3. METHODOLOGY

This chapter aims to build on the introduction and gives an outline of the scientific beliefs and paradigms informing the study to provide assurance that appropriate procedures were followed. The chapter is organized around four major topics: the study region, the sampling procedure, nominal group technique procedures, and data processing. In brief, methodology section focuses on research approach, population and sample, variables and measures, research questions and hypotheses, and, finally, data collection, analysis, and presentation techniques.

3.1. Aim

The general aim of the present study is to measure the relevance of emotional intelligence competencies in leader’s self-motivation and their potential to motivate others (i.e. direct reports) and examining their independent and joint influence on the effectiveness of IT/ITES and manufacturing organizations.

3.2. Operational Definition

All the constructs chosen for the study have been operationally defined as follows.

- **Emotional Intelligence**: “A capacity for recognizing our own feelings and those of others, for motivating ourselves” and others, “and for managing emotions both within ourselves and in our relationships” (Goleman, 1998). Emotional Competence is “A learned capability based on emotional intelligence that, results in outstanding performance at work” (Goleman, 1998b).

- **Motivation**: “An internal state or condition (sometimes described as a need, desire, or want) that serves to activate or energize behavior and give it direction” (Kleinginna & Kleinginna, 1981a).

- **Self-Motivation**: The ability of the leader(s) to satisfy his desire(s) or expectation(s), to keep his actions goal-directed without being influenced by
external stimuli; being able to delay gratification and working in a careful and consistent manner without giving up.

- **Motivating-Others:** The ability of the leaders to understand and influence the behavior of the subordinates and to create environment of intrinsic motivation. It is also the ability to release and channelize the untapped potential energy of the team towards accomplishing the personal and organizational goals.

- **Organizational Effectiveness:** The ability of an organization to deal with organizational difficulties or concerns pertaining to capabilities and ownership, operational effectiveness, strategy and leadership, and trust and motivation and achieve the outcomes that it intends to.

3.3. **Objectives**

To achieve the aim of the study, the following objectives or research questions were formulated.

1. To determine whether leader’s emotional intelligence competencies have any relationship with leader’s motivation.

2. To study the influence of leader’s emotional intelligence and motivation on organizational effectiveness.

3. To compare leader’s emotional intelligence and motivation with various demographic characteristics of the sample such as age, gender, marital status, experience level, job level, team size, industry type and annual income.

4. To compare the effectiveness of IT/ITES organizations with manufacturing organizations.
3.4. Hypotheses

In order to thoroughly investigate the research objectives formulated for the study with the backing of solid literature evidences mentioned, the following hypotheses were drawn.

1. Significant relationship exists between leader’s emotional intelligence competencies and leader’s motivation (self and others).
2. Emotional intelligence competencies of leaders significantly influence organizational effectiveness.
3. Leader’s motivation (self and others) has significant influence on organizational effectiveness.
4. Jointly leader’s emotional intelligence and leader’s motivation (self and others) has significant influence on organizational effectiveness.
5. Significant differences exist in emotional intelligence competencies of leaders when compared to their age, gender, experience level and job level.
6. Significant differences exist in leader’s motivation when compared to their age, gender, marital status, experience level, job level, team size and annual income.
7. Significant differences exist between the effectiveness of IT/ITES organizations and manufacturing organizations.

3.5. Research Model

Figure 2 represents the path diagram of the research model designed to primarily test if any relationship exists between leader’s EI, leader’s self-motivation and leaders motivation others. Second, this model tests the independent influence of leader’s EI, leader’s self-motivation and leaders motivating–others on organizational effectiveness. Third, this model tests the joint effects of leader’s EI and Motivation (self and others) on organizational effectiveness. Fourth, it tests the differences in effectiveness of IT/ITES
and Manufacturing organizations based on its leader’s EI, motivation and OE. Lastly, the influence of all the demographic variables is tested independently with leader’s EI, leader’s motivation (self and others).

**Figure 2: The Research Model**

### 3.6. Research Variables

In the research process the independent variables (IV) are used to examine the relationship with mediator or intervening variables (MV) and predict their direct and indirect influence on dependent variables (DV). Also, the researcher uses moderator and demographic variables to test the influence on IV, MV and DV respectively. All the variables chosen for the study have been presented below.
• **Independent Variable (IV) - Leader’s Emotional Intelligence Competencies**

The study consists of 12 EI competencies clustered under four domains namely self awareness, self management, social awareness and relationship management. The direct reports (others) perceptions of leader’s EI competencies are used as independent variables.

