸ . After examining occupational data for each of the 40 wards to see which of the single wards/ set of wards can qualify to act as a cluster (details given later in this chapter) 33 clusters were identified: most clusters were ‘single ward’ while some clusters were ‘few adjacent wards clubbed together’.	
	9/33 clusters were selected randomly.	1/33 clusters was selected randomly.
2	9 identified clusters were used for data collection using quota sampling (criteria was occupation).	Traditional retail stores (which had all the 5 chosen products categories) were identified in 1 randomly selected cluster ⁹ .
3	Shoppers were selected as final sampling units (quota sampling) for conducting interviews.	Shoppers were selected as final sampling units for conducting interviews (all who wished to buy from one of the 5 product categories)

⁸ Only those wards covered by city municipality were taken, since information about identification of geographical boundaries of wards in non-municipality areas was not available.

⁹ As a sampling frame did not exist at this stage, sample frame development for the randomly selected cluster was taken up. All traditional retail outlets selling grocery type of products were checked out, lane by lane, and appropriate shops were identified and listed to serve as the sampling frame.

3.5.1 Identification of clusters

Population for study consists of all shoppers who shop at traditional retail outlets. Details of forming clusters from population are described below. Cluster sampling technique involves 2 steps given below:

1. Parent population is divided into mutually exclusive and exhaustive subsets (clusters)
2. A random sample of subsets (clusters) is selected.

In the first step, goal is to form clusters that are similar to each other and are each small-scale models of the population so that each cluster reflects diversity of whole population. Diversity of population can be established on different criteria or basis. Occupation was identified as a criterion needed for cluster identification process. Rationale for using occupation comes from that finding that consumer behavior in stockouts is influenced by occupational factors (Schary and Christopher, 1979). Schary and Christopher interviewed 1167 consumers and reported that consumers in families where the head of the household is in a managerial or professional occupation are more likely to switch store to obtain the sought brand.

Data on occupational pattern of urban population of Varanasi was obtained from Census Office in New Delhi and examined. Although latest data on Census 2001 (Primary Census Abstract, 2001) was available, its content was not found to be useful¹⁰. Census 2001 data on occupation included only for 2 classes of workers, namely, main workers and marginal workers; and each of these classes were further divided into 4 categories of occupation, namely, cultivators, agricultural workers, household industry workers and other workers; number of non-workers for Census 2001 was also available. Census 1991 (Primary Census Abstract, 1991) categorized workers in 10 categories of main workers and 2 more categories (marginal workers and non-workers)¹¹. Occupational classification of population in Census 2001 and Census 1991 is shown in figures 3.1 and 3.2. These 2 data sets were

¹⁰ Two categories account for only a negligible proportion of population for 2001; secondly, three categories in 2001 corresponded to as many as 7 categories of workers in 1991. Clusters made on 2001 data set were likely to not represent appropriately city level profile of urban population.

¹¹ The specific meaning of what these occupations are is given in the appendix 3.

compared to check on the extent of difference. Since a direct comparison of data sets was not possible, certain categories in both data sets had to be merged.

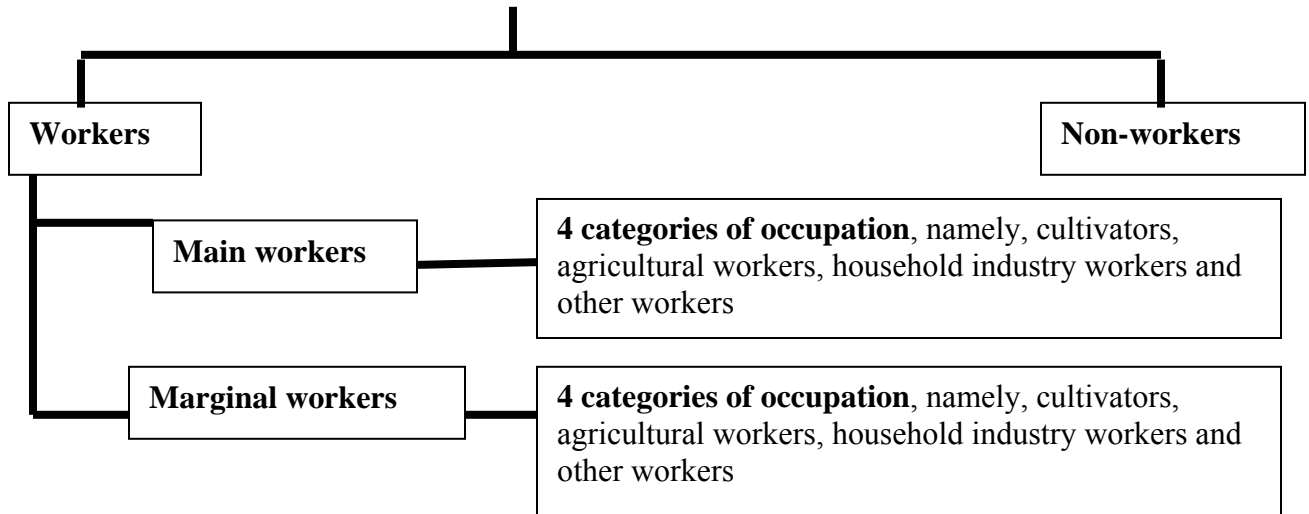


FIGURE 3.1: Classification used by census reports 2001

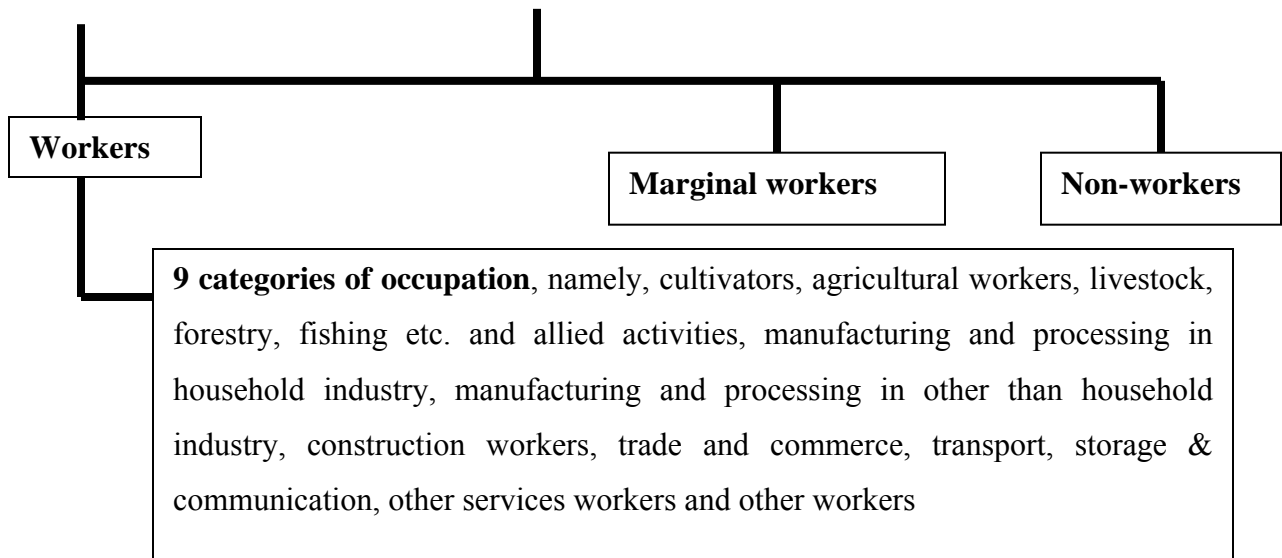


FIGURE 3.2: Classification used by census reports 1991

The correspondence and merger of categories in 2 data sets is shown in table 3.2. Note: “worker participation rate” term is used in Census to refer to how population is spread across industry categories. Difference in % shares for categories (table is 3.3) shows 1991 data set had fairly the same city profile as in 2001 data set. This conclusion supported use of 1991 data set.

TABLE 3.2: Correspondence of worker categories from Census 2001 and 1991

	Worker categories in 2001	Worker categories in 1991
1	Cultivators	Cultivators
2	Agricultural laborers	Agricultural laborers
3	Household industry workers	Manufacturing and Processing in household industry
4	Other workers	Manufacturing and Processing in other than household industry
5		Construction workers
6		Trade and Commerce
7		Transport, Storage & Communication
8		Other services
9		Livestock, Forestry, Fishing etc. and allied activities
10		Mining and Quarrying
11	Marginal workers in all 4 categories	Marginal workers
12	Non workers	Non workers

TABLE 3.3: Comparison of census 2001 and 1991 data sets

	As a % of total population of (workers+ non workers)	2001	1991	Difference
1	Cultivators	.25	.37	.12
2	Agricultural labourers	.17	.23	.06
3	Household industry workers	7.84	6.78	1.06
4	Other workers	17.31	19.63	2.32
5	Marginal workers	3	4	1
6	Non workers	71	73	2

Smallest unit of area used in Census 1991 data for generating clusters was a ward¹² for which occupation statistics were available. First priority was to identify single wards as clusters while clubbing wards to form clusters was second in priority. For cluster identification following steps were taken:

1. Location of all 40 wards was identified on city map (copy of map is given in appendix 5).
2. Census data was examined to see which single wards could qualify to become a cluster (criteria being that ward should represent city in terms of percent share of all 12 categories of occupation).
3. In last step, adjoining wards were clubbed to check if they could act as clusters.

27 single wards came fairly close to representing city profile were selected to act as clusters; 6 clusters were generated from remaining 13 wards. In the table 3.4, all clusters are listed. In all 33 clusters were identified from 40 wards.

Finally, one cluster was selected randomly out of 33 identified clusters for main study. Due to resource constraint, only one cluster, namely, Dhoopchandi was randomly selected. Next task was to determine sample size for survey

3.5.2 Sample size determination

Statistical studies (surveys, experiments, observational studies, etc.) are always better when they are carefully planned in many aspects, one of them being finding adequate sample size. Sample size calculations are important to ensure that estimates are obtained with required precision or confidence. Three factors are used in sample size calculation and determine sample size for simple random samples: 1) *margin of error* 2) *confidence level* 3) *proportion (or percentage) of sample that will chose a given answer to a survey question.*

¹² List of wards was taken from Varanasi municipality office. 40 such wards were identified. List of wards has been given in appendix 4.

TABLE 3.4: Identified clusters

Cluster no.	Ward name(s)	Cluster no.	Ward name(s)
1	Jolha	22	Bazardiha
2	Assi	23	Piyari Kalan
3	Madhaymeshawar	24	Mishra Pokhara
4	Ishawargangi	25	Pandeypur
5	Kazipura Khurd	26	Shiopur(Reserve)
6	Dhoopchandi	27	Chhittanpura
7	Ghausabad	28	Bhelupur
8	Nadesar		Jangam Badi
9	Khajuri	29	Dashashwamedh
10	Lahartara		Rajmandir
11	Lallapur kalan	30	Raja Darwaja C.K.
12	Pichasmochan		Kazipur Kalan
13	Sikraul	31	Kameshawar Mahadao
14	Madanpura		Nawapura
15	Pandey Haweli	32	Gopalganj
16	Shiwala		Sarnath
17	Sarai Gobardhan	33	Alaipura
18	Kamachha		Vandhu Kachchibagh
19	Bhagatpuri		Kamakgarha
20	Garhwali Tola C.K.		
21	Sapat_Sagar K.		

3.5.2 Sample size determination... continued

Clustered samples are not as statistically efficient as simple random samples. Similarities among subjects in clusters can reduce variability of responses from a cluster compared with those expected from a simple random sample resulting in overestimation of

effective sample size (ESS). ESS as used in design phase, is sample size under a simple random sample design that is equivalent to actual sample under a complex sample design. Therefore, in complex sample designs, actual sample size is determined by multiplying effective sample size by design effect (*deff*), which is either, anticipated or calculated for a pilot study to addressing impact of design on sampling variability.

For cluster samples, main components of *deff* are intraclass correlation coefficient (ICC) or ρ and number of units within each cluster. ρ is a statistical estimate of within cluster homogeneity. Task therefore was to calculate value of ρ from pilot study.

$$deff = 1 + \rho (\eta - 1),$$

Where:

- *deff* is design effect,
- ρ is intra-class correlation for variable in question,
- η is size of cluster (since clusters differ in size, this value has been taken as an average size of all clusters)

$$\rho = s_b / s_b + s_w$$

Where:

s_b is variance between clusters

s_w is variance within clusters

Sample size of pilot study was found next. Seelbinder (1953) said that for selecting sample size of pilot study one must minimize expected size of total sample and that this criterion can be used even when rough estimates of variance values are available. According to Gillett's (1989) understanding of Seelbinder's work, if variance, $\sigma \geq 2c$, where c is confidence level, then for significance levels of $(1 - \alpha)$ greater than or equal to .9, a value of pilot sample size = 40 represents a lower limit of size of pilot study. For present study, rough estimates of a range of likely values of variance have been taken from Gilbert Churchill (page 520), from what is a guideline for estimating variance for data obtained using rating scale. Variance of attitude score was the concern as attitude (measured using rating scale) is the most important variable in the study.

Churchill (page520) says that rating scales are doubly bounded: on a 5 point scale for instance, response cannot be more than 5 or less than 1. This constraint leads to a relationship

between mean and variance¹³ and by considering the types of distribution shapes typically encountered in practice; it is possible to estimate variances for use in calculating sample size requirements for a given number of scale points. Accordingly, when number of scale points is 5 then, typical range of variances is 1.2 – 2.0, which was used for this study (attitude measured on a five point rating scale). When variance is large, then a larger sample is needed. Thus, variance was taken as 2.0 for the present case.

Following Seelbinder (1953) following calculations were done:

When variance is assumed to be 2.0:

Confidence level desired = 90%

Therefore, $c = .90$

$\alpha = 10\% = .10$

$1 - \alpha = .90$

Next if $\sigma \geq 2c$ was checked:

$2c = 1.8$

$\sigma = 2.0$

$\sigma > 2c$ for present case. In such a case: smallest value of sample size of pilot study = 40 was taken. Again, sample size for main study was determined by multiplying “design effect” obtained from pilot study with “effective sample size” (calculation shown later).

To calculate ρ or intra-class correlation a pilot study was conducted in 9 randomly selected clusters. It was thought that this would not be any major constraint as researchers sometimes simply anticipate design effect instead of carrying out any pilot study. However, this is one of the limitations. In each of the 9 clusters, between 46- 48 interviews were conducted based on quota sampling method. Table 3.5 shows how many interviews were conducted for each industry category in each of the clusters.

¹³ The nature of relationship between mean and variance depends on number of scale points and on “shape” of the distribution of responses (example, approximately normal or symmetrically clustered around some central scale value or skewed or uniformly spread out among the scale values).

