CHAPTER-3
RESEARCH METHODOLOGY

3.1 INTRODUCTION

This chapter gives an overview of the research design adapted for the study. It provides us with the outline of the study type; variables used their operational definition, the techniques used for sampling, instruments used for data collection and the statistical plan of analysis.

3.2 TYPE OF RESEARCH

Research classification according to Krishnaswamy and Ranganatham (2010) is by intention and methodology. Descriptive study is used to describe the characteristics of a situation, person or organisation, to determine the association between variables.

3.3 VARIABLES AND OPERATIONAL DEFINITIONS IN THE STUDY

Table 3.1: variables and operational definition

<table>
<thead>
<tr>
<th>S.NO</th>
<th>Variable</th>
<th>Definition</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Product</td>
<td>The presentation of the products online concerning mannequin display, mix and match options, details of merchandise and positioning of the products in a visually appealing manner.</td>
<td>(Ha, Kwon and Lennon, 2007)</td>
</tr>
<tr>
<td></td>
<td>Presentation</td>
<td></td>
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<td>2</td>
<td>Atmospherics</td>
<td>The use of colour, lighting, font size and backdrop and virtual setting which influence the purchase intention on the online platform</td>
<td>(Manganari, Siomkos, and Vrechopoulos, 2009)</td>
</tr>
<tr>
<td>3</td>
<td>Perceived</td>
<td>The ease of facility to search and navigate for apparel in an</td>
<td>(Harris and Goode, 2010)</td>
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<tr>
<td></td>
<td>Interactivity</td>
<td></td>
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online store

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<tr>
<td>4</td>
<td>Advertisements on the online apparel site</td>
<td>Relates to the communication of messages regarding pop-up, automatically moving and static images without links to sale pages (Hausman and Siekpe, 2009)</td>
</tr>
<tr>
<td>5</td>
<td>Attitude</td>
<td>A behavioural evaluation that occurs after seeing the online visual merchandising cues (Wu, Lee, Fu, and Wang, 2013)</td>
</tr>
<tr>
<td>6</td>
<td>Trust</td>
<td>The degree to which the online visual merchandising cues can be visually trusted (Harris and Goode, 2010)</td>
</tr>
<tr>
<td>7</td>
<td>Emotion</td>
<td>The degree to which a person feels positive or negative towards the online visual merchandising cues (Jang and Namkung, 2008)</td>
</tr>
<tr>
<td>8</td>
<td>Purchase Intention</td>
<td>The probability and willingness to buy after seeing the online visual merchandising cues (Wu, Lee, Fu, and Wang, 2013)</td>
</tr>
<tr>
<td>9</td>
<td>Online visual merchandising cues</td>
<td>stimulus dimension signals which are through visual contact (Katrandjiev &amp; Velinov, 2014)</td>
</tr>
</tbody>
</table>

### 3.4 SAMPLING DESIGN

The sampling design gives us an overview of the population of the study and the various sampling techniques employed.

#### 3.4.1 Population

The population of the study covers three generations classified according to Williams, Page, Petrosky and Hernandez (2010). These generations as on 2018 are in the age brackets of 42-53 years, 24-41 years and less than 22 years.
3.4.2 Sampling Technique

The data collected has been restricted only to customers buying apparel online. Apparel here mainly consists of clothes, accessories and footwear. The online survey was conducted using google forms circulated based on the generational classification according to Williams, Page, Petrosky and Hernandez (2010). The genuineness of the questionnaire has been supported by the collection of the e-mail id of the respondents. Two strategies to ensure right respondents has been administered in order to get accurate responses. Firstly, only those respondents who are engaged in online apparel purchase were included to ensure the familiarity with the questions (Tangmanee and Rawsena, 2016). Secondly, the questionnaire had an option of how frequently do you visit online to do apparel shopping. Respondents who have ticked never in the option box provided are consciously eliminated. For the study purpose, top five shopping apparel websites of India was studied, these websites were also checked for the assortment if they included apparel mentioned for the review.

3.4.3 Sample Size

The final sample size of 1200, with 400 from each generation (N=400) was decided based on three thumb rules: Firstly, when SEM has been used the ideal sample size should range between 200-400 (Bagozzi and Yi, 2012). Secondly, the most commonly used table of (Krejcie and Morgon, 1970) was used to determine from the infinite sample. Thirdly, the rule of thumb of 10:1.ie, where the number of questions or parameters multiplied by ten respondents for every one question (Kline, 2005). Therefore a sample size of 1200, with 400 from each generation is considered reasonable and justifiable.

3.5 METHOD OF DATA COLLECTION

The researcher employed a quantitative data collection method by using survey method. The tools used for the study were standardised questionnaire which were validated by earlier studies. A web-based survey was also carried out both through emails and social media and a covering letter has been attached to the details of the study conducted and instructions for filling up the questionnaire. The respondents have been assured that their details would be kept confidential and anonymous and the data shall be used for research purpose only. The sampling
technique used is judgmental sampling. The study adopts a survey using google forms being circulated on various social media platforms, like Facebook, Whatsapp, LinkedIn and Academic group restricted to India.

