

## CHAPTER 3

### RESEARCH METHODOLOGY

#### 3.1 Statement of Problem

Driving can be considered as a goal-directed behavior, i.e. going from one place to another. Reaching the destination in time and maintaining safety are the two main aspects or goals while driving, when these goals gets blocked, emotions may occur, which in turn leads to behavioral change. Any ‘interruption’ of goal-directed behavior is likely to release negative effect and any ‘Promotion’ of goal-directed behavior is more likely induce positive effect. For example, a driver shows positive behavior when road conditions suddenly improves and negative behavior when road condition suddenly becomes worse. Psychological literatures often describes ‘goals’ as long term, high order, abstract which refers to imaginable states of existence, whereas ‘goals’ in the context of driving are directly related to the task at hand.

Then we evaluate this event to decide whether it is positive or negative, then follows the tendency to act, with physiological reactions accompanying it. This emotion process may result in behavior change. The attribution of responsibility is more important in some context than in others. When ‘anger’ was compared in driving and non-driving contexts, the appraisals of other accountability were stronger in driving than in non-driving situations. Driving is an area in which behavior may have consequences in terms of risk.

The driving tasks are relatively predictable and invariants, (eg. steering wheel and gear shift box) others are inherently unpredictable and highly variable (eg. reacting to other drivers and pedestrians behavior). Thus driving requires the performance of a constant flow of different tasks that vary dynamically according to the situation, even when it comes to performing the same roadway paths. This means that driving task requires drivers to judge, predict and monitor the behavior of other road users, as well as vehicle control, fast and appropriate response to unpredictable situations that are permanently presented in road traffic scenario. The behavior of drivers is also guided by factors associated to perception, motivation and selective attention among others, this multiple casual factors is put into play not only when we are drivers but also in every moment of our lives. The aim of this present study is to explore the relationship between personality traits, attitude towards traffic safety and risky *driving behavior* among drivers.

### **3.2 Significance of the Study**

This project is aimed at exploring the extent to which the psychological factors affecting speeding, dangerous driving behavior and violation behavior of traffic rules among the drivers, Even though this subject is of high relevance and social importance this has been often neglected and unattended to in India, Every year 1.2 million people all over the world are killed and 50 million severely injured in road traffic accidents (peden et al., 2004). National Crime Record Bureau of India (2011) reported that in India 430,600 road accidents caused death

of 133,938 persons and injured 470,600 human being during 2010 and the rate of accident and its severities are increasing manifold every year.

Even though it is well known that driving dangerously and too fast is a behavior that contributes to both the number and the outcome of these accidents, the drivers still resort to speeding and dangerous driving behavior. Further, it is more interesting to know why drivers choose to exceed the speed limits. Moreover, why do drives accept risky dangerous driving behavior and violate traffic rules? The general aim of this study was to further the knowledge about dangerous driving behavior, speeding and violations behavior of traffic rules. And psychological and demographical factors influencing such behaviors,

### **3.3 Objectives of the Study**

Hence, the present study is carried out on, “Drivers Behaviour as a Predictor of Road Safety Accident” with the following objectives.

1. To examine the errors, lapses and violations of drivers.
2. To test whether the demographic profile of drivers is associated with their opinion on errors ,lapses, violations and traffic awareness
3. To study the drivers (critical) driving behavior.
4. To verify whether there is association between demographic profile of respondents with the (critical) driving behavior.
5. To find the Dula dangerous driving index of drivers.

6. To check the dula dangerous driving index is associated with demographic profile of respondents.
7. To examine the self reported speeding behavior and aggression of drivers.
8. To identify whether demographic profile of respondents is associated with speeding behavior and aggressive behaviour.
9. To examine the reasons for alcohol consumption
10. To observe the influence of the study variables on driving behavior.

Among different districts in Tamil Nadu, cuddalore district has been selected for the present study purposively. The drivers have been selected by using random sampling method for the present study. The data have been collected from 500 drivers through pre-tested and structured questionnaire.

The frequency and percentage analysis have been done for socio-economic profile of drivers and alcohol consumption of drivers. The mean and standard deviation have been calculated for errors, lapses, violations, traffic awareness, driving behaviour (Critical), Dula dangerous driving index, self reported speeding behaviour and propensity for aggression of drivers.

The Analysis of Variance (ANOVA) test has been carried to examine the difference between socio-economic profile of drivers and errors, socio-economic profile of drivers and lapses, socio-economic profile of drivers and violations, socio-economic profile of drivers and traffic awareness, socio-economic profile of

drivers and their driving behaviour (critical) and socio-economic profile of drivers and Dula dangerous driving index. The Chi-Square test has been employed to study the association between socio-economic profile of drivers and self reported speeding behaviour and socio-economic profile of drivers and propensity for aggression.

The multiple regressions has been used to analyze the influence of errors, lapses, violations and traffic awareness of drivers on their driving behaviour (Critical). The multiple correlation analysis has been carried out to study relationship between errors, lapses, violations and traffic awareness of drivers. The Structural Equation Model (SEM) has been applied to examine the structural relationship between errors, lapses, violations, traffic awareness, self reported speeding behaviour, propensity for aggression, Dula dangerous driving index and driving behaviour of drivers,

### **3.4 Research Design**

#### **Area of the Study:**

Among the Cuddalore Districts the Four Taluks, was chosen for collecting data by stratifying into three blocks. Since the total population of the study from, the Cuddalore District nearly 1,63,828 in Cuddalore, 83,806 in Chidambaram, 52,188 drivers in Virudhachalam and 1,15,817 drivers in Neyveli. All the respondents could be interviewed due to the practical difficulties, the drivers were

chosen from all the Four stratified geographical area by Minimum sample size method.

$$\text{Minimum sample size (n)} = \frac{\Sigma^2 * p *(1-p)}{m^2}$$

Where:

n = required sample size (minimum size)

$\Sigma$  = Confidence level at 95% (standard value of 1.96)

p = Estimated fractional population of subgroup

m = Margin of error at 5% (standard value of 0.05)

The Cuddalore District has four Divisions wise Cuddalore, Chidambaram, Virudhachalam and Neyveli.