TABLE 3.5: Interviews conducted per industry category per cluster

	INDUSTRY CATEGORY* →	1	2	3	4	5A	5B	6	7	8	9	10	11	TOTAL
1	Jolha	1	1	1	1	3	2	1	3	1	2	1	29	46
2	Assi	1	1	1	1	1	2	1	4	1	4	1	30	48
3	Madhaymeshawar	1	1	1	0	3	2	1	4	1	2	1	29	47
4	Ishawargangi	1	1	1	0	1	3	1	4	1	2	1	29	46
5	Kazipura Khurd	1	1	1	1	2	3	1	4	1	2	0	29	46
6	Dhoopchandi	1	1	1	1	2	2	1	4	1	3	1	30	48
7	Ghausabad	1	1	1	1	6	2	1	3	1	1	1	28	48
8	Nadesar	1	1	1	1	1	2	1	4	3	3	1	29	47
9	Khajuri	1	1	1	1	2	2	1	3	1	3	1	30	46
														422
<p>*1=cultivators; 2 = agricultural laborers; 3= livestock, forestry, fishing etc. and allied activities, workers; 4= mining and quarrying; 5A= manufacturing and processing in household industry; 5B = manufacturing and processing in other than household industry; 6= construction workers ; 7= trade and commerce ; 8 = transport., storage & communication ; 9 = other services ; 10 = marginal workers ; 11 = non-workers</p>														

Data were then analyzed to find out variance within and between groups. The details of process of calculation are given below:

1. Within group variance: the following process was followed for each group resulting in one value of variance for each group (that is 9 values of variance were obtained).
 - (a) Average of all attitude scores for a particular cluster was calculated.
 - (b) standard deviation was found out and squared
 - (c) The result of (b) was multiplied with (n –1) where n was size of corresponding cluster.
 - (d) The result of (c) was added up for all clusters.
 - (e) The result of step (d) was divided by a ($\eta - 1$)

Where: η = number of respondents in each cluster = total respondents from all clusters/ a.

a = number of clusters

Result of step (e) gives “within group variance” value.

2. Between group variance: the following process was followed

- (a) Attitude scores of all respondents from 9 clusters was added and then divided by total number of respondents to calculate grand average.
- (b) Grand average was subtracted from average of each group resulting in 9 values.
- (c) Each of the 9 values from step (b) was squared.
- (d) Each squared grand average was multiplied with n, where n = size of each corresponding cluster
- (e) Resulting 9 values were summed up
- (f) Result in (e) was divided by (a-1), where a = number of clusters
- (g) Result of step (f) is “between group variance”.

2 variances values calculated from data from pilot study are give below:

1. Within group variance = 19.92758858 = 19.93
2. Between cluster variance = 12.88471 = 12.88

Next, ρ and design effect was calculated.

$$\rho = S_b / S_b + S_w = 0.392679$$

$$\text{Design effect} = 1 + \rho (\eta - 1)$$

Where η = number of subjects in a cluster = 46 (average size of all clusters in taken here)

$$\text{Design effect} = \text{deff} = 17.67057 = 17.67.$$

Sample size for simple random sample (ESS) was calculated by following formula:

$$n = \left(\frac{z}{m} \right)^2 p(1 - p)$$

Where,

1. z is z value (e.g., 1.645 for 90% confidence level, 1.96 for 95% confidence level, and 2.575 for 99% confidence level)
2. m is margin of error (e.g., .07 = + or - 7%, .05 = + or - 5%, and .03 = + or - 3%)
3. p is estimated value for proportion of a sample that will respond a given way to a survey question (e.g., .50 for 50%)¹⁴.

¹⁴ Statistical meanings of 3 factors used in random sample size calculation, namely, margin of error, confidence level and ‘proportion of sample that will choose a given answer to a survey question’ is given in appendix 6.

Solving for sample size:

$$\begin{aligned}n &= \left(\frac{z}{m}\right)^2 p(1-p) \\&= (1.645/.10)^2 *.5 (1-.5) \\&= (16.45)^2 (.25) \\&= 270.60 (.25) \\&= 67.65 \\&\sim 68\end{aligned}$$

Thus, without using finite population correction factor¹⁵, sample size = **68**. Next, actual sample size was determined by multiplying effective sample size by design effect calculated from pilot study. Final sample size for present study was therefore calculated as:

Final sample size

$$\begin{aligned}&= \text{ESS} * \text{deff} \\&= \mathbf{68 * 17.67} \\&= \mathbf{1201.599} \\&\sim \mathbf{1202}.\end{aligned}$$

Thus, a sample size = 1202 would be expected to provide sample reliability to the tune of: a confidence level of 90%, a margin of error (or precision) of +/- 10%, and 'proportion of a sample that will choose a given answer' as 50%. 1242 consumer interviewers were conducted out of which 35 questionnaires were invalid. Thus a net of 1207 questionnaires were finally considered for data analysis. Sample validity or representativeness was also achieved as sample was fairly well distributed for most occupational categories (table 3.6).

¹⁵ Finite Population Correction (FPC) factor is routinely used in calculating sample sizes for simple random samples. In fact, many formulae for simple random sample size include FPC as part of the formula. Sample size doesn't change much for populations larger than 20,000. Population size in present study is 9,29,270, which is much higher than 20,000. Therefore sample size of 68 was taken as final effective sample size.

Table 3.6: Distribution of respondents across occupational categories

Occupational categories	Population %	Sample %
Cultivators	0.38	0.82
Agricultural labourers	0.23	1.82
Livestock, Forestry, Fishing etc. and allied activities	0.32	1.65
Mining and Quarrying	0.01	0.66
Manufacturing and Processing in household industry	6.78	2.98
Manufacturing and Processing in other than household industry	4.17	2.98
Construction workers	0.63	2.65
Trade and Commerce	7.62	15.24
Transport, Storage & Communication	1.55	2.14
Other services	5.36	15.41
Marginal workers	0.4	5.63
Non-workers	73	47.88

3.6 Store selection

Where (at which shops), when and how data collectors would interview respondents was designed next. Consumers were interviewed for hypothetical stockout. First, the randomly selected cluster, Dhoopchandi, was exhaustively searched for traditional retail outlets housing all 5 chosen product categories. 28 shops were identified for exit interviews. All shopkeepers consented for the same. For solving when and how interviews should be conducted, it was decided that in order to obtain interviews from all types of consumers (day of week and time chosen for shopping) interviews be conducted on a randomly chosen day out of 7 days on which data collector would stay in shop throughout the day to be able to interview all respondents who had at least one of the 5 chosen product categories. For randomly choosing the shop-day combination, a matrix was constructed (table 3.7) with shop numbers on y-axis and days of the week on x-axis. With 28 shops and 7 days a week, a matrix with $7 \times 28 = 196$ cells was made. These cells were numbered 1 to 196 starting from first cell and a random number table was used to randomly pick up cells from the matrix.

TABLE 3.7: Shop-day combination matrix

DAY										S	H	O	P																	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28		
M	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28		
T	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56		
W	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84		
TH	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112		
F	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140		
SAT	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168		
SUN	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196		

TABLE 3.8: Random numbers identified

SL*	RN*	SL	RN	SL	RN	SL	RN	SL	RN
1	160	17	21	33	173	49	66	65	20
2	83	18	46	34	179	50	140	66	95
3	32	19	137	35	79	51	170	67	193
4	120	20	131	36	149	52	74	68	88
5	41	21	135	37	51	53	78	69	115
6	188	22	123	38	60	54	171	70	124
7	167	23	162	39	10	55	145	71	91
8	107	24	114	40	36	56	169	72	163
9	142	25	31	41	49	57	126	73	127
10	174	26	184	42	121	58	11	74	143
11	118	27	47	43	178	59	65	75	151
12	22	28	85	44	159	60	141	76	8
13	150	29	172	45	56	61	30	77	52
14	98	30	23	46	37	62	59	78	102
15	43	31	53	47	42	63	7	79	158
16	132	32	93	48	130	64	86	80	164

*SL = serial number; RN = random number

Intuitively, one shop could provide an average 15 interviews/day; therefore, approx. 80 random numbers would serve the purpose. 80 random numbers between 1 and 196 were identified and they were listed serially in the order in which they were taken from random number table, as shown in table 3.8.

Random numbers represented cell numbers in “shop-day combination matrix” which should be picked up for conducting interviews. For data collection, number of data collectors

varied between 3 to 6. The data collection started took 19 days. Random numbers only up to serial number 77 were used for completing 1242 questionnaires. Data collectors were trained appropriately; any field work and problems were monitored on an everyday basis.

Names of 28 shops used in survey were: Shop names were: Gunjesh Provision Store, Brajesh Cold Drinks, Pawan General Store, Laxmi General and Provision Store, Krishna General and Provision Store, Gopal General Store, Goel General Store and PCO, Natraj General Store, R. K. General Store, Neeraj General Store, Pappu General Store, Gautam Store, Pramod General Store, Lallan Prasad General Store, Ghar Grihasti General Store, Raj Kumar General Store, Sanjeev General Store, Jaiswal Provisional Store, Shyam Provisional Store, Jaiswal Store, Jyoti Electric and General Store, Anugrah General Store, Chaubey General Store, Kajol General Store, Manish General Store, Kanha Gifts and General Store, Pankaj General Store, Kamaal General Store.

CHAPTER 4

RESULTS

4.1 Statistical tests used

Study consists of 3 main areas and to decide statistical tests to be used for analysis, scales of dependant and independent variables were examined. Table 4.1 displays this information.

TABLE 4.1: Variables' scales

Sl. No.	Name of variable	Variable scale
	Dependant variable	
1	Behavioral option	Categorical
2	Consumer's attitude towards retail store.	Interval
	Independent variables	
1	Specific time constraint	Interval
2	Type of shopping trip	Nominal
3	General time constraint	Ratio
4	Store loyalty	Interval
5	Shopping attitude of consumers	Interval
6	Shopping frequency	Ratio
7	Availability of acceptable alternative store	Nominal
8	Store distance	Ratio
9	Perceived inter-store distance	Ratio
10	Perceived store prices	Interval
11	Availability of acceptable alternative items	Interval
12	Deal proneness	Interval
13	Brand loyalty	Interval

Given 3 major areas in present study and according to information about scales used, corresponding statistical test used in analysis were decided (table 4.2). Accordingly this chapter has been divided into 3 parts to deal with each of the 3 areas.

TABLE 4.2: Statistical tests used

	Area of study	Statistical test used
1	Influence of moderating variables on behavioral responses in retail out-of-stock.	Multiple logistic regression ¹⁶
2	Influence of moderating variables on consumer's attitude towards retail store.	Multiple regression
3	Correlation between behavioral responses and consumer's attitude towards retail store.	Correlation coefficient used is statistic eta

4.2 Preliminary results

A factor analysis of independent variables was performed to detect multicollinearity. All Variance Inflation Factor (VIF)¹⁷ values ranged from 1.03 to 1.77 (table 4.3) well below the acceptable cutoff value of 4. Therefore all 13 variables were retained as such. To check reliability of scales used, internal consistency reliability coefficient of Cronbach's alpha and goodness of fit indexes were examined (table 4.4). Cronbach's alpha values ranged from 0.90 to 0.97, indicating good reliabilities. Goodness of fit indexes for all constructs (ranging from

¹⁶ Logistic regression predicts categorical dependent variable on the basis of independent variables, determines percent of variance in dependent variable explained by independents and ranks relative importance of independents.

¹⁷ For each independent variable, Tolerance = 1 – Rsq, where Rsq is coefficient of determination for regression of that variable on all remaining independent variables, low values indicate high multivariate correlation. Variance Inflation Factor (VIF) is 1/Tolerance, it is always ≥ 1 ; and it is the number of times variance of corresponding parameter estimate is increased due to multicollinearity as compared to as it would be if there were no multicollinearity. There is no formal cutoff value to use with VIF for determining presence of multicollinearity. Values of VIF exceeding 4 are often regarded as indicating multicollinearity.

0.90 to 0.98) were within acceptable levels. Results for confirmatory factor analysis of constructs showed good to strong loadings (ranging from 0.68 to 0.96).

Then constructs were checked for convergent and discriminant validity. For convergent validity, average variance extracted (AVE) for constructs were found. All values (ranging from 0.52 to 0.88) were above the acceptable limit ($AVE > 0.5$) (Fornell and Larcker, 1981). For checking discriminant validity, construct correlations were examined and compared to Cronbach alpha reliabilities (Gaski, 1984). Results showed that reliabilities were more than construct correlations, showing the existence of discriminant validity.

TABLE 4.3: Colinearity Statistics

Independent variables	Collinearity Statistics	
	Tolerance	VIF
Specific time constraint	.916	1.092
Type of shopping trip	.877	1.141
General time constraint	.653	1.531
Store loyalty	.762	1.312
Shopping attitude of consumers	.846	1.181
Shopping frequency	.941	1.062
Availability of acceptable alternative store	.663	1.509
Store distance	.868	1.152
Perceived inter-store distance	.564	1.773
Perceived store price	.813	1.230
Availability of acceptable alternative items	.961	1.041
Deal proneness	.969	1.032
Brand loyalty	.904	1.107

Table 4.4: Preliminary data analysis of constructs

Constructs and scales		Loadings	Alpha, GFI	AVE
Specific time constraint	I have limited time available with me for this particular shopping trip	0.84	Alpha 0.90 GFI 0.93	0.74
	I am not rushed for time on this shopping trip	0.88		
Store loyalty	I think of myself as a loyal customer of this outlet/store.	0.73	Alpha 0.95 GFI 0.97	0.64
	I like to switch between different stores.	0.89		
	I would rather stay with the store I usually frequent than trying a different store I am not sure of	0.78		
Shopping attitude of consumers	Shopping is truly a joy	0.95	Alpha 0.95 GFI 0.97	0.88
	A good store visit is one that gets over quickly	0.93		
Availability of acceptable alternative items	When I would have to buy another brand of (*) I would not know what brand to choose.	0.82	Alpha 0.92 GFI 0.93	0.69
	When choosing a brand of (*) there is little to loose by choosing poorly	0.79		
	There are few differences between (*) brands	0.88		
Deal proneness	When buying (*), I mostly pay attention to price	0.72	Alpha 0.93 GFI 0.90	0.52
	I am more likely to buy brands in (*) that are on promotion	0.75		
	I enjoy buying products hat come with a free gift	0.68		
Brand loyalty	I would rather stick to my brand than try something new	0.78	Alpha 0.95 GFI 0.97	0.66
	I like to switch brand in (*)	0.84		
	I am very conscious in trying new brands in (*)	0.82		
Attitude towards store	Store is good	0.85	Alpha 0.97 GFI 0.98	0.78
	Store is nice	0.87		
	Store is attractive	0.81		
	Store is desirable	0.93		
	Store is likable	0.96		
* Is category name				

4.3 Relationship between determinant variables and behavioral responses

Multinomial logistic regression (MNL) was run on SPSS 11.5. Table 4.5 displays case-processing summary.

TABLE 4.5: Case Processing Summary

		N	Marginal %age
Behavioral option chosen	Delay purchase	151	12.5%
	Switch brand	360	29.8%
	Switch shop	696	57.7%
Valid		1207	100.0%
Missing		0	0 %
Total		1207	100.0%

Interestingly, results show that none of the 1207 respondents had opted for “cancel” option. Analysis dealt with rest 3 behavioral options: switch brand, switch store and delay purchase. Further, maximum number of respondents opted for switch store option, followed by switch brand and delay purchase options. Total number of cases included in analysis is 1207. Number of missing cases = 0.

4.3.1 Assumptions of MNL

Assumptions of Logistic regression were looked into. First 5 points present how logistic regression gives more leeway as it has lesser restrictive assumptions than OLS.

1. Logistic regression does not assume a linear relationship between dependents and independents¹⁸.
2. The dependent variable need not be homoscedastic for each level of independents; that is, there is no homogeneity of variance assumption.

¹⁸ It may handle nonlinear effects even when exponential and polynomial terms are not explicitly added as additional independents because the logit link function on the left-hand side of the logistic regression equation is non-linear. The dependent variable need not be normally distributed (but does assume its distribution is within the range of the exponential family of distributions, such as normal, Poisson, binomial, gamma).

3. Normally distributed error terms are not assumed.
4. Logistic regression does not require that independents be interval.
5. Logistic regression does not require that independents be unbounded.