3.6 MEASUREMENT INSTRUMENTS

The study adapted standardized questionnaires for all the constructs, and therefore exploratory factor analysis was not conducted but confirmatory factor analysis was conducted to see the right fit of the questions to the proposed construct. Each instrument used for the study purpose has been discussed below.

The researcher has employed quantitative data collection by using a survey method. The tools used for the study are standardised questionnaires which are adapted and modified. The scales used to measure online visual merchandising cues are on a five-point scale (5=strongly disagree, 1=strongly agree) these are adapted and modified from a single scale or multiple scales from past researchers in the online context.

The scale for product presentation is adapted from Ha, Kwon and Lennon (2007) who first identified what elements could be related and called as online visual merchandising cues on a website and a further modified version by Zimmerman (2012) for product presentation has been considered for the study. The next variable atmospherics is adapted from Manganari, Siomkos, and Vrechopoulos (2009). Coming to the next variable, perceived interactivity, is first developed by Silva and Awli (2008). The study adapted a modified version of Zimmerman, (2012) scale. The last online visual cue which has been identified as advertisements scale was adapted from Hausman and Siekpe (2009).

Attitude scale was developed originally by Kraft, Rise, Sutton and Roysamb (2005) and later modified by Wu, Lee, Fu, and Wang, (2013). Measuring Trust was adapted from Wang (2006). Emotion scale was developed by Jang and Namkung (2008). The scale to measure purchase intention adapted from Wu, Lee, Fu, and Wang (2013).
3.7 VALIDITY AND RELIABILITY OF THE INSTRUMENTS

A pre-test was conducted to ensure the items included in the questionnaire were relevant in the Indian context and also to ensure that the content and language used are understandable. To check the questionnaire validity, the questionnaires were sent to experts in the marketing area and to expert academicians who are well versed in qualitative as well as the quantitative survey. A pilot study has been conducted for the three generations taking a sample size of 100. Likert scale of five-point was used to measure the variables. 5 states strongly disagree and 1 states strongly agree. Based on the results of the pilot study the original survey was carried out.

Reliability and validity of the questions asked to the respondents were checked to see whether there exists consistency in the answering pattern of the respondents and also whether the researcher has targeted the correct respondents with relevant questions. At the analysis stage of the pilot study, a sample of 100 respondents for Generation, Y and Z was taken. The study has incorporated to examine both Cronbach’s alpha value and composite reliability to measure internal consistency and construct validity is examined through Average Variance Extracted (AVE). Thus, both reliability and the discriminant validity were checked by conducting Confirmatory Factor Analysis (CFA) technique using AMOS software.

To check the loadings which is the correlation coefficient CFA is carried out and items under each construct which is less than 0.3 is considered as moderate. In such a case, those items with loading showing weak correlation values were dropped and were not considered for the full-fledged study. Accordingly, it was observed from the initial CFA that two indicators (or items/questions) labelled PP_5 of Product Presentation dimension and Advertisements (WBADV_1) had a loading of less than 0.30. Hence, these two indicators were not considered for a full-fledged study. Under the heading stimulus and Emotion (EMO_4) under organism factor was not considered and was dropped for the main study across all the generations. Also to check theoretical fit convergent and discriminant validity was used obtaining satisfactory results. Also, as suggested by Stevens (1992) for interpreting purpose irrespective of sample 0.4 was considered.
3.8 TOOLS FOR ANALYSIS

The study used Cronbach’s alpha to check the reliability of the questionnaire. Tools such as inter-item correlations between the sub-construct, correlation between the dependent and independent variable, kurtosis, skewness, ANOVA and SEM were together used to analyse the data. The normality of data has been checked with skewness and kurtosis. The acceptable value considered as a rule of thumb positioned between +1 and -1. In some reference to other studies by (George and Mallery, 2003) the value of asymmetry of kurtosis is positioned between +2 and -2 to prove normal univariate distribution. Further Kline (2005) Rajaghatta & Gangadharappa (2015) Chikkodi & Satyaprasad (2010) have given a range of +3 and -3 also acceptable. Normality is verified and found to be within the reference range of kurtosis and skewness for the items considered for the study. Furthermore, tolerence value is less that one and Variance inflation factor is below the recommended value of five indicating that there is less collinearity. Thus the variables were included for further analysis.

One way ANOVA was used to test the hypotheses to check whether the means of purchase intention as the dependent variable and the year of birth of all the three generations X, Y, Z as independent variable have a significant difference. The whole study tries to establish the fact that there is a difference in the purchase intention of the three generations considered for the study. ANOVA has been used as inferential statistics to prove that all three generations vary in their purchase intention decisions and further checked it with the construction of the hypothetical model using SEM and the influence of mediation variables.

