CHAPTER 3

RESEARCH METHODOLOGY

This chapter presents an overview of the methodology adopted in this study, details of sample selection, data collection and data analysis procedures. The proposed research model based on the review is shown below in Figure 3.1.

![Figure 3.1 Proposed model](image)

The primary goal of this study is to develop a model that combines PMT and ELM to increase consumer’s green product purchase intentions. Consumers are presented with realistic threats to create awareness about the health risks posed by indiscriminate consumption. Research questions were framed based on the problem definition, conclusions of the literature review and exploratory studies.

3.1 RESEARCH DESIGN

This study follows a multi method approach and uses both qualitative and quantitative techniques. Since the literature review indicated that there was sparse research on green advertising in India, an initial exploratory research was undertaken to investigate these two aspects.
Therefore the research was conducted in two phases - (i) exploratory phase and (ii) quantitative experimental phase. The following Figure 3.2 shows the research flow.
Content analysis of green advertisements
- Unit of analysis – each green advertisement
- Trained Coders coded the advertisements using coding framework
- Reliability Check
  - Inter-coder reliability was measured for each variable using both Perreault and Leigh’s (1989) P/L index and Krippendorff’s (1970) it

Inferences drawn from Content Analysis on
- Claim specificity (Banerjee et al 1995)
- Type and validity (Carlson et al 1993)
- Advertiser profile, company and product identification marks, body copy tone, illustration setting and illustration presenter (Leonidou et al 2011)

Formulation of Research Questions

Development of Research Model

Development of Hypotheses

Pretests
- Questionnaire 1a
  - Product Involvement
- Questionnaire 1b
  - Geographic distance

Figure 3.2 (Continued)
Product Selection for experiments
- Selection of two products (mobile and watch)
- Geographical distance (India and "world")

Experiment Design
- Factor (independent variables) definition
- Identification of 2x2 factorial experiments
- Sample Size determination
  - Power analyses (Cohen 1988)

Study 1
- Effect of temporal proximity and geographical proximity on PMT variables
- Effect of PMT variables on Message Involvement and subsequent effects of involvement on attitudes and intentions

Study 2
- Effect of threat levels and goal framing on PMT variables
- Effect of PMT variables on Message Involvement and subsequent effects of involvement on attitudes and intentions

Experiment 1
- Stimuli Design and validation
  - Advertisement 1 for product 1 (watch)
  - Advertisement 2 for product 2 (mobile)
- Questionnaire design for dependent variables and covariate (Q2)
  - PMT variables (Milne et al 2002)
  - Message involvement (Cox & Cox 2001)
  - Fear (Hartmann et al 2013)
  - Attitude towards the ad (Mackenzie & Lutz 1989)
  - Attitude towards the brand (Muehling & Lacziak 1988)
  - Purchase intention (Mackenzie et al 1986)
  - Environmental concern (Schultz 2001)
  - Objective Environmental knowledge (Maloney et al 1975)
  - Consideration for future consequences (Joreman et al 2012)

Hypothesis testing
- Effect of temporal proximity and geographical proximity on PMT variables using MANCOVA (H1 – H4)
- Effect of PMT variables on Message Involvement and subsequent effects of involvement on attitudes and intentions using Regression (H9 – H16)

Figure 3.2 (Continued)
## Experiment 2
- **Stimuli Design and validation**
  - Advertisement 3 for product 1 (watch)
- **Questionnaire design for dependent variables and covariate (Q3)**
  - PMT variables (Witte et al 1996)
  - Message involvement (Cox & Cox 2001)
  - Fear (Hartmann et al 2013)
  - Attitude towards the ad (Mackenzie & Lutz 1989)
  - Attitude towards the brand (Muehling & Laczmáik 1988)
  - Purchase intention (Mackenzie et al 1986)
  - Environmental concern (Schultz 2001)
  - Objective Environmental knowledge (Maloney et al 1975)
  - Consideration for future consequences (Joireman et al 2012)

## Experiment 3
- **Stimuli Refinement and validation**
  - Advertisement 4 for product 2 (mobile)
- **Questionnaire design for dependent variables and covariate (Q4)**
  - PMT variables (Witte et al 1996)
  - Message involvement (Cox & Cox 2001)
  - Fear (Hartmann et al 2013)
  - Attitude towards the ad (Mackenzie & Lutz 1989)
  - Attitude towards the brand (Muehling & Laczmáik 1988)
  - Purchase intention (Mackenzie et al 1986)
  - Environmental concern (Schultz 2001)
  - Objective Environmental knowledge (Maloney et al 1975)
  - Consideration for future consequences (Joireman et al 2012)

## Hypothesis testing
- Effect of threat level and goal framing on PMT variables using MANOVA (H5-H8)
- Effect of PMT variables on Message Involvement and subsequent effects of involvement on attitudes and intentions using Regression (H9- H16)

## Hypothesis testing
- Effect of threat level and goal framing on PMT variables using MANOVA (H5-H8)
- Effect of PMT variables on Message Involvement and subsequent effects of involvement on attitudes and intentions using CFA, Path Analysis based on PLS-SEM (H9- H16)

## Discussion, Recommendations and Conclusions

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**Figure 3.2 Research flow**
The exploratory phase included two qualitative studies. The first study verified the nature of the current state of Indian green advertisements. The second study investigated online stakeholder responses to greenwashing. Based on the literature review and exploratory studies, a research model was developed and hypotheses were proposed. Experimental studies were designed to verify the effect of advertisement stimuli on attitudes and intentions.