However, some other assumptions still apply and were taken care of as follows. :

6. Error terms are assumed to be independent. Special methods (SPSS NOMREG, for instance) are available to adapt logistic models to handle non-independent data. Since SPSS was used this assumption is taken care of.
7. Absence of multicollinearity assumption was checked via VIF figures mentioned in section 4.2.
8. Another assumption relates to linearity¹⁹, that is, linear relationship between the logit of the independents and the dependent. Such linearity was assumed to be present.

4.3.2 Preliminary results

In next step, a Global tests of parameters was done to test hypothesis that all β 's = 0. For this a likelihood ratio chi-square test was used, which gave following model fitting information (table 4.6):

TABLE 4.6: Model Fitting Information

Model	-2 Log Likelihood ²⁰	Chi-Square	Sig.
Intercept Only	2262.949		
Final	1984.339	278.610	.000

-2 Log Likelihood (-2LL) also called the Deviance (DEV) is measure of how well estimated model fits the likelihood. A good model is one that results in a high likelihood of observed results. Subscripts are used to denote which model the deviance applies to. The smaller the deviance is, the better the model fits the data.

¹⁹ Logistic regression does not require linear relationships between independents and dependent, as does OLS regression.

²⁰ Probability of observed results given parameter estimates is known as *likelihood*. Since likelihood is a small number less than 1, it is customary to use -2 times the log of likelihood.

“Initial log likelihood function” or “intercept only log likelihood function” ($-2LL_0$, DEV_0 are alternative ways of referring to this) is for a model in which only constant is included. This is used as the baseline against which models with independent variables are assessed. This is analogous to the Total Sums of Squares, SST, in OLS Regression. In the present case,

$$DEV_0 = 2261.847.$$

Final model statistics (when all independent variables are included) showed final model $-2 \log$ likelihood (also called DEV_M) is considerably less than DEV_0 .

$$DEV_M = 1983.701$$

$-2LL$ for a full model indicates the extent to which full model fails to perfectly predict values of DV, i.e. it tells how much improvement is needed before predictors provide best possible prediction of dependent variable. DEV_M is analogous to Error (unexplained) Sums of Squares (SSE) in OLS regression. Addition of 13 variables to “intercept only model” reduces $-2LL$ by 278.146, i.e.

$$\begin{aligned} DEV_0 - DEV_M \\ &= 2261.847 - 1983.701 \\ &= 278.146. \end{aligned}$$

$DEV_0 - DEV_M$ is Model Chi-square (also called Model L^2 or G_M), for degrees of freedom = 13. Model Chi-Square is analogous to Regression (explained) Sums of Squares, SSR, in OLS regression. It is also the direct counterpart to the Global F Test in regression analysis. A significant value tells that one or more betas differ from zero, but it doesn't tell which ones. Significance level for model chi-square indicates that this is a very large drop in chi-square, ergo null hypothesis (all β 's = 0) is rejected. The effect of at least one of the IVs likely differs from zero.

For assessing Model Fit or total variance “explained”, R^2 -like measure for Multinomial logistic regression (MNL) regression, ‘Nagelkerke’s R-Square’ (measures strength of association)²¹ was examined. Nagelkerke's R-Square = .243, meaning that 24.3% of the variance in behavioral options can be accounted for by all independent variables.

MNL was run on SPSS 11.5 (to generate parameter estimates) and on Stata 9.1 (for obtaining marginal impact of independent variables in terms of marginal probabilities) to assess effects of which IVs differ from zero. For same purpose Likelihood Ratio Chi-Square Tests or Incremental Tests (stepwise logistic regression)²² were also used from logistic regression outputs (table 4.7). Incremental chi-square square statistic was used to compare constrained and unconstrained models. The difference between deviances of constrained and unconstrained models has a chi-square distribution with degrees of freedom equal to number of constraints.

Results show that L^2 for 10 out of 13 independent variables are significant at $p \leq .05$, and therefore have real non-zero values. Corresponding L^2 values tell how much more error is made when each of these variables are dropped, one at a time from final model. Significant variables in order of importance are shown in table 4.8. However, not “all” these variables having a statistically significant impact on dependant variable will necessarily also be statistically significant separately for all 3 categories (switch brand, switch store and delay) of dependant variable.

²¹ There is no widely accepted direct analog to OLS regression's R^2 . This is because an R^2 measure seeks to make a statement about "percent of variance explained," but variance of a dichotomous or categorical dependent variable depends on frequency distribution of that variable. For a dichotomous dependent variable, for instance, variance is at a maximum for a 50-50 split and the more lopsided the split, the lower the variance.

²² Incremental chi-square test can be understood as given below:

$$\text{Chi square} = L^2 = \text{DEV}_{\text{Constrained}} - \text{DEV}_{\text{Unconstrained}}$$

Degrees of freedom. = Number of constraints

If the resulting chi-square value is significant, stick with the unconstrained model; if insignificant then the constraints can be justified.

TABLE 4.7: Likelihood Ratio Tests

Effect	-2 LL of Reduced Model	Chi-Square	Sig.
Intercept	1984.339(a)	.000	
Specific time constraint	1985.125	.786	.675
Type of shopping trip	1997.470	13.130	.001
General time constraint	2011.481	27.142	.000
Store loyalty	2022.252	37.912	.000
Shopping attitude of consumers	1987.563	3.224	.199
Shopping frequency	1992.210	7.871	.020
Availability of acceptable alternative store	2010.351	26.012	.000
Store distance	1995.930	11.591	.003
Perceived inter-store distance	1990.567	6.228	.044
Perceived store price	1999.047	14.708	.001
Availability of acceptable alternative items	2017.478	33.139	.000
Deal proneness	1985.619	1.280	.527
Brand loyalty	2063.462	79.123	.000

(a) This reduced model is equivalent to the final model because omitting the effect does not increase degrees of freedom.

4.3.3 Parameter estimates

Parameter estimates are effect sizes and may be expressed in unstandardized or standardized form. While standardized parameter estimates indicate variable importance and can be used to compare relative strength of independents; unstandardized logit shows independent variable's impact (in terms independent variable's unit of measurement) on log odds of dependant ("logits" refers to unstandardized logistic regression coefficients or effect coefficients or "parameter estimates"²³). An unstandardized beta coefficient exists for each independent variable and for constant. Logistic regression model is:

²³ If an independent variable has a logit of .40, this means *logged odds* of dependent change by a factor of 40%.

Log odds (dependent variable) = (B for Var 1)* Var 1 + (B for Var 2)*Var2 + ... + (B for Var n)*Var n + (B for the constant*Constant).

Note: Var stands for variable

TABLE 4.8: Selected significant variables in order of importance

	-2 LL Reduced Model	Chi-Square	Sig.
Brand loyalty	2063.462	79.123	.000
Store loyalty	2022.252	37.912	.000
Availability of acceptable alternative items	2017.478	33.139	.000
General time constraint	2011.481	27.142	.000
Availability of acceptable alternative store	2010.351	26.012	.000
Perceived store price	1999.047	14.708	.001
Type of shopping trip	1997.470	13.130	.001
Store distance	1995.930	11.591	.003
Shopping frequency	1992.210	7.871	.020
Perceived inter-store distance	1990.567	6.228	.044

However, for comparison of relative strength of independent variables, odds ratios are preferred over standardized logit coefficients²⁴. While latter indicates independent variables' impact in terms of "effect on dependent variable's logged odds" odds ratios use "actual odds of dependent variable". Latter is more intuitive. For conceptual clarity on odds ratio and logit coefficients (in terms of probability) see appendix 7.

²⁴ Additionally, SPSS does not output standardized logit coefficients but if one standardizes one's input data first, then logit coefficients will be standardized logit coefficients. Alternatively, one may multiply unstandardized logit coefficients times standard deviations of corresponding variables, giving a result, which is not standardized logit coefficient but can be used to rank relative importance of independent variables.

"Parameter Estimates" generated (table 4.9) has (k-1) tiered sections, where k= the number of categories of the dependent and last (kth) category is omitted as reference category²⁵. Each tier will have rows for intercept, continuous variables, and dummy value of categorical variables. Larger odds ratios within a tier indicate bigger effect of variables on dependent category. As no respondents choose "cancel purchase"; k = 3 resulting in (k – 1) = 2 tiers. Interpretation of odds ratio is made by comparison with omitted reference category. When odds ratio = 1, independent variable has no impact on change in dependant variable. Thus one is interested in those variables where the odds ratio is different from 1.0.

TABLE 4.9: Parameter Estimates

BEHOP (a)		B	Sig.	Exp (B)
Delay purchase	Intercept	1.785	.174	
	SPTC Specific time constraint	-.017	.736	.983
	Type of shopping trip =m*	.148	.524	1.159
	Type of shopping trip =mn*	0(b)	.	.
	General time constraint	-.056	.002	.946
	Store loyalty	-.182	.005	.834
	Shopping attitude of consumers	-.148	.136	.863
	Shopping frequency	.120	.016	1.127
	Availability of acceptable alternative store =na*	-.893	.005	.410
	Availability of acceptable alternative store =a*	0(b)	.	.

²⁵ Category of dependant variable where frequency is highest and which is therefore typically the group of highest interest is made reference category and is omitted.

TABLE 4.9 continued: Parameter Estimates

BEHOP (a)		B	Sig.	Exp (B)
Delay purchase	Store distance	.033	.001	1.034
	Perceived inter-store distance	-.023	.090	.977
	Perceived store price	-.178	.302	.837
	Availability of acceptable alternative items	.154	.004	1.166
	Deal proneness	-.013	.756	.987
	Brand loyalty	-.109	.115	.897
Switch brand	Intercept	9.471	.000	
	SPTC Specific time constraint	-.035	.381	.966
	Type of shopping trip =m*	-.638	.001	.528
	Type of shopping trip =mn*	0(b)	.	.
	General time constraint	.043	.001	1.044
	Store loyalty	-.279	.000	.757
	Shopping attitude of consumers	.043	.554	1.044
	Shopping frequency	-.030	.445	.971
	Availability of acceptable alternative store =na*	-1.075	.000	.341
	Availability of acceptable alternative store =a*	0(b)	.	.
	Store distance	.007	.431	1.007
	Perceived inter-store distance	-.024	.033	.977
	Perceived store price	-.503	.000	.605
	Availability of acceptable alternative items	-.176	.000	.839
	Deal proneness	-.035	.259	.966
	Brand loyalty	-.383	.000	.682
<p>(a) The reference category is: switch shop. (b) This parameter is set to zero because it is redundant. (c) * m = major; mn = minor; na = non-availability; a = availability (d) BEHOP = Behavioral option chosen in case of stock out of desired item</p>				

Results show that impact of not all variables on dependant categories is significant. Variable with statistically significant odds ratio ($p \leq 0.05$) are shown in table 4.10.

TABLE 4.10: Statistically significant odds ratio

BEHOP (a)		Sig.	Exp (B)
Delay purchase	General time constraint	.002	.946
	Store loyalty	.005	.834
	SHOPFREQ	.016	1.127
	Availability of acceptable alternative store =na*	.005	.410
	Availability of acceptable alternative store =a*	.	.
	Store distance	.001	1.034
	Availability of acceptable alternative items	.004	1.166
Switch brand	Type of shopping trip =m*	.001	.528
	Type of shopping trip =mn*	.	.
	General time constraint	.001	1.044
	Store loyalty	.000	.757
	Availability of acceptable alternative store =na*	.000	.341
	Availability of acceptable alternative store =a*	.	.
	Perceived inter-store distance	.033	.977
	Perceived store price	.000	.605
	Availability of acceptable alternative items	.000	.839
	Brand loyalty	.000	.682
(a) The reference category is: switch shop.			
(b) This parameter is set to zero because it is redundant.			
(c) m = major; mn = minor; na = non-availability; a = availability			
(d) BEHOP = Behavioral option chosen in case of stock out of desired item			

Interpretation of odds ratio: Delay purchase

1. Odds ratio for general time constraint general time constraint is .946: means that when General time constraint General time constraint increases by 1 unit, odds that dependent = switch store, decreases by a factor of .946 (by about 5.4%), with other variables controlled.
2. Odds ratio for store loyalty is .834: means that when store loyalty increases by 1 unit, odds that dependent = switch store, decreases by a factor of .834 (by about 16.6 %), with other variables controlled.
3. Odds ratio for shopping frequency is 1.127 means that when shopping frequency increases by 1 unit, odds that dependent = switch store, increase by a factor of 1.127 (by about 12.7%), with other variables controlled.

Note: For nominal independent variable which is a dichotomy, an odds ratio above 1.0 means that odds of getting reference category of dependent variable are greater.

4. Odds ratio for availability of acceptable alternative store = na is 0.410: means odds of getting switch store on dependent variable for respondents who face non-availability of acceptable alternative shops is 0.410 times odds of getting switch store on dependent variable for respondents who face availability of acceptable alternative shops.
5. Odds ratio for store distance = 1.034: when store distance increases by 1 unit, odds that dependent = switch store, increase by a factor of 1.034 (by about 3.4%) with other variables controlled²⁶.
6. Odds ratio for availability of acceptable alternative items is 1.166: means that when availability of acceptable alternative items increases by 1 unit, odds that dependent = switch store, increase by a factor of 1.166 (by about 16.6 %), with other variables controlled.

Interpretation of odds ratio: Switch brand

1. Odds ratio for type of shopping trip = m is 0.528: means that odds of a major trip consumer choosing switch store on dependent variable is 0.528 times the odds that minor trip consumer would choose switch store.

²⁶ Same content can be expressed as: when SDIST increases by 1 unit, odds that respondent will choose to switch store to odds that respondent will delay purchase is = 1.034.

2. Odds ratio for general time constraint is 1.044: means that when general time constraint increases by 1 unit, odds that dependent = switch store, increase by a factor of 1.044 (by about 4.4) when other variables are controlled
3. Odds ratio for store loyalty is 0.757: means that when store loyalty increases 1 unit, odds that dependent = switch store, decreases by a factor of 0.757 (decreases by about 24.3 %) when other variables are controlled.
4. Odds ratio for availability of acceptable alternative store = na is 0.341: means that odds of a consumer who has “acceptable alternative stores not available” choosing switch store on dependent variable is 0.341 times the odds that a consumer who has “acceptable alternative stores available” would choose switch store.
5. Odds ratio for perceived inter store distance is 0.977: means that when perceived inter store distance increases by 1 unit, odds that the dependent = switch store, decreases by a factor of 0.977 controlling for other variables.
6. Odds ratio for perceived store price is 0.605: means that when perceived store price increases by 1 unit, odds that dependent = switch store, decreases by a factor of 0.605 (decreases by about 39.5 %) when other variables are controlled.
7. Odds ratio for availability of acceptable alternative items is 0.839: means that when availability of acceptable alternative items increases by 1 unit, odds that dependent = switch store, decreases by a factor of .839 (decreases by about 16.1 %) when other variables are controlled.
8. Odds ratio for brand loyalty is 0.682: means that when brand loyalty increases by 1 unit, odds that dependent = switch store, decreases by a factor of .682 (decreases by about 31.8 %) when other variables are controlled.

As mentioned earlier, logits is not very intuitive and are converted to odds ratios before interpreting. An even better method (especially for practitioners) is to understand impact of independent variables on dependant in terms of marginal effects of former on each dependant variable category (here, each stockout response) probability or choice probability. MNL was run again on Stata 9.1 for obtaining marginal impact of independent variables in terms of marginal probabilities. Table 4.11 shows marginal impact of explanatory variables on stockout reaction probabilities. Later in chapter on Findings and Discussion, marginal

effects statistics are obtained for present study is compared to earlier 2 studies (Campo *et al.* 2000; Zinn and Liu, 2001) that have closest resemblance to present study.