As per the formula, the required sample size is 382 drivers, therefore, 200 drivers were chosen from Cuddalore and 175 drivers were selected from Chidambaram and 75 drivers were selected from virudhachalam and 75 drivers were selected from Neyveli as samples on the basis of proportionate to the total population. Initially 525 questionnaires are circulated to drivers in all the four Taluks. Among them 185, 165, 75 and 75 were found to be fit for further analysis from the cuddalore, Chidambaram, virudhachalam and Neyveli respectively. Out of the 525 questionnaires only 500 respondents returned the filled up questionnaires. Hence, the sample size of the study is 500.

## **Sampling Method**

Convenience sampling technique is used for selection of drivers . The sample is selected and investors are approached for filling up Questionnaire. 500 filled up questionnaire are collected from the drivers. Filled-up questionnaire is scrutinized and collected data are classified and tabulated according to objective of the study.

## **Pilot Study**

Researchers strongly recommend pilot testing of the instrument. A sample of 50 drivers was used, in the pilot testing, to validate the instrument. To validate the results empirically, appropriate reliability and validity tests of the measurement were taken. Indeed, reliability refers to the instrument's ability to prove consistent results in repeated uses, whereas validity refers to the degree to which the instrument measures the concept that the researcher wants to do. The questionnaire for the drivers in Cuddalore district was pre tested with fifty samples. After the pre testing, necessary modifications were made in the questionnaire.

## **Research Instrument**

The questionnaire was structured with 104 questions printed in a definite set of forms. The questionnaire was framed segregating the variables like personal

information, error, lapses, violations, Dutch dangerous driving scale, self reported speeding scale, propensity for aggression, traffic awareness, alcohol consumption of individual.

## **Description of Research Instrument**

### **Moped Rider Behaviour Questionnaire (MRQ)**

We developed the MRQ on the basis of the Dutch DBQ (Verschuur, 2003) and personal interviews with four moped riders in the North of the Netherlands<sup>2</sup>. The interviews revealed aberrant behaviours that are specific for young moped riders from their own point of view; these were included in the MRQ (e.g., Not take account of the blind spot of a car or truck; Not notice that you should ride on the carriageway rather than on the cycle lane; Ride on the sidewalk in build-up areas to avoid a long way round; Not wearing a safety helmet when riding short distances). As the original DBQ focused on car users, we rephrased some items from the Dutch DBQ as to make them relevant to moped riders (e.g., replace ‘car’ by ‘moped’ (L10), including watching over your shoulder besides checking the mirror (E11). Also, items that were not relevant to moped riders were omitted (e.g., forget which gear you are currently in and have to check with your hand). In total, 43 items were included in the MRQ. Subjects were asked to indicate on a six-point scale how often they engaged in the behaviour described in each of the 43 items (0 = never, 1 = hardly ever, 2 = sometimes, 3 = regularly, 4 = often, 5 = almost always).

## **Propensity for Aggression Scale**

Source: Barry Watson (2007): 6 items [chronbach A+.72) the three items are adapted from the Driver behaviour questionnaire (reason et.al.,1990).Measured on a 7- point likert scale- Never to always.

1. Never Very rarely
2. Rarely
3. Not known
4. Occasionally
5. Very frequently
6. Always

Participants were asked to think about their driving on public roads in the last 12 months and asked how often they.

## **Self reported speeding behavior questionnaire**

Source: Tay et. al., 2003) consist Of 6 statements Coding from

1. Disagree very strongly
2. Disagree strongly
3. Disagree
4. Undecided
5. Agree
6. Agree strongly
7. Agree very strongly

**Dula Dangerous driving Index (1999, Dula, C.S.)** 5 point Likert Scale Consist of 20 statements coding from

1. Never
2. Rarely
3. Sometimes
4. Very often
5. Always

### **Statistical Tools Used**

The primary data was collected by the researcher with the help of quasi experimental study. The collected data was coded and processed through spss package version 20

### **Limitation of the Study**

1. Time was the huge limitations for study of this kind that necessitated training
2. Sincerity of the respondents towards training was critical towards success of study

### **Hypothesis**

1. There is no significant association between socio-economic profile of drivers and errors.
2. There is no significant association between socio-economic profile of drivers and lapses.

3. There is no significant association between socio-economic profile of drivers and violations.
4. There is no significant association between socio-economic profile of drivers and traffic awareness.
5. There is no significant association between errors, lapses, violations and traffic awareness of drivers.
6. There is no significant association between socio-economic profile of drivers and driving behaviour (critical).
7. There is no significant association of errors, lapses, violations and traffic awareness of drivers on their driving behaviour (Critical).
8. There is no significant association between socio-economic profile of drivers and Dula dangerous driving index.
9. There is no significant association between socio-economic profile of drivers and self reported speeding behaviour.
10. There is no significant association between socio-economic profile of drivers and propensity for aggression.
11. There is no significant structural relationship between errors, lapses, violations, traffic awareness, self reported speeding behaviour, propensity for aggression, Dula dangerous driving index and driving behaviour of driver.