CHAPTER 4

4. RESEARCH DESIGN AND METHODOLOGY

The chapter covers different aspects of research methodology listed as under:

4.1 Profile and Scope of Study

4.2 Population and Sample Design
   4.2.1 Population
   4.2.2 Sample Size
   4.2.3 Sampling Techniques

4.3 Data Collection

4.4 Survey Instrument

4.1. Profile and Scope of Study

The study covers retail individual investors, ranging from those investing for long term to short or medium term, to those engaged in intra-day trading in Indian capital equity market. Though the applicability of the conceptual framework extends beyond retail investors, like high net worth investors or institutional investors, yet the study is limited in scope to individual investors. Additionally, owing to the individuality of the behavioural dimensions being studied, investors engaged in non-assisted investment decision making are covered.

Initially, few depository participants were screened and approached to broadcast the questionnaire to all the account holders online and seek the response. However, due to administrative difficulties, investors were approached directly or through their chartered accountants and relationship managers. The study has a very generalized appeal and is not restricted to a specific locale or demographics. Hence, an effort was also made to collect data from investors trading in other stock exchanges across the globe, but owing to difficulty in data collection stage, this was later dropped out.
4.2. Population and Sample Design

4.2.1. Population

For the current study, population includes all the investors of Indian equity market. SEBI Investor Survey (SIS, 2015), a periodic sponsored study by SEBI, conducted to assess retail investors’ perceptions attempts to estimate the total number of retails investors and provides the following figures:

Total number of Investor households – 3.37 Crores
Total number of Urban Investor households – 2.37 Crores
Total number of Rural Investor households – 1 Crore

In another survey conducted by Central Depository Services India Ltd (CDSL), published in 2016, it has been estimated that the representation of women in Indian securities market is 24%.

4.2.2. Sample Size

A sample of 222 investors is covered to provide robust estimates about the population characteristics estimated at 95% confidence interval and 0.09 to 0.1 degree of error. Cochran (1977) proposed the following formula to estimate the sample size.

\[
\text{Sample size} = \frac{\sigma^2 Z^2}{D^2}
\]

Where,

\(\sigma\) represents variability of population characteristics or standard deviation,

\(Z\) is the desired confidence level or Z-variate. 95% confidence interval has been considered to compute the sample size using corresponding alpha value of 1.96,

\(D\) represents allowable error in estimating population characteristics from the sample statistic. Also, referred to as desired degree of precision.

Three scenarios have been considered to estimate the sample size with different combinations of low-moderate-high standard deviation (\(\sigma\)) and low-moderate-high degree of error (\(D\)). \(Z\) value is considered at 1.96 for the three situations. An average of the three, estimated as 222 is considered for this study.
Table 4.1: Comparative Analysis Taking Different Values of σ and D

<table>
<thead>
<tr>
<th></th>
<th>Scenario 1</th>
<th>Scenario 2</th>
<th>Scenario 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>σ</td>
<td>0.7</td>
<td>0.5</td>
<td>0.9</td>
</tr>
<tr>
<td>Z</td>
<td>1.96</td>
<td>1.96</td>
<td>1.96</td>
</tr>
<tr>
<td>D</td>
<td>0.1</td>
<td>0.1</td>
<td>0.09</td>
</tr>
<tr>
<td>N</td>
<td>188.2</td>
<td>96.04</td>
<td>384.1</td>
</tr>
</tbody>
</table>

4.2.3. Sampling Techniques

A combination of purposive and judgement sampling has been used. In the initial phase, branch offices of depository participants were approached to use their databases of investors for inducting them as respondents for this research. However, this exercise failed as it required formal approvals from their respective head offices. Though, few of the employees of these depository participants agreed to informally approach their clientele. Additionally, chartered accountants in Agra, Delhi, Ahmedabad and Mumbai were also contacted for getting questionnaires filled from their clients. In the later stage, judgement sampling technique was followed to approach known investors to gather information and complete data collection.

4.3. Data Collection

Data was collected using a combination of online questionnaire, offline questionnaire and survey technique. Online questionnaires were administered through google forms and data ported in excel. The data collected through offline questionnaires and survey was also coded and entered in excel.