Interpretation can be done like this: coefficient for variable store distance, is 0.0027 for delay, .0015 for switch brand and – 0.0042 for switch store: it means that that one unit increase in value of store distance will increase the probability that average consumer will react to stockout by (1) delaying by 0.0027 (or 0.27%) (2) switching brand by 0.15%. Probability of switch store will decrease by 0.42%.

TABLE 4.11: Marginal impact of explanatory variables on OOS reaction probabilities

Sl.no.	Variables	Switch brand	Switch store	Delay
1	Specific time constraint	NS [#]	NS	NS
2	Type of shopping trip (m)	-0.122^a	0.086^b	NS
3	General time constraint	0.0101^a	NS	-0.0069^a
4	Store loyalty	-0.047^a	0.0586^a	-0.0116^c
5	Shopping attitude of consumers	0.0401^a	NS	-0.0317^a
6	Shopping frequency	NS	NS	0.0122^c
7	Availability of acceptable alternative stores (na)	-0.194^a	0.2497^a	NS
8	Store distance	NS	-0.0042^b	0.0027^a
9	Perceived inter store distance	-0.004^b	0.0056^a	NS
10	Perceived store price	-0.094^a	0.0985^a	NS
11	Availability of acceptable alternative items	-0.038^a	0.0183^b	0.0198^a
12	Deal proneness	NS	NS	NS
13	Brand loyalty	-0.07^a	0.0701^a	NS

NS = not significant

(*) dy/dx is for discrete change of dummy variable from 0 to 1

Superscript a means 1% significance level

Superscript b means 5% significance level

Superscript c means 10% significance level

4.3.4 Hypothesis results

Hypothesis H1b to H13b were examined in light of marginal effects statistics in table 4.11. Specific time constraint had insignificant impact on all behavioral options, rejecting H1b Impact of type of shopping trip on delay option is insignificant but significant for the other 2 options. When type of type of shopping trip changes from major to minor, probability for switch brand will decrease while for switch store would increase. Conversely, it can also be said that consumer on a major trip would be more likely to switch brand that switch stores. Thus H2b is supported.

Impact of general time constraint was significant for 2 options: switch brand and delay. Direction of impact was as hypothesized: increased general time constraint increased likelihood of switch brand and decreased likelihood of delay. Thus H3b was accepted.

Store loyalty had significant impact on all options. Worsening store loyalty decreases likelihood of brand switch and delay, but increase probability of store switch. H4b was therefore accepted. Again marginal effects for shopping attitude of consumers matched hypothesized direction. However impact was significant only for switch brand and delay. Present results indicate worsening shopping attitude of consumers (more negative attitude) increases probability of switch brand and decreases likelihood of delay. Thus H5b is supported.

Shopping frequency had significant impact on delay option. Higher shopping frequency increases chance of delay, supporting H6b. Availability of acceptable alternative store's impact was as expected. Presence of acceptable alternative stores decreases probability of brand switch and increase probability of store switch. Impact on 'defer' was insignificant. H7b was accepted. Store distance had significant effects on switch store and delay. However direction of effects was contrary to expectation: increase in store distance increased likelihood of delay and decreased store switch chance. Thus, H8b was rejected.

Availability of acceptable alternative items had significant impact on all behavioral options: As availability of acceptable alternative items becomes worse, probability of brand switch decreases and probabilities of both store switch and delay increases: as expected. Therefore, H9b was accepted. Deal proneness had insignificant impact on all behavioral options. H10b was rejected. Brand loyalty had significant impacts on switch brand and switch store in hypothesized direction. Therefore H11b was accepted.

For perceived inter-store distance, results show significant impacts on 2 options: switch brand and switch store: but with contradictory direction. Therefore H12b is rejected. Finally, perceived store price had significant impact on switch brand and switch store. Results indicate that when perceived store price worsens, chances of switch brand decrease and likelihood of switch store increases. Therefore H13b is accepted.

4.4 Relationship between attitude and independent variables

In first step assumptions of multiple regression were checked on data. Next Multiple regression and stepwise multiple regression were run on SPSS 11.5.

4.4.1 Assumptions of multiple regression

1. This section lists the assumptions and corresponding verification for assumptions of multiple regression.
2. Similar to many other studies on complex consumer behavior, linearity between dependant and independent variables has been assumed.
3. Assumption about use of continuous data (interval or ratio) was met as dummy were used as independents while dependent variable was interval scale
4. Assumption about perfect multicollinearity²⁷ was assured as VIF values (from 1.032 to 1.773) for all independent variables were below the acceptable cut off limit of 4.0 (table 4.3).
5. Assumption about partial multicollinearity²⁸. As VIF values obtained were quite low, this was taken care of.
6. Normally distributed residual error is another assumption. A histogram of standardized residuals showed a roughly normal curve²⁹ (Chart 4.1). Central limit theorem assures that

²⁷ Perfect multicollinearity occurs if independents are linear functions of each other (ex., age and year of birth), when the researcher creates dummy variables for all values of a categorical variable rather than leaving one out, and when there are fewer observations than variables.

²⁸ When there is high but imperfect multicollinearity, standard errors of the regression coefficients will become inflated and reliability of coefficients suffers

even when error is not normally distributed, when sample size is large, sampling distribution of b coefficient will still be normal. Therefore violations of this assumption usually have little/no impact on conclusions for large samples. In present study, sample size = 1207, is fairly large and reliance on central limit theorem takes care of this assumption

Histogram

Dependent Variable: attitude towards the store

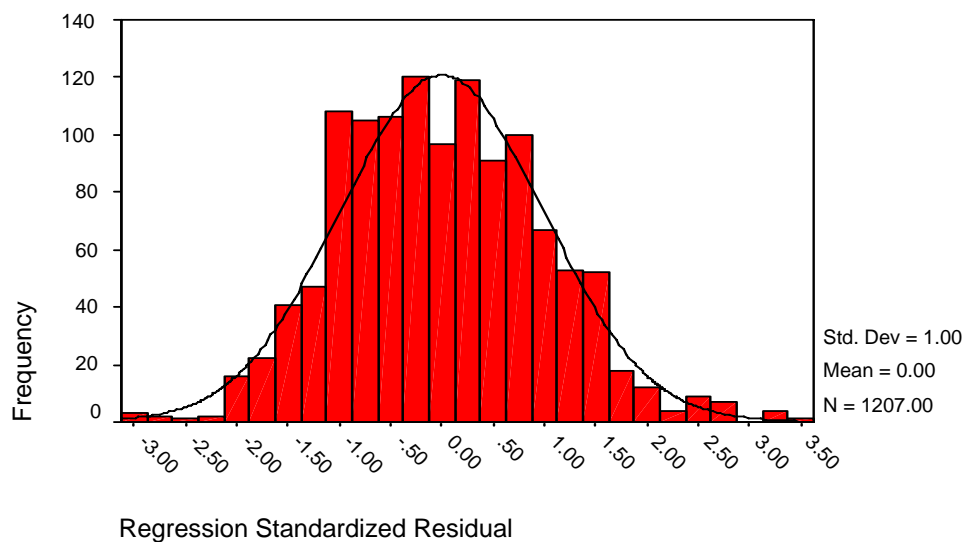


CHART 4.1: Histogram of standardized residuals

²⁹ An alternative for the same purpose is the normal probability plot, with the observed cumulative probabilities of occurrence of the standardized residuals on the Y axis and of expected normal probabilities of occurrence on the X axis, such that a 45-degree line will appear when observed conforms to normally expected.

7. Another assumption relates to presence of homoscedasticity³⁰: A condition under which the response variable (y) has a constant variance for all values of x. “No outliers” method was used in which outliers (a form of violation of homoscedasticity) were detected in “analysis of residuals and leverage statistics”. Leverage statistic, h, also called *hat-value* identifies cases which influence regression model more than others; it’s value varies from 0 (no influence on model) to 1 (completely determines model). A rule of thumb is that cases with leverage under .2 are not a problem, but if a case has leverage over .5, the case has undue leverage. Table 4.12 shows that leverage value does not cross danger line.

TABLE 4.12: Residuals Statistics

	Minimum	Maximum	Mean	Std. Deviation	N
Centered Leverage Value	.002	.125	.010	.007	1207

8. Last assumption relates to absence of autocorrelation ³¹(independent observations) leading to uncorrelated error terms. This was checked using Durbin-Watson coefficient, d, which tests for autocorrelation. The value of d ranges from 0 (extreme positive autocorrelation) to 4 (extreme negative autocorrelation). Values close to 2 indicate no serial autocorrelation. As a rule of thumb, d should be between 1.5 and 2.5 to indicate independence of observations. Table 4.13 displays d =1.689, hence no problem of autocorrelation.

³⁰ Homoscedasticity is a necessary condition for regression and variance analyses. It assures that residuals are dispersed randomly throughout the range of estimated dependent and variance of residual error should be constant for all values of independent(s). If not, separate models may be required for different ranges. Also, when this assumption is violated "conventionally computed confidence intervals and conventional t-tests for OLS estimators can no longer be justified" (Berry, pp. 81). However, moderate violations of homoscedasticity have only minor impact on regression estimates (Fox, pp. 516). Lack of homoscedasticity may mean (1) there is interaction effect between a measured independent variable and an unmeasured independent variable not in model; or (2) some independent variables are skewed while others are not.

³¹ It means that current values should not be correlated with earlier values in a data series.

TABLE 4.13: Model Summary (1)

Model	R	R ²	Adjusted R ²	Std. Error of the Estimate	Durbin-Watson
1	.707(a)	.500	.495	2.738	1.684

(a) Predictors: (Constant), major shopping trip, brand loyalty, time taken to move from home to shop, deal proneness, employment level, perceived store prices, weekly shopping frequency, non availability of acceptable alternative shops, specific time constraint of, shopping attitude of, store loyalty, time taken to move from one shop to another shop

(b) Dependent Variable: attitude towards store

4.4.2 Coefficient of determination, R²

To see if overall regression is statistically significant significance level for R² , coefficient of determination was checked in ANOVA table (4.14) showing significance of F value. Results showed that significance level for the F test is small (p < .05) and therefore R² is REAL (non-zero) and at least one B (unstandardized) is non-zero. Ergo, for overall model null hypothesis was rejected and alternative hypothesis was accepted.

TABLE 4.14: Model summary (2)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	8958.991	12	746.583	99.673	.000(a)
	Residual	8943.467	1194	7.490		
	Total	17902.457	1206			

(a) Predictors: (Constant), major shopping trip, brand loyalty, time taken to move from home to shop, deal proneness, perceived store prices, weekly shopping frequency, availability of acceptable alternatives, non availability of acceptable alternative shops, specific time constraint, shopping attitude, store loyalty, time taken to move from one shop to another shop

(b) Dependent Variable: attitude towards store

Next strength of R^2 was examined³² ; $R^2 = 0.500$ which is considered decently strong strength. Adjusted R^2 statistics was also examined³³; adjusted $R^2 = .495$, which slightly less than R^2 , showing the total number and choice of variables is proper.

4.4.3 Hypothesis results

Values and statistical significance of beta Bs coefficients were examined for hypothesis testing (table 4.15).

³² Typically values of R^2 below .11 are considered to signal a case where results are real but probably not practically important and it is against this criterion that strength of R^2 was checked.

³³ Adjusted R^2 is an adjustment for fact that when one has a large number of independents, it is possible that R^2 will become artificially high simply because some independents' chance variations "explain" small parts of variance of dependent. At extreme, when there are as many independents as cases in sample, R^2 will always be 1.0. Adjustment to formula arbitrarily lowers R^2 as $p =$ number of independents, increases. Adjusted R^2 is also regarded as percent of variance "explained in a replication, after subtracting out contribution of chance."

TABLE 4.15: Beta coefficients

Model		Unstd* coeff.		Std. *coeff.	Sig.* ³⁴	Relationship	
		B	Std. Error	B		Exp.	Obs.
1	(Constant)	-7.677	.939		.000		
	Specific time constraint	.029	.043	.015	.491	+	+
	Type of shopping trip	-.078	.205	-.008	.705	-	-
	General time constraint	.012	.014	.017	.420	-	+
	Store loyalty	.587	.050	.274	.000 (b)	+	+
	Shopping attitude of consumers	1.503	.081	.411	.000(b)	+	+
	Shopping frequency	.151	.044	.073	.001(b)	-	+
	Availability of acceptable alternative store	-.371	.278	-.034	.182	-	-
	Store distance	.042	.009	.100	.000(b)	+	+
	Perceived inter-store distance	.006	.011	.015	.592	+	+
	Perceived store price	1.749	.149	.266	.000 (b)	+	+
	Availability of acceptable alternative items	.053	.046	.024	.253	+	+
	Deal proneness	.050	.035	.030	.145	+	+
	Brand loyalty	.119	.049	.052	.016(b)	+	+

- (a) Dependent Variable: attitude towards store
- (b) Significance at less than 5%.
- (c) * Unstd. = unstandardized; std. = standardized; sig. = significance
- (d) Exp. = expected; Obs. = observed

³⁴ When significance value of B is .05, it actually means that odds of getting these sample results by chance if b were really zero would be less than 5 in 100 samples. This is a very rare event, and in such cases if direction of observed relationship between independent and dependant variables is same as expected, null hypothesis that b is zero is rejected, and alternative, i.e., that absolute value of b is something greater than zero is accepted.

To see if statistics for constant should be included in explanation; theory was checked which says that most multiple regression models include a constant term, since this ensures that model will be "unbiased"--i.e., mean of residuals³⁵ will be exactly zero; and that if sum of squared errors is to be minimized, constant *must* be chosen such that the mean of errors is zero. In simple regression model, constant represents the Y-intercept of regression line, in unstandardized form; while in multiple regression model, it represents value that would be predicted for dependent variable if all independent variables were simultaneously equal to zero. In addition to ensuring that in-sample errors are unbiased, presence of constant allows the regression line to "seek its own level" and provide the best fit to data that may only be "locally" linear. Therefore, constant was included in analysis. Significance of beta coefficient of constant was < 0.05 , and therefore considered to be statistically significant. Unstandardized beta for constant = -7.677 ; meaning that if all independent variables were simultaneously equal to zero, then value that would be predicted for consumer's attitude towards store in out-of-stock out will be = unstandardized beta coefficient of constant.

Results showed following 6 independent variables had significant beta coefficients ($p < .05$):

1. Store loyalty of respondent
2. Shopping attitude of respondent
3. Weekly shopping frequency
4. Store distance
5. Perceived store prices
6. Brand loyalty of respondent

Additionally, results showed that observed relationship was same as expected in all except one of the 6 cases, exception being weekly shopping frequency. Therefore, null hypothesis was rejected and alternative hypothesis accepted for following 5 independent variables:

1. Store loyalty of respondent
2. Shopping attitude of respondent

³⁵ Coefficients in a regression model are estimated by "least squares"--i.e., minimizing mean squared error. Now, mean squared error is equal to variance of errors plus square of their mean: this is a mathematical identity. Changing the value of constant in model changes mean of errors but doesn't affect variance.

3. Store distance
4. Perceived store prices
5. Brand loyalty of respondent

Null hypothesis for weekly shopping frequency is accepted and alternative hypothesis rejected. Other than 6 independent variables listed above, all other independent variables (7 in number) had statistically insignificant beta coefficients; therefore, null hypothesis were accepted for all 7 variables listed below:

1. Specific time constraint of respondent
2. Type of shopping trip
3. General time constraint
4. Availability of acceptable alternative shops
5. Perceived inter-store distance
6. Availability of acceptable alternative items
7. Deal proneness of respondent

It must be noted that a relationship or correlation may be statistically significant (i.e., non-zero) but that does not mean it is large or even moderate size association. How large or how strong a relationship is a different question from how statistically significant it is. However, we need to address the statistical significance question first. For 7 independent variables with statistically insignificant betas, size of their association does not matter.