3.2 RESEARCH STAGES

3.2.1 Qualitative Study 1: Content Analysis of Green Advertisements in India

There are very few green marketing studies in India and green advertising is considered to be in a nascent stage in India with no accepted guidelines to standardize environmental claims (Nair & Menon 2008). The following research questions were explored in this study to understand the nature of green advertising in India: Do green advertisements in India use valid and specific environmental claims or is there an incidence of greenwashed claims in green advertisements in the absence of regulatory pressures in India? If the latter, to what extent is greenwashing prevalent in India and which form of greenwashing is widely used? Content analysis was the method used to identify the answers to the research questions. Coding framework was developed based on variables from existing literature. Literature related to one of the variables namely greenwashing was sparse and therefore a separate qualitative study was conducted to ascertain the nature of this variable. Chapter 4 provides a detailed description of the methods and the results of this study.
3.2.2 Qualitative Study 2: Thematic Analysis of Greenwashing

Researchers from different disciplines have worked on greenwashing, based on theories in their respective subjects (Crane 2000; Kirchhoff 2000; Laufer 2003; Hamann & Kapelus 2004). Most of this work consists of descriptive studies, case studies or definition of conceptual frameworks. Again, most of these studies have also used the opinion of experts to identify “greenwashed” claims (Carlson et al 1993; Polonsky et al 1998). Even empirical studies measure consumer perception of greenwashing using a pre-defined “greenwashed” claim (Newell et al 1998).

Although deception in marketing communication can be measured using the opinion of experts, it is more relevant to measure the changes in the beliefs of subjects exposed to claims (Gardner 1975) since intention to deceive on the part of the communicator is considered irrelevant (Gaeth & Heath 1987). “Misleadingness” studies also use cognitive measures associated with consumers’ false beliefs (Andrews et al 2000; Mitra et al 2008). This qualitative study focuses on integrating the views of multiple stakeholders on greenwashing by developing themes based on online stakeholder discussions. It investigates the answers to the following research question: Do the different themes in stakeholders’ discussions on greenwashing match expert definitions on greenwashing?

Three different online forums where stakeholders from each category expressed concerns regarding ‘greenwashing’ were selected for the analysis and themes were obtained from the data in an inductive manner using thematic analysis. Thematic analysis was conducted with the aid of Leximancer (www.leximancer.com) - text mining software. The details are shown in Chapter 4.
3.3 RESEARCH QUESTIONS

Based on the inferences from the literature review and qualitative studies research questions are proposed. According to the ELM, situational involvement should increase the consumer’s attitude and intentions towards green advertising. Therefore the major research question posed is

**RQ1**: Can situational involvement influence attitudes and purchase intentions towards green products?

The review showed that environmental concern and environmental awareness of the consumer also influences the consumers’ responses. Therefore the following research questions were considered as a subset of RQ1.

a. How well does involvement with the environment or environmental concern influence attitudes and intentions?

b. Does this enduring involvement with the environment influence situational involvement also?

The PMT framework is used to create message involvement by presenting cognitive threats about health hazards caused by environmental deterioration. Based on the PMT, if consumers evaluated the risks to be severe and probable they are more involved with the message and are interested in taking the recommended action. Perceived risk is an antecedent to situational involvement and therefore perceived health threat should increase situational involvement. In this research message involvement is the specific case of situational involvement. Therefore the next research question is raised to investigate this effect.
**RQ2:** Can cognitive health threats increase consumer’s situational involvement with the green advertising message?

a. Does the severity of the threat, vulnerability to threat and fear increase involvement with the message?

b. Which component among the three has a strong effect on involvement?

**RQ3:** Is the recommended action evaluated as a good alternative to avoid health threats?

a. How does the recommended action influence the subsequent message processing, attitudes and intentions towards the advertised product?

b. Does the consumer believe that they can take the recommended action? If they did, how does it affect their attitudes and intentions towards the advertised product?

Consumer’s knowledge and awareness regarding environmental issues is a significant variable under study as it influences involvement and threat appraisal. Therefore the fourth research objective is:

**RQ4:** Does environmental knowledge have an effect on involvement and threat appraisal?

Construal Level Theory (Trope & Liberman 2003) and goal framing (Levin et al 1998) were used to create advertising stimuli that served as the source to the PMT framework. Based on these frameworks the following secondary questions are raised:
**RQ5a:** Does temporal framing increase perception of health threat caused by environmental issues?