4.4. Survey Instrument

A comprehensive questionnaire was prepared with multiple survey instruments, one for each behavioural construct. The details of the survey instruments used are listed in table 4.2.

Psychological Disposition – Psychological Disposition is measured using Type A-Type B personality questionnaire (Friedman, 1996) which is a modified and abridged version of Bortner (1969). The questionnaire has seven pair questions with numeric responses from one to eight. The respondents are asked to choose the number which best describes them. Summative score is
calculated which is then multiplied by three to obtain a final score. Table 4.3 describes investor personality based on the final score.

People with type A personality type are characteristically very competitive, critical about themselves and unceasingly attempt to achieve their targets irrespective of being thoughtful about the efforts and achievements. Type A individuals tend to be stressful and they operate in a panic mode, are short-tempered and impatient, try to do several things at a time, feel constrained due to time paucity. Type B individuals are usually more tolerant, even-tempered, less competitive, do one thing at a time, relaxed, reflective and are not affected by time lapse. Accordingly, they tend to be less stressful, easygoing and calm.

Table 4.2: List of Survey Instruments used in the study

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Variable</th>
<th>Survey Instrument</th>
<th>No. of Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Psychological Disposition</td>
<td>Type A-Type B personality questionnaire (Friedman, 1996 based on Bortner (1969))</td>
<td>14</td>
</tr>
<tr>
<td>2</td>
<td>Consciousness Quotient</td>
<td>Consciousness Quotient Inventory (Brazdau, 2013)</td>
<td>22</td>
</tr>
<tr>
<td>3</td>
<td>Mindfulness</td>
<td>Freiburg Mindfulness Inventory (FMI) (Walach et al., 2006)</td>
<td>14</td>
</tr>
<tr>
<td>4</td>
<td>Religiosity</td>
<td>Religiousness Measure (Sethi &amp; Seligman, 1993)</td>
<td>15</td>
</tr>
<tr>
<td>5</td>
<td>Intuitive Ability</td>
<td>Preferences for Intuition and Deliberation (PID) (Betsch, 2004)</td>
<td>9</td>
</tr>
<tr>
<td>6</td>
<td>Cognitive Capability</td>
<td>Self-developed set of questions</td>
<td>9</td>
</tr>
<tr>
<td>7</td>
<td>Efficacy of Stock Market Investors</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Age</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Time-period of Investment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Years of experience</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 4.3: Investor Personality Type as per Type A-Type B

<table>
<thead>
<tr>
<th>Final Points</th>
<th>Personality Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Below 90</td>
<td>B</td>
</tr>
<tr>
<td>90 to 99</td>
<td>B+</td>
</tr>
<tr>
<td>100 to 105</td>
<td>A-</td>
</tr>
<tr>
<td>106 to 119</td>
<td>A</td>
</tr>
<tr>
<td>More than 120</td>
<td>A+</td>
</tr>
</tbody>
</table>

Religiosity – Religiosity has been assessed using Religiousness Measure scale (Sethi and Seligman, 1993). This scale measures religiosity as a summative score of three sub-aspects – religious influence in daily life (6 items), religious involvement (3 items) and religious hope (6
items). While *religious influence in daily life* assesses role of religious dogma on an individual’s day-to-day decisions, *religious involvement* evaluates the regularity in attending/performing religious rituals and services by an individual. *Religious hope* is a more abstract criterion which appraises individual’s meta-physical viewpoint on religion. A 7-point Likert scale is used for religious influence in daily life (1: Not at all influential to 7: Extremely influential) and religious hope (1: Strongly Disagree to 7: Strongly Agree), while a 6 point Likert scale is used for religious influence in daily life to record frequency of following religious activities (1: Less than once a month to 6: More than once a day).

**Mindfulness** – 14-item version of Freiburg Mindfulness Inventory (FMI-14) (Walach et al., 2006) is administered for assessing mindfulness of an investor. The scale characterizes the phenomenological mindfulness using last few days’ experience to reflect for each of the 14 items. A 4-point Likert scale is used with 1 for rarely, 2 for occasionally, 3 for fairly often and 4 for almost always. One reverse scored item is re-scored by using “n+1+score” logic, where n is the 4 (i.e., number of options for question). The instructions seek for an honest and spontaneous answer based on personal experience instead for a deliberative perfectly right or correct answer.