Next, statistically significant beta coefficients – standardized and unstandardized are interpenetrated. SPSS prints two slopes: standardized and unstandardized. Researchers have to make a choice about which they should report or examine. Significance test of slope applies to both beta coefficients and indicates that there is a relationship between them. The unstandardized beta coefficients are used when one wants to make a definitive prediction (e.g., beta coefficient for SDIST is 0.042: this means that for a 1 minute increase in time taken to move from home to shop, attitude score becomes worse (attitude become more negative) by a score of 0.042 on 5 point Likert scale measuring attitude of consumer towards retail store in stockout where max. score is 25; similarly, beta coefficient for weekly shopping frequency is 0.151: this means that for every 1 shopping trip increase per week, attitude score becomes worse (attitude become more negative) by a score of 0.151 on maximum score of 25).

This refers to an explanation where it is seen how the statistically significant betas raise or lower scores on dependent variable. It must be noted that interpretation of unstandardized beta coefficients is difficult and useless when variables have been measured on Likert scale, where measures used do not have a meaningful scaling. Therefore, unstandardized betas were used only to construct final multiple regression model equation:

$$\mathbf{ATT = 1.503 SHOPATT + 0.587 SL + 1.749 PSPRICE + 0.042 SDIST + 0.151 SHOPFREQ + 0.119 BL}$$

In present study, all except one of 6 significant independent variables were measured on Likert scale. Ergo, it was decided to interpret standardized beta coefficients. Standardized beta coefficients can be interpreted like a correlation coefficient. It's possible values range from -1.0 to +1.0, with zero indicating no relationship. Standardized beta coefficients show how strongly each independent variable influences dependent variable and how relatively important each independent variable is within same equation. Advantage of standardized beta coefficients is that it is scale free. Table 4.16 lists only significant standardized beta coefficients in order of importance.

TABLE 4.16: Ranking independent variables

Sl. No.	Independent variables	Std. coeff.
1	Shopping attitude of consumers	.411
2	Store loyalty	.274
3	Perceived store price	.266
4	Store distance	.100
5	Shopping frequency	.073
6	Brand loyalty	.052

Results from above table show that shopping attitude of consumers of respondents is the most important variable affecting consumer attitude towards retail store in an out-of-stock while brand loyalty is the least important. Relative importance of each independent variable can also be assessed. For example, shopping attitude of respondents is 1.5 times as important as store loyalty of respondent, and shopping attitude of respondents is 7.9 times as important

as brand loyalty. Next, the beta weights were assessed in terms of literally naming the level of their strengths. Accordingly, while shopping attitude of consumers, store loyalty and perceived store price can be designated as having moderate impact; store distance, shopping frequency and brand loyalty can be said to have weak impact on attitude towards store.

Next, data was analyzed using stepwise regression for examining R^2 increments (additional explanatory importance excluding common variance it shares with independents entered in earlier steps). Stepwise regression gives a list of significant independent variables only. This helps in assessing a variable's importance.

“Ratio of squared beta weights indicates each independent variable's R-square increment” is incorrect, as beta weights for equation in final step of stepwise regression do not partition R^2 into increments associated with each independent because beta weights are affected by variables present in equation. While beta weights estimate relative predictive power of each independent, controlling for all other independent variables in equation for a given model; R^2 increments estimate predictive power an independent variable brings to analysis when it is added to regression model, as compared to a model without that variable. Beta weights compare independents in one model, whereas R^2 increments compare independents in two or more models.

Stepwise regression criteria was fed as probability-of-F-to-enter ≤ 0.050 , probability-of-F-to-remove ≥ 0.100 . Stepwise regression added 6 variables. Table 4.17 shows R^2 increments and statistics for F-test (F-test tests significance of R^2 increments). Shopping attitude is best correlated with dependent: ergo included in 1st in equation.

TABLE 4.17: Model Summary- stepwise regression

Model	R	R Square	Change Statistics				
			R Square Change	F Change	df1	df2	Sig. F Change
1	.557(a)	.310	.310	540.706	1	1204	.000
2	.650(b)	.422	.112	233.558	1	1203	.000
3	.693(c)	.480	.058	133.541	1	1202	.000
4	.700(d)	.490	.010	23.714	1	1201	.000
5	.703(e)	.495	.005	11.214	1	1200	.001
6	.706(f)	.498	.003	7.508	1	1199	.006

- (a) Predictors: (Constant), shopping attitude of respondent
- (b) Predictors: (Constant), shopping attitude of respondent, store loyalty of respondent
- (c) Predictors: (Constant), shopping attitude of respondent, store loyalty of respondent, perceived store prices
- (d) Predictors: (Constant), shopping attitude of respondent, store loyalty of respondent, perceived store prices, store distance
- (e) Predictors: (Constant), shopping attitude of respondent, store loyalty of respondent, perceived store prices, store distance, weekly shopping frequency
- (f) Predictors: (Constant), shopping attitude of respondent, store loyalty of respondent, perceived store prices, store distance, weekly shopping frequency, brand loyalty of respondent
- (g) Dependent Variable: attitude towards store

In the output for F test of differences between two regression models where one includes an additional variable and the other model does not, one column in the table gives F change, which is same as F incremental.

Thus, F change = F incremental

$$= [(R_2^2 - R_1^2)/(k_2 - k_1)] / [(1-R_2^2)/(n - k_2 - 1)]$$

Where

- (a) R_2^2 = R-square for second
- (b) R_1^2 = R-square for first model (ex. without any added independent)
- (c) n = total sample size
- (d) k_2 = number of predictors in second model

(e) k_1 = number of predictors in first model

(f) F has $(k_2 - k_1)$ and $(n - k_2 - 1)$ degrees of freedom and tests null hypothesis that R^2 increment between the two models is not significantly different from zero.

In the above table it is seen that df 1 is equal to 1 for all the steps as only one independent variable is added at each step. Calculations for df 2 have been done for second model below: For second model of “Predictors: (Constant), shopping attitude of respondent, store loyalty of respondent”:

(a) $n = 1207$

(b) $k_2 = 3$

(c) $k_1 = 2$

Therefore, $df\ 2 = 1207 - 3 - 1 = 1207 - 4 = 1203$ for 2nd model.

F change values together with df gives significance of F change. All values of significance of F change were < 0.05 , which shows that all R^2 changes are significant.

4.5 Attitude behavior correlation results

Introduction and literature review showed why one would expect attitude to influence behavior and therefore to be correlated to behavior. For generating attitude (interval)-behavior (nominal) correlation statistics, statistical test chosen was statistic, eta, used when one variable is nominal and other is interval. Eta is a coefficient of nonlinear association. For linear relationships, eta equals correlation coefficient (Pearson's r). Theory about statistic "eta" says that one variable must be interval or ratio in level. Typically, this is dependent variable, particularly when one is giving a "variance explained" interpretation to eta. However, eta can be computed with either variable considered as dependent. If eta is significant, two variables are not independent. Eta was obtained using SPSS 11.5. SPSS outputs 2 values of eta: one in which nominal variable is dependent and other value for interval variable as dependant. Latter value was chosen where “behavioral option” was dependant variable and “attitude of the respondent towards retail store in out-of-stock” was independent variable (table 4.18).

TABLE 4.18: Attitude behavior correlation coefficient

		Value
Nominal by Interval Eta	Behavioral option Dependent	.121

Results showed $\eta = 0.121$. Given that like other forms of correlation and association, eta cannot prove causal direction, only measures correlation level (given researcher's assumption of causal direction) eta has no sign and varies from 0 to 1.0. Eta value of 0.121 can be best interpreted as slightly better than small association between 2 variables considered.

CHAPTER 5

FINDINGS AND DISCUSSION

5.1 Chapter framework

Similar to chapter on Results, findings and corresponding discussion on 3 major areas of this study have been arranged in following framework:

1. Findings and corresponding discussion on influence of independent moderating variables on consumer's attitude towards retail store in a retail out-of-stock.
2. Findings and corresponding discussion on influence of independent moderating variables on consumer's behavioral response in a retail out-of-stock.
3. Findings and corresponding discussion on relationship between behavioral responses and attitudinal responses.
4. Major findings in a nutshell.

5.2 Relationship between independent variables and behavioral responses

Salient features of frequency of 4 behavioral options were identified. Case-processing summary reported in table 4.3 showed (1) none of 1207 respondents had opted for “cancel” behavioral option and (2) frequency distribution had following pattern: switch brand (N= 360; 29.8%), switch store (N= 696; 57.7 %), and delay purchase (N= 151; 12.5%). Thus, maximum respondents opted for switch store. This finding about no one choosing cancel option was not found in any of the earlier studies. It suggests that present study respondents have a more determined and definite mindset if a particular purchase has to be made and simply finding that the product is not there does not change their plan to buy from the product category. This also means that once such a consumer has planned to buy an item a sale is definite. Secondly, switch store response had maximum proportion of respondents similar to many other studies (Schary and Christopher, 1979; Emmelhainz *et al.*, 1991a & b). However, reaffirmation of Zinn and Liu's (2001) view that these numbers do not contribute much to understanding of out-of-stock situations was found.

5.2.1 Impact of independent variables

Chi square values and corresponding significance values for independent variable given in the table 4.7, which refers to effect of independent variables on overall model show that 10 out of 13 independent variables are statistically significant at $p \leq 0.05$. Additionally, while table 4.11 shows marginal impact of explanatory variables on stockout reaction probabilities, table 5.2 shows the marginal probability statistics for earlier and present studies. This section enumerates findings comparing them simultaneously with results from 2 studies: Campo *et al.* (2000) {11 variables} and Zinn and Liu (2001) {2 variables}.

It must be noted that this study did not attempt to make any cross category comparisons and therefore results quote only value for marginal probability for each independent variable's impact on a specific behavioral option, like Zinn and Liu (2001) and unlike Campo *et al.* (2000) who considered 2 product categories separately. To compare results, therefore, only 'cereals' product category has been chosen from Campo *et al.* (2000), as it was intuitively felt that involvement level of cereals matches better with average involvement level of products considered here.

Specific time constraint had insignificant impact on all behavioral options unlike Campo *et al.* (2000) study (significant impact on all 3 options). A possible explanation for why specific time constraint was insignificant could be that respondents did not differ much on this variable in the study's settings. Campo *et al.* (2000) found this variable to have a statistically insignificant impact on response options in the margarine category and a weak but statistically significant impact in the cereals category.

Impact of type of shopping trip on delay option is insignificant but significant for the other 2 options. When type of shopping trip changes from major to minor, probability for switch brand would decrease (12.2 %) while probability for switch store would increase (8.6 %). Conversely, it can also be said that consumer on a major trip would be more likely to switch brand than switch stores. Campo *et al.* (2000) found type of shopping trip to significantly affect behavioral options but they found the impact to be small.

TABLE 5.1: Marginal impact of explanatory variables on stockout reaction probabilities: earlier and present studies

Sl.no.	Variables	Switch brand		Switch store		Delay	
		PS 1	PS 2	PS 1	PS 2	PS 1	PS 2
1	Specific time constraint	NS	0.0104	NS	-0.0230	NS	0.0117
2	Type of shopping trip (m)	-0.122^a	0.0170	0.086^b	0.0065	NS	0.0398
3	General time constraint	0.0101^a	0.0436	NS	NS	0.0069^a	0.0508
4	Store loyalty	-0.047^a	0.0060	0.0586^a	-0.0131	0.0116^c	0.0067
5	Shopping attitude of consumers	0.0401^a	-0.0611	NS	0.0016	0.0317^a	0.0648
6	Shopping frequency	NS	NS	NS	NS	0.0122^c	NS
7	Availability of acceptable alternative store (na)	-0.194^a	NS	0.2497^a	NS	NS	NS
8	Store distance	NS	NS	-0.0042^b	NS	0.0027^a	NS
9	Perceived inter-store distance	-0.004^b	NS	0.0056^a	NS	NS	NS
10	Perceived store prices	-0.094^a	0.0508	0.0985^a	-0.1696	NS	0.1188
11	Availability of acceptable alternative items	-0.038^a	0.0923	0.0183^b	-0.0055	0.0198^a	-0.0806
12	Deal proneness	NS	NS	NS	NS	NS	NS
13	Brand loyalty	-0.07^a	-0.1029	0.0701^a	0.0061	NS	0.0648

(*) dy/dx is for discrete change of dummy variable from 0 to 1

PS1: Present study

PS2: earlier studies (Campo et al. Zinn and Liu studies)

Superscript a means 1% significance level;

Superscript b means 5% significance level

Superscript c means 10% significance level

NS = Not significant

Impact of general time constraint was significant for two options: switch brand and delay as compared to all three options for Campo *et al.* (2000) results. Direction of impact as

seen in Campo *et al.* (2000): that increased general time constraint would increase likelihood of switch brand and decrease likelihood of delay.

Store loyalty had significant impact on all options like Campo *et al.* (2000) results. Worsening store loyalty decreases likelihood of brand switch (by 4.7 %) and delay, but increase probability of store switch (by 5.86%). A comparison of marginal probability figures for 2 studies (present and Campo *et al.* (2000) however shows exactly opposite signs for each cell in the row for store loyalty. This is because, while in Campo *et al.* (2000) study higher scores on store loyalty meant higher loyalty, in present study, higher scores meant lower loyalty.

Again marginal effects for shopping attitude of consumers matched Campo *et al.* (2000) results in direction. However impact was significant only for switch brand and delay in Campo *et al.* (2000) study. Present results indicate worsening shopping attitude of consumers (more negative attitude) increases probability of switch brand (4.01%) and decreases likelihood of delay (3.17 %).

Shopping frequency had significant impact on delay option while Campo *et al.* (2000) study showed insignificant effect on all behavioral options. Higher shopping frequency increases chance of delay (21.22 %) as could be expected. Presence of acceptable alternative stores decreases probability of brand switch (19.4 %) and increase probability of store switch (24.97 %). Impact on 'defer' was insignificant.

Store distance had significant effects on switch store and delay. Campo *et al.* (2000) study showed insignificant impact on all options. However direction of effects was contrary to expectation: increase in store distance increased likelihood of delay and decreased store switch chance. The impact of store distance can be explained like this: most of the respondents quoting high value for store distance, were located in relatively sparsely populated regions where shops were very few, very distantly located, so that switching store would demand more resources than revisiting same store later. Conversely for respondents located in relatively thickly populated areas, store distance was low and perceived inter-store distance was also low.

Availability of acceptable alternative items had significant impact on all behavioral options: As availability of acceptable alternative items becomes worse, probability of brand switch decreases (3.8 %) and probabilities of both store switch (1.83%) and delay (1.98 %)

increases: as expected. Marginal probability figures for Campo *et al.* (2000) and present study shows exactly opposite signs for each cell in the row for availability of acceptable alternative items. This is because, while in Campo *et al.* (2000) study, higher scores on availability of acceptable alternative items meant better availability, in present study, higher scores meant lower availability.

Deal proneness had insignificant impact on all behavioral options, like Campo *et al.* (2000) results. Deal proneness's impact could be insignificant for 3 reasons: One, since in Indian unorganized retailing, promotions are typically run by marketers of branded items and almost never by retailers, consumers have very few opportunities to practice switching in response to deals. Two, respondents pointed out that they generally considered items on deal to be of a lower quality/defective/old, which is very likely to reduce their involvement in deals. Three, unorganized stores do not differ in type/amount of deals they offer (they hardly offer any deals).

Brand loyalty had significant impacts on switch brand and switch store in expected direction {It strongly decreases probability (by 7%) of switching brand while substantially increasing probability (by 7%) of switching store to obtain the favorite brand}.