**RQ5b:** Does goal framing and threat level increase perception of health threat caused by environmental issues?

**RQ5c:** Do the threats increase the affective responses – i.e. fear?

These were the major research questions that needed to be answered by the research.

### 3.4 Research Model and Hypothesis Development

A research model is developed based on the research questions and hypotheses are proposed based on the model. The details are shown in Chapter 5. The hypotheses involve testing of the effect of various stimuli on consumer attitudes and intentions. Therefore experimental methodology was chosen and factorial experiments were used to test the hypotheses. All the experiments use a full factorial between-subjects design, in which the main effects and the interaction effects are examined.

The experiments were conducted in a sequential manner. The results of each experiment were examined and the stimuli and measures were refined for the subsequent experiments. The experimental procedure and results are discussed elaborately in Chapter 6.

### 3.4.1 Population and Sample characteristics

Young adults in a developing country are treated as the population for the experimental studies. Judgement sampling was used to select university students as a representative sample for the study. Student sample is considered adequate and consistent with external validity in most
experimental studies when the product classes advertised are salient to them (Goodwin & Etgar 1980). In this research, products were chosen based on a pretest with this population and hence student sample is considered adequate for this study.

3.4.2 Pretests

Two pretests were conducted. The first pretest was done to identify and select products that were familiar and of interest to the study population. Two products that ranked high on product involvement are selected for the study.

The second pretest was done to identify which country was considered proximal to develop stimuli for one of the studies.

3.4.3 Sample Size Determination

Power analyses (Cohen 1988), was conducted to determine the appropriate sample size using G*Power 3.1 (Faul et al 2007). All the three experiments had two factors each with two levels. The minimum sample size was calculated using an alpha level of .05 and a power level of .80 (Cohen 1988). A medium effect size of 0.50 was assumed and the resultant minimum sample size was 34. The sample size exceeded this number in all the experiments and equal cell sizes were ascertained in all the cases.

The final experiment used PLS-structured equation modelling and therefore sample size for this experiment was chosen accordingly. The minimum sample size for PLS-SEM should be “equal to the larger of the following: (1) ten times the largest number of formative indicators used to measure one construct or (2) ten times the largest number of structural paths directed at a particular latent construct in the structural model” (Hair et al
2011; Hair et al 2012). The sample size was chosen according to this requirement.

3.5 EXPERIMENTAL STUDIES

3.5.1 Study 1

This study investigates the effect of temporal proximity and geographical proximity on the PMT variables. Therefore the independent variables are temporal proximity i.e. (day vs. year) and geographical proximity (local vs. global) of the health threat. Stimuli was designed for the both the products that were selected from the pretests. Experiment 1 was designed using Product 1 and Product 2 to verify the main effects and the interaction effects of the stimuli on the PMT variables and the subsequent effect of the hypothesized causal effects among the PMT variables, involvement, attitude and intention. The covariate CFC was included in this study. Hence, MANOVA/MANCOVA tests are used as appropriate when testing the effects of the factors. Some of the hypotheses were also tested using simple and multiple regression analysis. IBM SPSS 19 is used to run the statistical tests.

3.5.2 Study 2

This study investigates the effect of threat levels and goal frames on the PMT variables. Therefore the independent variables are threat levels of the health threat i.e. (low vs. high) and goal frames (gain vs. loss). Stimuli were designed for both the products that were selected from the pretests. Experiment 2 was designed to verify the main effects and the interaction effects of the stimuli on the PMT variables and the subsequent effect of the hypothesized causal effects among the PMT variables, involvement, attitude and intention. Experiment 2 is conducted based on Product 1. The results of this experiment inform the development of stimuli for the next experiment on
Product 2 i.e. Experiment 3. In the case of Experiment 3, MANOVA is used to test the experimental effects of the factors on the PMT variables. Partial least squares (PLS) based structured equation modelling (PLS-SEM) was chosen for testing the proposed model. This is consistent with other studies that use a similar combinatory approach (Nicolaou & McKnight 2006). The choice of PLS-SEM was guided by three major considerations: the major research goal was identifying message involvement as a “driver” construct for green product purchase intentions. The research uses a formative indicator index (environmental knowledge). The structural model is complex as it has many constructors and many indicators (Fornell & Bookstein 1982; Chin 1998; Sarstedt 2008; Hair et al 2011). IBM SPSS 19 was used for data screening and MANOVA analysis. SmartPLS version 2.0.M3 (Ringle et al 2005) was used for performing the PLS-SEM based path analysis. The results are also discussed along with the implications in Chapter 6.

3.6 CONCLUSIONS

The results and implications are discussed in detail in Chapter 7. The limitations and suggestions for future research are also presented in this chapter.