**Consciousness Quotient** – An abridged version of Ovidua Brazdau’s (2013) CQ-i 2013 has been used for measuring consciousness quotient of an individual. The original version consists of six sub-scales, namely, Physical CQ (5 items), Emotional CQ (6 items), Cognitive CQ (9 items), Spiritual CQ (10 items), Social-Relational CQ (9 items) and Self CQ (12 items). The scale defines consciousness quotient in terms of awareness of self which is interpreted as ability to access the information simultaneously. The cognitive processing of this information is beyond the measurement of the scale which Brazdau (2009) argues to be a more complex task. In this study, we have considered consciousness quotient as the summative score of two sub-scales, spiritual CQ and self CQ. Feedback from three experts with prior research experience in the field of consciousness and social science was collated to identify the suitability of the sub-scales for this behavioural finance research. A 6 point Likert scale is used where 1 is for never, 2 is for very rarely, 3 is for rarely, 4 is for frequently, 5 is for very frequently and 6 is for always.
**Cognitive Capability and Intuitive Ability** – Preferences for Intuition and Deliberation (PID) (Betsch, 2004) is a composite scale which measures two important constructs of the conceptual framework. Preference of Intuition, a 9-item scale (one item reverse scored) measures intuitive ability (for example, “I listen carefully to my deepest feelings”); while Preference of Deliberation, another 9-item scale measures cognitive capability (for example, “I prefer making detailed plans rather than leaving things to chance”). The level of agreement/disagreement is collected on a 5-point Likert scale (1: very much disagree and 5: very much agree). One item in Preference for Intuition scale is reverse scored. The two scales are not dependent on logical ability and intelligence of the decision maker (Betsch, 2004).

**Efficacy of Stock Market Investors**

The efficacy of an investor has been analyzed based on his/her ability to earn returns over time. Ideally, an investor can optimize the returns when he/she buys the share at low and sells at high. In this study, efficacy of investors has been studied based on score of post-facto performance.

- **Post-facto performance** – Returns earned over a period will compute the efficacy of investor. To measure post-facto performance, returns earned in different investment horizons are queried. First, the investor ranks his/her preferred investment horizon from four categories – VST: very short term investor (intra-day to 2 weeks); ST: short term investor (2 weeks to 3 months); MT: mid-term investor (3 months to 9 months) and LT: long term investor (more than 9 months) in Q.4. Next, returns earned under each horizon are classified in either of the six categories - “NA” (does not invest in a specific time horizon), “Less than 0%” (or loss), “0% - 5%”, “5%-10%”, “10% -15%” and “more than 15%” in Q.7. A composite score of the preferred investment horizon and returns earned in that horizon has been computed to assess investor’s post-facto performance.

\[
\text{Efficacy} = \Sigma (\text{Rank} \times \text{Return on Investment})
\]  

(2)

- **Self-efficacy** – Self-efficacy can be defined as decision maker’s belief in his/her abilities to restrict the effect of distracting variables and achieving the goal (Bandura, 1997). Hence, the concept of self-efficacy is rooted in the argument that behavioural choice are influenced by self-belief and confidence on capabilities. A unidimensional item has been
used to measure investor self-efficacy where the investor is asked if he/she is “..able to meet my desired investment targets?” on a 5-point Likert scale.

**Gender**

The respondents have been categorized as Male (M) and Female (F)

**Age**

The stock market investors have been classified into two groups based on their age – Young Adults: less than 45 years and Mature Adults: more than 45 years

**Time-period of Investment**

Based on investment horizon, the investors have been categorised in four groups – Very short-term investor: intra-day to 2 weeks; Short Term Investor: 2 weeks to 3 months); Mid Term Investor: 3 months to 9 months and Long Term Investor: more than 9 months.

**Years of experience**

Based on experience in stock market investment, three categories have been formed – Naïve: 0-5 years; Moderate: 5 to 15 years and Experienced: more than 15 years.

4.5. **Concluding Remarks**

This chapter outlines research methodology adopted for the study including scope of the study, sample design, questionnaire design and details of the measurement scale used for the research constructs. The reliability score of each construct of the survey instrument is tested. The descriptive and inferential analysis of the of the data collected is discussed in the following chapters.