For perceived inter-store distance, results show significant impacts on 2 options: switch brand and switch store: but with contradictory direction to Zinn and Liu (2001) study which found insignificant impacts on all options they considered. Impact of perceived inter-store distance has been significant but weird and for which no explanation seems to be forthcoming.

Finally, perceived store price had significant impact on switch brand and switch store. Results indicate that when perceived store price worsens, chances of switch brand decrease (9.4 %) and likelihood of switch store (9.85%) increases like Zinn and Liu (2001) study findings. Zinn and Liu (2001) study found significant effects for delay purchase also.

Overall, study results showed that they are only partially consistent with earlier studies. On one hand, impacts of 8 out of 13 variables, namely, type of shopping trip, general time constraint, store loyalty, shopping attitude, availability of acceptable alternative items, deal proneness, brand loyalty and perceived store price were exactly like the earlier studies: all of these variables being significant except for deal proneness which was insignificant for both studies. On the other hand, remaining 5 variables, namely, specific time constraint,

shopping frequency, availability of acceptable alternative store, store distance and perceived inter-store distance showed different impacts from the earlier studies. Specific time constraint show insignificant impact (earlier study showed significant impact for this variable); remaining 4 variables were significant for the present study while all of them had insignificant impacts in the earlier studies. Impact of some variables has been in tune with expectations (type of shopping trip, general time constraint, store loyalty, shopping attitude, availability of acceptable alternative items, perceived store price, shopping frequency, availability of acceptable alternative store).

Predicted and actual outcome figures also supported the model for present population. Table 5.2 shows observed and predicted frequencies for 3 levels of dependant variable.

TABLE 5.2: Observed and predicted frequencies

Observed	Predicted			
	Delay	Switch brand	Switch shop	
Delay purchase	13	18	120	151
Switch brand	5	135	220	360
Switch shop	2	81	613	696
Total	20	234	953	1207

Hit ratio = $(13+135+613) / 1207 = .6305$.

Statistics show that this model can predict approximately 63 out of 100 times the behavioral options that can be taken by shoppers in stockout situations. Overall model is also statistically significant (table 4.6). Nagelkerke's R-Square = .243, which means that 24.3% of variance in behavioral option taken can be accounted for by independent variables considered; implying only a modest strength of association. Considering that the results show that 10 out of 13 independent variables are statistically significant in their impact on

behavioral responses; possible reason for this modest strength of association may be that the study did not consider interactions between and among the variables.

5.3 Relationship between independent variables and attitude

An important finding was that the proposed model has a moderately strong goodness of fit. Adjusted R^2 showed that choice of variables is not faulty. R^2 is not very strong possibly because interactions between and among variables have not been considered and more variables could be added to the model, like attitude of consumers just before they experienced stockout, memory strength of consumers and variables to capture emotions. The study found 6 out of 13 independent variables (shopping attitude of consumers, store loyalty, perceived store price, store distance, shopping frequency and brand loyalty) significantly affected attitude of consumers towards store in stockout ($p < .05$); as discussed under results; shopping attitude of consumers having the strongest impact.

An examination of R^2 increments derived from stepwise multiple regression, confirmed the order of strength of variables. Given below is finding and corresponding discussion about each significant independent variable.

Shopping attitude of consumers: one key finding is that shopping attitude of consumers has a substantial impact on attitude of consumers towards retail store and impact is as expected: positive shopping attitude of consumers is indirectly related to negative attitude towards store. Underlying logic is that for a consumer who has positive attitude towards shopping activity and perceives enjoyment and fun in it, obtaining desired item is only one part of the shopping trip goal. Such a consumer therefore is not bothered or agitated by out-of-stock. Also, such individuals tend to experience more positive affect (or mood) in shopping environment, as found by Beatty and Ferrell (1998), which in turn would neutralize negative affect due to frustration of not finding sought item. Additionally good mood of shopper with positive shopping attitude of consumers helps shopper in retrieving positive and mood congruent information like earlier pleasant experiences in shop/with retailer to maintain good mood, avoiding any negative information and/or eases cognitive disturbance by motivating low cognitive elaboration – all of which, ultimately protect attitude towards shop from turning negative. Finally good/bad mood directly impact consumer satisfaction/dissatisfaction respectively leading to movement towards positive/negative attitude.

Store loyalty: results show that strong store loyalty prevents attitudes towards store from becoming negative. Rational for this finding is that store loyalty which results from satisfaction with store gets converted to positive attitudes about store which in turn acts in a direction opposite to outcomes (in terms of satisfaction and attitudes) of a negative event like stockout, ensuring that net attitude towards store is not negative.

Perceived store price: results also reveal that overall perceived attractiveness of price levels of store prevents attitudes towards store from becoming negative. This impact can be understood as follows. Perceived store price determines store image, store choice and patronage patterns via processes in which perceptions, images and attitudes towards stores are formed and reformed on basis of experiences, information and needs. Attractive perceived store price helps in development of positive attitudes about store, which in turn ensures that attitude towards store in stockout remains positive.

Store distance: It was expected that for consumers who stay near to store where stockout occurs, store distance would be directly related to consumer's negative attitude towards store, which was confirmed by result. The result is supported by the literature on store choice models, which emphasize that shopper would visit store with lowest total shopping cost; so that in stockout, consumer tends to revisit store to obtain item {as store offers advantage on a certain criteria, for example price³⁶}. Coming back is more stressful and undesirable for consumer who stays farther away from store, leading to development of negative attitude.

Shopping frequency: result on shopping frequency was opposite to expected direction of impact. It was hypothesized that "in an out-of-stock, consumer's shopping frequency is indirectly related to consumer's negative attitude towards store"; while results showed opposite impact. A tentative explanation for this trend is that consumers often expect to obtain their chose brand on a following trip. However when trip frequency is high, it would mean that consumer gives very little time for retailer to obtain stockout good. This

³⁶ One thing that should be noted here is that price might not be a very important variable cost element as far as this study is concerned since there are hardly any stores in unorganized sector which have a format based on price. What might be very important for consumers could be, shopper's inherent preference for store due to factors like store service offered (some stores regularly keep fresh products) and historic store loyalty- elements in fixed component of total cost.

presents a scenario in which consumer is more demanding than system can provide leading to frustration: the higher the frequency the higher the frustration and negative attitude towards store.

Brand loyalty: result about brand loyalty was in line with expectation; that brand loyalty is indirectly related to negative attitude towards retail outlet in out-of-stock. The logic behind this finding is that when consumers see perceived differences among brands and loyalty develops in favor of a particular brand, there is a perception of loss occurring in choosing other than favorite brand. Additionally, substitution cost and transaction cost; which result from consumers' attitude towards change, or low experience with category, make consumer frustrated, inconvenienced in out-of-stock.

Remaining 7 independent variables, namely, **perceived inter-store distance, specific time constraint, availability of acceptable alternative items, availability of acceptable alternative store, type of shopping trip, general time constraint and deal proneness** were found to be statistically insignificant. A possible reason why **perceived inter-store distance, specific time constraint, availability of acceptable alternative items, availability of acceptable alternative store** is insignificant is that these variables do not differ between consumers in the study's settings. For example, the urban setup in which shops are located close by would have kept most consumers on similar levels of perceived inter-store distance. Again very few respondents said that acceptable alternative store was not available.

A possible explanation for why **type of shopping trip** is insignificant is this: type of shopping trip hypothesis was based on consideration of 3 facets of situation, (1) variable shopping utility (which does not mean much in the present setting as stores hardly follow any price formats; price being an important element of variable shopping utility); (2) ease/unease of obtaining stockout item due to differing shopping frequency (impact of this on type of shopping trip would have already got accounted for by variable shopping frequency) and (3) disutility due to urgency of purchase (this element possibly made a small contribution to type of shopping trip effect). Thus, overall impact of type of shopping trip was insignificant.

Rational for **general time constraint** being statistically insignificant seems to be "measure deficiency". General time constraint was conceptualized as 'time pressure that arises from employment of respondent' and measured as 'amount of time respondent devotes to employment'. For such respondents as housewives, college students, unemployed and

retired persons, general time constraint was recorded as zero; we rationalize that this does not represent their true “general time constraint” as even these people have to necessarily devote regularly some time to routine activities other than shopping, by which amount their general time available for shopping would less than estimated by their answers.

For **deal proneness**, statistically insignificant impact can be explained by 3 factors. One, since in Indian unorganized retailing, promotions are typically run by marketers of branded items and almost never by retailers, consumers have very few opportunities to practice switching in response to deals. Two, respondents pointed out that they generally considered items on deal to be of a lower quality/defective/old, which is very likely to reduce their involvement in deals. Three, unorganized stores do not differ in type/amount of deals they offer (they hardly offer any deals) so that deal proneness is not an important plank to base evaluations about the store on.

5.4 Attitude behavior correlation

Results on attitude behavior correlation revealed only a small relationship between 2 variables. As seen from table 4.24, value of coefficient of non-linear association “eta”, is 0.121, which can be best interpreted as slightly better than small association between 2 variables. In hindsight, many reasons seem to support why association is low. Literature (Eagly and Chaiken, chapter 4) reports a list of factors that affect attitude-behavior consistency, namely, laboratory settings, direct vs. indirect experience, measure compatibility, subjective norms, personality variables, single vs. multiple act, past behavioral experience, attitudinal qualities and prior knowledge about the attitude object.

Literature says that attitude behavior relations would differ depending on whether the data was collected by laboratory or survey methods. Hovland (1959) pointed out to this in his paper on experimental and survey studies of attitudes. Eagly and Chaiken (page 157) say that among the reasons why survey methods are more powerful in this regard are: one, that there is a tendency in survey methods to examine attitudes that are more important and involving and that therefore would have more influence on behavior; and two, survey methods assess behavior in relatively less constrained and natural situations. The present study made use of survey method of data collection and therefore this factor would have helped attitude behavior consistency determination.

Fazio and Zanna (1981) asserted that the impact of direct experience on attitude behavior relations is explained by the nature of attitudes that are based on direct experience vs. those based on indirect experience. They said that attitudes that are based on direct experience have greater clarity, are held with greater confidence and certainty than attitudes that are based on indirect experience. Again studies have found that these aspects of attitude, called *attitudinal qualities*, by Fazio and Zanna, mediate the relationship between direct experience and attitude behavior correspondence and that these attitudinal qualities correlated significantly with the extent of direct experience. In the present study, respondents are shoppers and they were asked questions about what they directly experience many times when they shopped, namely stockout situations. Thus, the presence of this factor was a positive help for probing the attitude behavior relations.

Eagly and Chaiken (page 166), discuss attitude-behavior research, and refer to the principle of compatibility, which says that attitude behavior correspondence is strengthened if researchers match their measures of attitude and behavior with respect to action, target, context and time. This study suffered from partial incompatibility, meaning that the measures used to measure attitude and behaviors were compatible on a certain factor and incompatible on another factor. Compatibility existed to the extent that the attitude measure specified a target (the store at which the respondent had come to shop and with respect to which store they were asked to visualize stockout), which was neither more general nor less general but exactly the same as the target of the specified behavior assessed in the study. Incompatibility existed to the extent that the study attempted to relate attitude towards target to single behavior; where single behavior is more specifically defined with respect to action, target, context and time while attitude towards target specifies only a target.

Another factor that can account for the differences in the magnitude of attitude-behavior relations is the influence of many variables together called 'subjective norms'. As Eagly and Chaiken (page 193) have mentioned, these nonattitudinal variables are substantial predictors of behavior when attitude towards targets is used as predictors. Examples of factors that will get included under subjective norms are: personality variables and situational constraints/opportunities. Although the study has considered personality variables like shopping attitude, deal proneness and situational constraints/opportunities like availability of acceptable alternative items and availability of acceptable alternative store and the impact of

such variables on attitude and behavior separately; this study has not considered the moderating affect of these variables on attitude-behavior relations. Another interesting perspective to look at what has been discussed above is that although such impactful social norms and situational cues need not totally eliminate the effect of attitude on behavior, they can create barriers that discourage attitude-consistent behavior Eagly and Chaiken (page 157).

Whether a researcher chooses to measure behavior by a single act or multiple acts is a powerful source of influence on attitude-behavior relations. According to Martin Fishbein and Icek Aizen (1974, 1975), overt behavior may be assessed by (a) single behaviors or (b) composite indices that compile behaviors over time or over various exemplars of a class of behaviors. Eagly and Chaiken (page 159) have mentioned that since single behaviors are generally a function of many factors in addition to seemingly relevant attitude towards an entity, in psychometric terms, each such behavior should be considered a somewhat unreliable indicator of the attitude. When a composite index of behaviors is formed, such factors other than attitude that irrelevantly affect attitude are tend to cancel each other as long as they do not influence all the behaviors or a sizable subset of them in the same way. Thus an appropriate aggregation of attitude relevant behaviors creates a more reliable behavioral measure of an attitude. Unfortunately although this study offered 4 behavioral options from which each respondent could choose, did not attempt to measure behavior by a composite index.

5.5 Major findings in a nutshell.

The study however came up with important findings about which variables impacted behavioral and attitudinal responses of consumers towards retail outlets in case of out of stock situations. It reaffirmed the impact of attitude on behavior in a specific type of situation faced frequently by consumers and retailers. Specifically, this study found:

1. Not all variables affect attitude and behavior of a respondent to the same extent.
2. Not all variables affect behavior responses in the same way (in terms of direction and significance) as pointed out by literature.

3. Impacts of 11 out of 13 variables (type of shopping trip, general time constraint, store loyalty, shopping attitude, shopping frequency, availability of acceptable alternative store, store distance, perceived inter-store distance, perceived store price, availability of acceptable alternative items, and brand loyalty) on behavioral response were significant.
4. Remaining 2 variables' (specific time constraint, deal proneness) impacts on behavioral responses in out-of-stock were insignificant.
5. The study found 6 out of 13 independent variables : shopping attitude of consumers, store loyalty, perceived store price, store distance, shopping frequency and brand loyalty significantly affected attitude of consumers towards store in out-of-stock
6. Lastly, attitude behavior correlation results revealed only a small yet significant relationship between 2 variables.

The implications this study can have for retailers and marketers in terms of what new dynamics about consumer behavior and attitudes can be learnt and how the knowledge could be possibly used tactfully is dealt with in the next chapter.

CHAPTER 6

IMPLICATIONS AND RECOMMENDATIONS

6.1 Restatement of importance of attitudes

Decades of research on attitude behavior relations has made it abundantly clear that attitudes do sometimes relate to behavior. Extreme pessimism regarding value of attitudes as predictors of behavior is unwarranted. Literature has also shown that attitude can guide behavior in more than one-way. Russell H. Fazio and David R. Roskos-Ewoldsen (1994), in their paper titled “Acting as We Feel: When and How Attitudes Guide Behavior”, have pointed out that ‘Theory of Reasoned Action’ assumes that attitudes guide behavior through conscious consideration of and deliberation about one’s attitude and its implications for a given course of action. In contrast, ‘Process Model’ suggests that attitudes can guide a person’s behavior even when person does not actively reflect and deliberate about attitude.

Michel Tuan Pham (2004) in his paper titled, “The Logic of Feeling”, mentions about 2 types of feelings: cognitive feelings and affective feelings and says that both kinds of feelings refer to phenomenological experiences that provide judgment-relevant information in an efficient manner; suggesting that feelings and in turn attitudes facilitate judgments and decisions.