3.9 STRUCTURAL EQUATION MODELING

The surge in the structural equation modelling has become the need of the day. Therefore, it is essential to follow the development of the SEM model. SEM has a series of the chronological order of their development. Namely regression, factor analysis, path analysis and structural equation models. The first model involved linear regression in checking the regression weights. Regression analysis was useful in prediction of the theoretical model testing. Then came the factor analysis which was
used by Charles Spearman and furthermore developed by Karljoreskorg. Factor analysis has been used by various researchers for almost a century in many disciplines. Today's era confirmatory factor analysis is used to check the existence of the theoretical construct and is gaining a lot of importance. In 1960 it took Karl Joreskorg constructive nine years to come with the fully developed concept of confirmatory factor analysis. Goldberg used further CFA in the year 1990 and he used it in checking the big five-factor model. Later, this development made way for more advancement and created an advanced version of a path model. Sewell Wright, a biologist who developed Path model applied in testing the same with animal behaviour. Path model uses regression analysis and correlation coefficient to establish more complex models among observed variables. Later the path model suffered a setback due to the gaining importance of other aspects by econometricians. Paving the way for the final advanced model is SEM which brings unification of path model and confirmatory factor analysis.

SEM in AMOS software has been used to test the hypotheses and conceptual model. SEM is also known to be a second generation statistical tool developed for analysis of multiple variables and their interrelationship in a proposed model. According to Hair, Gabriel and Patel (2014) SEM is a widely used method for theory development and building model in social science research and predominantly in marketing research.

3.10 MEDIATION ANALYSIS IN SEM

To test the independent variable (exogenous) and its relationship with the dependent (endogenous) variable when influenced by a third variable is known as mediation analysis. A mediator variable clarifies the relationship between the dependent and independent variables. The current study examines the indirect relation of online merchandising cues with purchase intentions whether mediated by personality attributes.

The mediator is synonymously called the intervening effect. It acts as a predictor link to establish a relationship between two variables. Usually an intervening variable can become endogenous and exogenous at the same time. Mediator aims to explain how or why an outcome is influenced by the independent variable. According to Awang (2015), the mediation is of three type’s namely full mediation, partial
mediation and non-mediation. According to (Baron & Kenny 1986) who inherit the (Sobel 1982) technique, the indirect effect should be higher than direct effect to indicate the mediation effect that occurs in structural modelling.

In the present context of our SEM model, we follow a simple meditation where Attitude, Emotion and Trust act as a mediator between Product Presentation, Perceived Interactivity, Atmospherics, Advertisement and Purchase Intention for X, Y and Z Generation. Both direct and indirect effects was checked. The above figure 2 depicts a simple mediation model

According to Awang (2015) when analysing the variable for mediation, there are two effects taken into consideration which is the indirect and the direct effect. If there is full mediation, we see that indirect effect is more than the direct effect and it is not significant for direct path and significant for the indirect path. When partial mediation occurs, we notice that both paths are significant and there is little significance of the mediating variable. The third type of mediation which is no mediation occurs when there is either or both path is not significant

### 3.11 BOOTSTRAPPING

Bootstrapping is a resampling method and is considered important for mediation analysis to confirm mediation. When we compare Sobel test to other methods bootstrapping is recommended by many authors (Preacher & Hayney, 2008) because the advantage of bootstrapping is manifold and it can be done without any assumptions (Hayes, 2009) considering the advantages mentioned in various expert opinions from literature, the bootstrapping method has been adapted for the current study.
3.12 SOME OF THE MODEL EVALUATION CRITERIA

**Chi-square test**: It is a test used to measure the goodness of fit of random data. It is considered to be a traditional measure for evaluation. It assesses the level of discrepancy/variation in the sample and fitted covariance matrices. It is very liberal and may suffer from some errors. The chi-square test is not a preferred measure of goodness of fit as it is sensitive to sample size (Joreskorg & Sorborn, 1993). As threshold acceptable for chi-square has been regarded as low as 2.0 (Tabachnick and Fidell, 2007) and high as 5.0 by (Wheaton et al., 1997).

**The goodness of fit index**: unique measure of the amount of variance matrix and covariance. It was proposed in the year 1981 by Joreskorg and Sorborn. Values which are close to zero are said to be a measure of poor fit, and a perfect model is suggested to have a value =1.0 (GFI). Further, these measures have been classified into three categories which are an absolute measure, incremental measure and parsimony fit measure.

**Normed fit index**: It is a measure that analyses the difference between the chi-squared model of the hypothesised model and the chi-squared model of the null model. A null model is the one with no correlation and has zero regression coefficients. Even though it is referred to as a negatively biased model and is unfit for models with less than 200 values the value nearer to 1 in a Normed fit index represents a good model fit.

**Comparative fit index**: It measures the inconsistency between the data and the hypothesised model. It compares the sample covariance matrix with the null model. It covers the backlogs that are suffered by the chi-squared model and the Normed fit index. The models with a value nearer to 1 in the comparative fit index are known as fit models.

**Relative fit index**: It is a measure of goodness of fit where the value of derivative of Normed fit index and the comparative fit index has been taken into consideration, out of which the coefficient of the relative fit index is taken out. The value of relative fit index varies from 0 to 1. The higher the value, the more the superior fitness of the data.