Again given the mounting time pressure people of all occupations are facing, literature suggests increasing importance of role attitude plays. Individuals are more likely to base their decisions on their attitudes when they are under time pressure (see Jamieson & Zanna, 1989, for a review). It appears that time pressure pushes people away from a careful examination of available information and toward reliance upon their preexisting attitudes. In this backdrop, it becomes important for retailers and marketers to understand what impacts attitudes towards retail stores, extent to which store attitudes affect behavior and which variables be best controlled and managed so that store attitude, sales and store profits are bolstered. In nutshell, it is more important to understand attitude than behavior for 2 reasons. One, attitude towards store influences behavior (which in turn determines profits) importantly and consistently; two, store attitude can serve as an important measure for effectiveness of retailer strategies and/or practices.

6.2 Approach for retailers

Since the type of clientele for any retail shop is almost always unique; there cannot be one standard prescription as to which influencing variables are important for any retailer. First step therefore for retailers would be to identify average/typical shopper profile {in terms of the influencing variables} their store attracts. For example, if a retailer knows his store's average shopper has negative shopping attitude, retailer could expect that in an out-of-stock, his customers would have a high probability not to delay purchase or switch store but buy a substitute item. At the same time impact on their store attitude would be quite negative. Thus retailer can understand impact of stockout on both shoppers' attitude and behavior and design strategy to minimize not only immediate losses but also prevent attitude from deterioration. For understanding implications for retailers more discreetly, impact of independent variables has been examined under 3 sections:

1. Implications of impact of independent variables on behavior
2. Implications of impact of independent variables on store attitude
3. Implications of impact of independent variables on store attitude and behavior

6.3 Implications of the impact of independent variables on behavior

Overall, results showed that they are only partially consistent with earlier Campo *et al.* (2000) and Zinn and Liu (2001) studies. On one hand, impacts of 8 out of 13 variables, namely, type of shopping trip, general time constraint, store loyalty, shopping attitude, availability of acceptable alternative items, deal proneness and perceived store price were exactly like the earlier 2 studies: all of these variables being significant except for deal proneness which was insignificant for both earlier studies. On the other hand, remaining 5 variables, namely, specific time constraint, shopping frequency, availability of acceptable alternative store, store distance and perceived inter-store distance showed different impacts from the earlier studies.

Specific time constraint show insignificant impact (earlier study showed significant impact for this variable); remaining 4 variables were significant for the present study while all of them had insignificant impacts in the earlier studies. Impact of some variables has been in tune with expectations (type of shopping trip, general time

constraint, store loyalty, shopping attitude, availability of acceptable alternative items, perceived store price, shopping frequency, and availability of acceptable alternative store).

Table 4.11 in chapter on “Results” showing marginal impact of explanatory variables on stockout reaction probabilities is referred to for following discussion on implications. For any retailer, first priority would be to not let customer switch store. Results show that 8 out of 13 independent variables significantly affect switch store option. Table 6.1 lists these 8 variables in descending order of importance.

TABLE 6.1: Variables affecting switch store option

Variables	Marginal probability
Availability of acceptable alternative store (na)	0.2497
Perceived store price	0.0985
Type of shopping trip (m)	0.086
Brand loyalty	0.0701
Store loyalty	0.0586
Availability of acceptable alternative items	0.0183
Perceived inter-store distance	0.0056
Store distance	-0.0042
(*) dy/dx is for discrete change of dummy variable from 0 to 1	

Accordingly, implications for retailers can be framed suggesting retailers to work on variables in same sequence as given in table. For example if a retailer is able to differentiate his store (by means of store design, store services, employee behavior or any other tool) so that consumers’ perceive “alternative acceptable stores are not available”, it could keep them from switching store. Similarly offering better prices³⁷; giving incentives to consumers to have a longer shopping list {for example by giving discounts

³⁷ However, since price perceptions are affected by non-price factors (Magi and Julander, 2005) - short-term price changes tactics (Rhee and Bell, 2002) may not have any impact.

on certain minimum value of purchases made}; creating store design, environment and promotional material which encourages variety seeking and non-brand loyal personality of shoppers- could increase probability that shoppers will not switch store. On same logic retailers need to foster store loyalty of shoppers {for example, by running loyalty/frequency programs}; increase availability of substitute items by having deeper assortments or create barriers to switching store by increasing perceived inter-store distance.

Next priority for retailer would be to ensure that shopper makes a purchase by undertaking brand switch. Results show that 9 out of 13 independent variables significantly affect switch store option. Table 6.2 lists these 9 variables in descending order of importance.

TABLE 6.2: Variables affecting switch brand option

Variables	Marginal probability
Availability of acceptable alternative store (na)*	-0.194
Type of shopping trip (m)*	-0.122
Perceived store price	-0.094
Brand loyalty	-0.07
Store loyalty	-0.047
Shopping attitude of consumers	0.0401
Availability of acceptable alternative items	-0.038
General time constraint	0.0101
Perceived inter-store distance	-0.004
(*) dy/dx is for discrete change of dummy variable from 0 to 1	

As a shopper moves from non-availability to availability of acceptable alternative stores probability of switch item decreases. This signals that differentiating store could lead to increase in probability of item switch. Also, encouraging shoppers to have longer shopping list; offering better prices; encouraging variety seeking by giving

appropriate environment and incentives; fostering store loyalty by running loyalty or customer relationship programs – all could bolster chances that shoppers switch item and purchase in same store. Negative shopping attitude could benefit retailer immediately as such shoppers would be likely to switch brand rather than delay or switch store. However findings on influence of shopping attitude of consumers on store attitude moves in an opposite direction. Therefore in such cases it will be very desirable to look at effect of any influencing variable on both behavior and attitude; then design retailer strategy/tactics accordingly.

Again offering better availability of acceptable alternative items by having substitute brands would ensure purchase via switch brand option. Additionally, although nothing can be done to alter shopper’s general time constraint, retailer must understand that shopper with higher time constraint would very likely switch brand so that in this respect retailer needs to worry more about low time constraint shoppers.

Implications of findings for “delay” option has to be viewed by retailers in conjunction with “switch store” option; idea being that retailer should optimize variables affecting both these options so that likelihood of delay is more than switch store. This is important as “switch store” means that consumer definitely does not purchase at present store while “delay” implies that there is some chance that consumer might come back to same store on next trip to obtain sought item. Influencing variable that affect both these behavioral options are: store loyalty, store distance and availability of acceptable alternative items (table 6.3).

TABLE 6.3: Variables affecting switch brand and delay options

Variables	Marginal probability	
	Switch store	Delay
Store loyalty	0.0586	-0.0116
Store distance	-0.0042	0.0027
Availability of acceptable alternative items	0.0183	0.0198

Impacts of **store loyalty** on behavior and attitude both pull in same direction: worsening store loyalty encourages switch store and decreases likelihood of delay, suggesting that shopper buys from another store without delay. It is strongly recommended that retailer boost store loyalty of shoppers by running frequency and loyalty programs.

Retailer possibly cannot do much to alter **store distance** factor. On the basis of results it can be suggested that retailers can try to lay equal if not more emphasis on consumers who stay farther away from store who would be more likely to delay and less likely to switch store. However as was noted earlier under Findings, shoppers high on store distance were very few in number; so that for present population, the above recommendation could be applied only with a mild intensity. Additionally, impact of store distance on attitude pulls in opposite direction to behavior. Given that (1) it would normally not be wise to lay more stress on consumers high on store distance {for intuitive reasons as greater investment in upkeep of relationship with customers high on store distance}; and (2) ensuring positive store attitude is more important than immediate one time behavior, study suggests the retailers to consider impact of this independent variable on attitude before considering impact on behavior.

Lastly, findings show **availability of acceptable alternative items** affects significantly all 3 behavioral options: worse availability of items increases probability of both delaying (1.98 %) and not switching item (3.8 %) while increasing probability of switching store (1.83%). Retailers therefore must offer deep assortment of items to choose from.

6.4 Implications of impact of independent variables on attitude

One key finding is that **shopping attitude** has substantial impact on attitude towards store and relationship is of direct nature, which is a positive shopping attitude lead to positive store attitude. Recommendation for retailer therefore is that, he/she must plan processes and arrange infrastructure such that shopping is facilitated and is joy; for example by arranging for physical and psychological environment that is comfortable and friendly. People by themselves do possess to some extent positive/negative shopping

attitude, which characterizes their personality. However, a retailer can attempt to modify direction and level of joy experienced while shopping.

Findings suggest that strong **store loyalty** prevents attitudes towards store from becoming negative. It is advised that retailer invest to bolster SL and also ensure that already loyals never switch store. Retailer could run loyalty programs, develop novel processes like 'home delivery of stockout items', or reward loyalty towards store in other ways.

Presence of attractive **store prices** prevents negative store attitude in undesirable events like stockout. Accordingly, it is suggested that retailer attempt to offer value to shoppers to keep them regular visitors. Another variable that has a significant impact on attitude is **store distance**. However this variable is out of the retailers' control. The findings suggest that for consumers who stay nearer the store, the attitude of the consumer towards the store in case of stockout is less negatively affected. One suggestion that can be offered to a retailer based on this finding is to lay greater stress on acquiring and keeping consumers who stay nearer to the store.

Another finding having implications for retailers is **shopping frequency**: higher shopping frequency leads to higher frustration and negative store attitude. This implies that retailers must attempt to persuade consumers to keep their shopping frequency not too high by offering them incentives, for example on longer shopping lists, which is possible when shopping is less frequent. It is recommended that retailers be frank and honest enough to be able to tell their customers when they can obtain stockout item, so that consumers do not look for it before retailer can arrange to offer.

Last statistically significant variable is **brand loyalty**. Findings reveal that strong brand loyalty leads to negative attitude. It is known that brand loyalty towards a specific item is opposite to variety seeking tendency. Recommendation therefore for retailer is to attempt to bolster variety seeking behavior, by for example rewarding variety seeking by offering more value on different items at different points of time so that consumers see lesser risk in purchase of other than regular brand when the regular brand is out of stock. Retailers can also attempt to bolster variety-seeking tendencies by having better displays or by giving more information about the brands other than regular brand when latter is in stockout.

6.5 Implications of impact of independent variables on behavior and attitude

All variables for which impact was on both dependant variables: behavior and store attitude were examined 6 such variables were identified, namely, **shopping attitude, store loyalty, perceived store price, store distance, shopping frequency and brand loyalty** as shown in table 6.4 (a). In the table, each cell represents one combination of an independent variable affecting either a behavioral options or store attitude. All such impacts were then categorized as low or high impact on dependant variables on following criteria:

1. All marginal probabilities greater than or equal to 1.00 % were considered as high impact; others below 1.00% were taken as low impact on behavioral options undertaken.
2. All standardized beta values greater than or equal to 0.15 were considered as high impact; others below .15 were taken as low impact on store attitude.

New table 6.4 (b) was accordingly constructed for showing low and high impacts.

TABLE 6.4 (a): Significant impacts on both dependant variables

Sl. No.	Marginal probability				STD B
	Variable	Delay	Switch brand	Switch store	
1	Shopping attitude	-0.0317	0.0401	Ns	0.411
2	Store loyalty	Ns	-0.047	0.0586	0.274
3	Perceived store price	Ns	-0.094	0.0985	0.266
4	Store distance	0.0027	Ns	-0.0042	0.1
5	Shopping frequency	0.0122	Ns	Ns	0.073
6	Brand loyalty	Ns	-0.07	0.0701	0.052
Ns: not significant					

TABLE 6.4 (b): High impacts (shaded) and low impacts (un-shaded) differentiated

Sl. No.	VARIABLE	Marginal probability			STD B
		Delay	Switch brand	Switch store	
1	Shopping attitude	-0.0317	0.0401	Ns	0.411
2	Store loyalty	Ns	-0.047	0.0586	0.274
3	Perceived store price	Ns	-0.094	0.0985	0.266
4	Store distance	0.0027	Ns	-0.0042	0.1
5	Shopping frequency	0.0122	Ns	Ns	0.073
6	Brand loyalty	Ns	-0.07	0.0701	0.052
Ns: not significant					

Tables 6.4 (a) and (b) have been organized keeping “attitude towards store” as more important dependant variable than “behavioral option taken by consumer” in stockout at retail outlet. Thus shopping attitude, which affects attitude most, comes at the top. Total affect an independent variable can have on dependants was examined case by case.

It can be seen that negative **shopping attitude** leads to negative attitude towards store; decreases probability of delay and increases probability of switch brand. A retailer would want to have shopping attitude level such that attitude towards store is protected and consumer is likely to switch brand than delay. However, in case of shopping attitude, these aims pull in opposite directions; for example, a consumer with negative shopping attitude switches brand, giving immediate sale to retailer, store attitude is negatively affected. Moreover, if attitude is negatively affected, guess would be that there are really bleak chances of consumer coming back to the same store next time. In such a case, retailers would be advised to pay more attention to facilitate development of positive attitude towards store and not worry about an immediate sale lost. If this is followed then retailer is advised to work on attempting to foster positive shopping attitude.

For **store loyalty**, figures show that as store loyalty worsens, impact on attitude towards store is negative; probability of switch brand decreases and that of a store switch increases- all 3 effects being detrimental for a retailer. Thus it is clear that retailer would

get best results by carefully developing facilities and programs to boost shoppers' store loyalty and work hard to keep already loyal ones.

Perceived store price follows exactly the same pattern as store loyalty. Attractive perceived store price would signal positive impact on both attitude and behavior. Retailer would benefit on both fronts by making such investments, which improve perception of value of the store's offer.

Like **shopping attitude**, the desirable impacts on attitude and behavior of store distance pull in opposite directions, although both these impacts are not very large ones. On similar logic as was given for shopping attitude, store distance must be handled by retailer in a way, which keeps attitude protected more than immediate sales. Accordingly it will be advisable for the retailer to focus more on those customers who stay nearer to the shop.

Shopping frequency's impact shows that as **shopping frequency** increases, attitude gets worse while probability of delaying purchase increases. Delay option signals that retailer does not make any sale immediately and that future sale is also not guaranteed; additionally, impact on attitude is negative. Thus it is recommended that retailer encourage low value for shopping frequency, by for example, giving incentives to shop less often or have longer shopping list. Impact of **brand loyalty** on attitude and behavior follows exactly the same pattern as store loyalty and perceived store price. On similar logic as given for store loyalty and perceived store price, retailer must aim at formulating and/or modifying marketing mix elements for retail outlet to foster variety seeking tendency in consumers that are opposed to brand loyalty.

CHAPTER 7

LIMITATIONS AND FUTURE RESEARCH

7.1 Limitations

Although this study provides with important insights about impact of out-of-stock situations on consumer's attitude towards retail store, about responses to out-of-stock in Indian context and extent of relationship between attitude and behavior, this study has certain limitations.

This study shares 2 limitations with earlier studies on stockout: (1) behavioral response options considered are neither mutually exclusive nor exhaustive; (2) study considered reactions to fictions stockout occurring³⁸. The study however interviewed only those shoppers who had come to purchase something from one of the 5 product categories; which would have made it easier for respondents to imagine how they could have possibly behaved and what attitude they would have developed towards retail outlet, bringing data collected closer to real stockout situation.

Thirdly, in pilot stage test, only first 9 out of 33 identified clusters were used for data collection to calculate design effect due to budgetary constraints.

Fourthly, the study assumed linearity in multiple regression - non-linear regression would have given better picture of reality.

Interactions among the independent variables were also not considered (inclusion of interactions can lead to identification of certain influences, which remain undetected in present study). Yet another drawback is use of both single ward and combination of wards in drawing up clusters.

Additionally, only low priced consumables were considered, which face frequent out-of-stocks and the results are not generalizable therefore for product classes which have different characteristics as consumers can react differently.

³⁸ Measuring variables in hypothetical out-of-stock helped to keep number of interviews at a tractable level. Also, since retailers avoid out-of-stock for brands enjoying high brand loyalty (Peckham, 1963), using true out-of-stock could have caused biased choice of items.

Lastly, behavioral measure used in the study was found not to be a very compatible measure as far as objective of understanding attitude-behavior relationship is concerned.

7.2 Future research

One way to look at future research scope is to undo some or all limitations of present and past studies. Another perspective is to explore new directions that could emerge. First perspective can be taken care of by looking at limitations and attempting to undo them. Second perspective demands that researchers take a more visionary view.

Future scope of study could go beyond existing boundaries. This study considers only 5 product categories and urban population of Varanasi. Accordingly, future studies can look at more product categories or consider other type of population as there is ample scope for undertaking empirical replication research.

Secondly, future studies can look at similar problems in organized sector. Thirdly, study did not consider cross product category comparisons, which can be looked at by future researchers. Last but not the least, this study considered single stockout incident to understand attitude and behavior. Study of multiple stockouts faced by shoppers can give new perspectives to knowledge in this field and can be taken up for future research work.

LIST OF PUBLICATIONS

- 1 Rani, L. and Velayudhan, S. K., “Understanding Consumer’s Attitude Towards Retail Store in Stockout Situations”, *Asia Pacific Journal of Marketing and Logistics* (Accepted in May 2007 for publication at a later date)
- 2 Rani, L., “Consumer Reactions to Retail Out-of-stock: Replication into New Contexts”, *International Journal of Indian Culture and Business* (Accepted in June 2007 for publication at a later date)
- 3 Rani, L., “Consumer’s Response to Stockouts in Retail: A Cross-research Analysis”, paper presented at International Conference on Retailing and Sourcing, January 2005, organized by Birla Institute of Management Technology, New Delhi and Philadelphia University, USA.

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APPENDIX 1: ENGLISH QUESTIONNAIRE

First I will ask a few questions about your purchase.

1. Did you want to purchase a product in any of the following product categories from this shop? If yes, which one?
 - a) Butter
 - b) Detergent powder
 - c) Toothpaste
 - d) Tomato ketchup
 - e) Fruit juice
2. If the brand of (category name) you wanted were not available in this store, what would you have done?
 - a) Bought another brand in the same store
 - b) Changed the store to look for the same brand elsewhere
 - c) Would have decided to buy the same brand later
 - d) Would have decided to not buy at all.

The next few questions relate to the distance you have traveled.

3. How many minutes do you take to reach the store from your house?Minutes
4. How many minutes do you take to reach another preferred store from the present store where (cat name) is available?Minutes
5. How many shopping trips do you make on an average/ normally in a week? Times
6. My employment level can be taken as Hours/day
7. On the present shopping trip, my shopping list is:
 - a) Long
 - b) Short

In the questions that follow now, I will read out a statement. You will have to tell me the degree to which you agree or disagree with the statement by choosing a number between 1 and 5 where:

- 1 means strongly agree
- 2 means agree
- 3 means neither agree nor disagree
- 4 means disagree
- 5 means strongly disagree

8. I have limited time available with me for this particular shopping trip:

1	2	3	4	5
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

9. I am not rushed for time on this shopping trip:

1	2	3	4	5
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

10. There are decent and comparable stores available.

- 1) Agree
- 2) Disagree

11. Shopping is truly a joy

1	2	3	4	5
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

12. A good store visit is one that gets over quickly

1	2	3	4	5
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

13. I think of myself as a loyal customer of this outlet/store.

1	2	3	4	5
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

14. I like to switch between different stores.

1	2	3	4	5
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

15. I would rather stay with the store I usually frequent than trying a different store I am not sure of

1	2	3	4	5
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

16. How do you evaluate of the attractiveness of the prices offered by the store (for the chosen product categories)

- 1) Very attractive
- 2) Attractive
- 3) Normal
- 4) Unattractive
- 5) Very unattractive

17. When buying (category), I mostly pay attention to price

1	2	3	4	5
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

18. I am more likely to buy brands in (category) that are on promotion.

1	2	3	4	5
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

19. I enjoy buying products that come with a free gift

1	2	3	4	5
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

20. I would rather stick to my brand than try something new.

1	2	3	4	5
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

21. I like to switch brand in (category name).

1	2	3	4	5
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

22. I am very conscious in trying new brands in (category name)

1	2	3	4	5
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

23. When I would have to buy another brand of (category name) I would not know what brand to choose.

1	2	3	4	5
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

24. When choosing a brand of (category name) there is little to loose by choosing poorly.

1	2	3	4	5
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

25. There are few differences between (category name) brands.

1	2	3	4	5
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

In such a case when you would face a stock-out in the product cat you wanted to purchase, what would you say about this store?

26. The store is:

1		2		3		4		5
Good		Very good		Neither good nor bad		Bad		Very bad

27. The store is:

1		2		3		4		5
Nice		Very nice		Neither nice nor awful		Awful		Very awful

28. The store is:

1		2		3		4		5
Attractive		Very attractive		Neither attractive nor unattractive		Unattractive		Very unattractive

29. The store is:

1		2		3		4		5
Desirable		Very desirable		Neither desirable nor undesirable		Undesirable		Very undesirable

30. The store is:

1		2		3		4		5
Likable		Very likable		Neither likable nor unlikable		Unlikable		Very unlikable

APPENDIX 2: HINDI QUESTIONNAIRE

APPENDIX 3: DESCRIPTION OF WORKERS CATEGORIES

The following description of who gets included in the different categories of workers in census 2001 data has been taken from “Metadata” section of Primary Census Abstract 1991:

Main Workers Those workers who had worked for the major part of the reference period (i.e. 6 months or more) are termed as Main Workers.

Marginal Workers: Those workers who had not worked for the major part of the reference period (i.e. less than 6 months) are termed as Marginal Workers.

Cultivator: For purposes of the census a person is classified as cultivator if he or she is engaged in cultivation of land owned or held from Government or held from private persons or institutions for payment in money, kind or share. Cultivation includes effective supervision or direction in cultivation.

A person who has given out her/his land to another person or persons or institution(s) for cultivation for money, kind or share of crop and who does not even supervise or direct cultivation in exchange of land, is not treated as cultivator. Similarly, a person working on another person’s land for wages in cash or kind or a combination of both (agricultural labourers) is not treated as cultivator. Cultivation involves ploughing, sowing, harvesting and production of cereals and millet crops such as wheat, paddy, jowar, bajra, ragi, etc., and other crops such as sugarcane, tobacco, ground-nuts, tapioca, etc., and pulses, raw jute and kindred fiber crop, cotton, cinchona and other medicinal plants, fruit growing, vegetable growing or keeping orchards or groves, etc. Cultivation does not include the following plantation crops - tea, coffee, rubber, coconut and betel-nuts (areca).

Agricultural Labourers: A person who works on another person's land for wages in money or kind or share is regarded as agricultural labourers. (S) He has no risk in the cultivation, but merely works on another person's land for wages. An agricultural labourer has no right of lease or contract on land on which (s) he works.

Household Industry Workers: Household Industry is defined as an industry conducted by one or more members of the household at home or within the village in

rural areas and only within the precincts of the house where the household lives in urban areas. The larger proportion of workers in the household industry consists of members of the household. The industry is not run on the scale of a registered factory, which would qualify or has to be registered under the Indian Factories Act.

The main criterion of a Household industry even in urban areas is the participation of one or more members of a household. Even if the industry is not actually located at home in rural areas there is a greater possibility of the members of the household participating even if it is located anywhere within the village limits. In the urban areas where organized industry takes greater prominence, the Household Industry is confined to the precincts of the house where the participants live. In urban areas, even if the members of the household run an industry by themselves but at a place away from the precincts of their home, it is not considered as a Household Industry. It should be located within the precincts of the house where the members live in the case of urban areas.

Household Industry relates to production, processing, servicing, repairing or making and selling (but not merely selling) of goods. It does not include professions such as a Pleader, Doctor, Musician, Dancer, Waterman, Astrologer, Dhobi, Barber, etc., or merely trade or business, even if such professions, trade or services are run at home by members of the household.

Other Workers: All workers, i.e., those who have been engaged in some economic activity during the last one year, but are not cultivators or agricultural labourers or in Household Industry, are 'Other Workers (OW)'. The type of workers that come under this category of 'OW' include all government servants, municipal employees, teachers, factory workers, plantation workers, those engaged in trade, commerce, business, transport banking, mining, construction, political or social work, priests, entertainment artists, etc. In effect, all those workers other than cultivators or agricultural labourers or household industry workers are 'Other Workers'.

**APPENDIX 4: LIST OF WARDS FROM CENSUS DATA FORMING
STUDY POPULATION**

1	Bazardiha	21	Bhelupur
2	Jolha	22	Kamachha
3	Assi	23	Lahartara
4	Shiwala	24	Lallapur kalan
5	Pandey Haweli	25	Pichasmochan
6	Madanpura	26	Kazipura Khurd
7	Jangam Badi	27	Sarai Gobardhan
8	Dashashwamedh	28	Dhoopchandi
9	Garhwali Tola C.K.	29	Nawapura
10	Rajmandir	30	Gopalganj
11	Kameshwar Mahadao	31	Vandhu Kachchibag
12	Bhagatpuri	32	Alaipura
13	Chhittanpura	33	Kamakgarha
14	Madhaymeshwar	34	Ghausabad
15	Ishawargangi	35	Nadesar
16	Sapat_Sagar K.	36	Sikraul
17	Piyari Kalan	37	Khajuri
18	Raja Darwaja C.K.	38	Sarnath
19	Kazipur Kalan	39	Pandeypur
20	Mishra Pokhara	40	Shiopur(Reserve)

APPENDIX 5: CITY MAP OF VARANASI

APPENDIX 6: CALCULATING EFFECTIVE SAMPLE SIZE: FACTORS

Effective sample size (ESS) is sample size is appropriate when random sampling technique is used. Three factors used calculating ESS are: 1) margin of error, 2) confidence level, and 3) proportion (or percentage) of sample that will chose a given answer to a survey question. A brief note on each one of these factors is discussed below.

Margin of error (also called confidence interval) measures precision with which an estimate from a single sample approximates the population value. For example, in a national voting poll, margin of error might be $\pm 3\%$. This means that if 60% of the people in a sample favor Mr. Smith one could be confident that “if entire population is surveyed, between 57% (60-3) and 63% (60+3) of the population would favor Mr. Smith”. Margin of error in social science research generally ranges from 3% to 7% and is closely related to sample size. A margin of error will get narrower as sample size increases. Margin of error selected depends on precision needed to make population estimates from a sample. If it’s acceptable to have an confidence interval of $\pm 7\%$ around a given estimate, then sample size needed will be smaller than if an confidence interval of $\pm 3\%$ is chosen.

Confidence level is estimated probability that a population estimate lies within a given margin of error. Using above example: confidence level of 95% tells that one can be 95% confident that between 57% and 63% of population favors Mr. Smith. Common confidence levels in social science research include 90%, 95%, and 99%. Confidence levels are also closely related to sample size. If confidence level increases, sample size also increases. Confidence level of 90% will need a smaller sample than a confidence level of 99%.

Most of the time, *proportion (or percentage) of a sample that will choose a given answer* to a survey question is unknown, but it is necessary to estimate this number since it is required for calculating sample size. Most researchers use a proportion (or percentage) that is considered the most conservative estimate – that is, that 50% of sample will provide a given response to a survey question. This is considered the most conservative estimate because it is associated with the largest sample size.

APPENDIX 7: BRIEF ON ODDS RATIO AND LOGIT COEFFICIENTS

Suppose, seven out of 10 candidates admitted to an engineering school are males while three of 10 candidates admitted are females. The probabilities for admitting a male are,

$$p = 7/10 = .7 \quad q = 1 - .7 = .3$$

Here are the same probabilities for females,

$$p = 3/10 = .3 \quad q = 1 - .3 = .7$$

Now we can use the probabilities to compute the admission odds for both males and females,

$$\text{Odds (male)} = .7/.3 = 2.33333$$

$$\text{odds (female)} = .3/.7 = .42857$$

Next, the odds ratio for admission can be computed,

$$\text{OR} = 2.3333/.42857 = 5.44$$

Thus, the odds of a male being admitted are 5.44 times greater than for a female.

Logits are the natural logs of odds ratios. They contain exactly the same information as odds ratios (that is, they are measures of the strength of relationship between variables) but because they are symmetrical, they can be compared more easily. They are used in the logistic regression equation to estimate (predict) the log odds that the dependent equals 1 (binomial logistic regression) or that the dependent equals its highest/last value (multinomial logistic regression). For the dichotomous dependant variable case, if the logit for a given independent variable is b_1 , then a unit increase in the independent variable is associated with a b_1 change in the log odds of the dependent variable (the natural log of the probability that the dependent = 1 divided by the probability that the dependent = 0). In multinomial logistic analysis, where the dependent may have more than the usual 0-or-1 values, the comparison is always with the last value rather than with the value of 1.

The logit can be converted easily into an odds ratio simply by using the exponential function (raising the natural log e to the b_1 power). For instance, if the logit $b_1 = 2.303$, then its odds ratio (the exponential function, e^b) is e to the power 2.303 = 10

and we may say that when the independent variable increases one unit, the odds that the dependent = reference category/omitted category of dependant (multinomial logistic regression), increase by a factor of 10, when other variables are controlled. That is, the original odds are multiplied by e to the b th power, where b is the logistic regression coefficient, when the given independent variable increases one unit.

Another point about odds ratio that will ease the understanding of the influence of the independent variable on the dependant variable is enumerated below:

1. An odds ratio below 1 indicates a decrease (that is, a unit change in the independent variable is associated with a decrease in the odds of the dependent being 1 in binomial logistic regression, or being the highest value /reference category in the case of multinomial logistic regression).
2. An odds ratio above 1 indicates an increase (that is, a unit change in the independent variable is associated with an increase in the odds that the dependent equals 1 in binomial logistic regression, or being the highest value /reference category in the case of multinomial logistic regression).
3. An odds ratio of 1.0 indicates the two variables are statistically independent.

Another way to look at the parameters of the model in the in the multinomial context is in terms of marginal effects of each independent variable on each dependant variable category (each stockout response) probability or choice probability

Brief Biography of the Supervisor

Dr. Sanal Kumar Velayudhan is currently Professor of marketing at Indian Institute of Management, Khozhikode. He is a Fellow of Indian Institute of Management, Ahmedabad. Before joining IIMK, he has had varied work experience. He worked as faculty member at Department of Business Management, Osmania University; in Industry for about 8 years, including marketing an industrial product and as a senior executive in a bank; was Associate Professor at Xavier Labour Relations Institute, Jamshedpur for 6 years; spent 1 year at Centre for Management Development, Thiruvananthapuram and was senior member of Faculty at Administrative Staff College of India and Chairman, Marketing Area. He has designed and directed training programmes in General Management and Marketing; was Visiting Professor at IIMA, Management Development Institute (Gurgaon) and Birla Institute of Technology and Science (Pilani) and has handled many consultancy assignments in marketing. His research interests are in the areas of communication and diffusion, rural markets, small business marketing, product management and industrial marketing.

Brief Biography of the Candidate

Leela Rani is Faculty in Management Group at Birla Institute of Technology and Science, Pilani, Rajasthan (India). She earned her masters degree in foreign trade from Indian Institute of Foreign Trade, New Delhi. Apart from Retail Management, her interest also lies in such areas as 'Product and Brand Management', 'Advertising and Sales Promotion', and 'Business Communication'. Currently she is also serving as an ad hoc reviewer for Asia Pacific Journal of Marketing and Logistics.