*Independent variable 1:* Emotional Self-awareness

*Independent variable 2:* Achievement Orientation

*Independent variable 3:* Adaptability

*Independent variable 4:* Emotional Self-Control

*Independent variable 5:* Positive Outlook

*Independent variable 6:* Empathy

*Independent variable 7:* Organizational Awareness

*Independent variable 8:* Conflict Management

*Independent variable 9:* Coach and Mentor

*Independent variable 10:* Influence

*Independent variable 11:* Inspirational Leadership

*Independent variable 12:* Teamwork

• **Mediator Variable (MV) - Leader’s Motivation (Self and Others)**

The study consists of two mediating variables which measure leader’s potential to motivate self and direct reports.

*Mediator variable 1:* Leader’s self-motivation

*Mediator variable 2:* Leaders motivating-others

• **Dependent Variable (DV) - Organizational effectiveness**

The current study consists of four dependent variables as the organizational effectiveness is evaluated based on four areas of organizational concern or difficulty.
Dependent variable 1: Capability and Ownership

Dependent variable 2: Operational Effectiveness

Dependent variable 3: Strategy and Leadership

Dependent variable 4: Trust and Motivation

- **Moderator Variable (Mo)** - Industry sector (IT/ITES and Manufacturing)

  In the current study the ‘industry sector’ has been treated as the qualitative moderator variable which tests the influence of different cultures predominant in IT/ITES and Manufacturing organizations on leadership effectiveness based on leader’s EI and motivation.

- **Demographic Variable (s)** - Age, Gender, Marital Status, Work Experience, Job Level, Team Size, Annual Income and Industry Type

  Various demographic variables of leaders and direct reports collected as a part of personal information are used selectively to test their independent effects on leader’s EI, leader’s motivation (self and others) respectively.

3.7. The Sample

The study sample consisted of 500 leaders and their 1500 direct reports working in IT/ITES and manufacturing industry sector. The organizations chosen for the study were public companies who were the market leaders in India’s private business sector having nationwide network and global presence. These organizations were employing over 10,000 to 40,000 people. The study was conducted in the branch offices of these organizations located in the vicinity of Bangalore and Mysore, the southern part of India.

- **Sample Inclusion Criteria.** The population of ‘leader’ in this study included all those employees who were handling various leadership and managerial roles formally or informally at all levels of the organization.
• **Sample Exclusion Criteria.** The sample didn’t include leaders who had less than three direct reports and those direct reports who were not directly reporting to the respondent leader for less than six months.

### 3.8. Research Measures

To empirically investigate the proposed conceptual relation and impact of the IV, MV on DV, the standardized psychometric measures identified for the study are as follows.

#### 3.8.1. The Emotional and Social Competency Inventory (ESCI)

The emotional and social competency inventory (ESCI) is the most recent model of EI developed by Goleman, Boyatzis and Hay group (2007) as a re-conceptualization of ECI 2 to achieve a higher psychometric standard with the ECI. The ESCI contains 12 competencies organized into four clusters, namely: self-awareness, self-management, social awareness, and relationship management. ESCI consists of 68 questions to be rated on a six-point rating scale.

##### 3.8.1.1 The Emotional and Social Competency Framework

Figure 3 gives the quick overview of the EI framework of the ESCI model which has been illustrated below.

**Self-Awareness** concerns knowing one’s internal states, preferences, resources and intuitions.

- *Emotional self-awareness.* Recognizing one’s emotions and their effects

**Self-Management** refers to managing one’s internal states, impulses and resources.

- *Achievement orientation* is striving to improve or meeting a standard of excellence
- *Adaptability* is the flexibility in handling change
- *Emotional self-control* is to keeping disruptive emotions and impulses in check
Methodology

- **Positive outlook** refers to persistence in pursuing goals despite obstacles and setbacks

*Social Awareness* refers to how people handle relationships and awareness of others’ feelings, needs and concerns.

- **Empathy** is sensing others’ feelings and perspectives, and taking an active interest in their concerns

- **Organizational awareness** is reading a group’s emotional currents and power relationships

![Figure 3: EI framework of ESCI](image)

*Relationship Management* concerns the skill or adeptness at inducing desirable responses in others.

- **Conflict management** refers to negotiating and resolving disagreements

- **Coach and mentor** is sensing others’ development needs and bolstering their abilities

- **Influence** refers to wielding effective tactics for persuasion

- **Inspirational leadership** is inspiring and guiding individuals and groups
• **Teamwork** is working with others toward shared goals and creating group synergy in pursuing collective goals.

### 3.8.1.2. Competency Levels

In ESCI developmental levels have been dropped as a result of revising the wording of items for each scale to ensure overlap in language and concepts resulting in the removal of the algorithm that lies behind the ECI and its target level for each competency. However, ESCI doesn’t restrict the usage of ECI developmental levels (Boyatzis, 2007). Hence, ECI 2 competency levels have been adopted in the current study and modified accordingly to suit the competencies outlined under ESCI. As per ECI 2 manual (Hay group, 2005) the optimal level for the following competencies is level 4: self-confidence, adaptability, initiative, empathy, service orientation, and conflict management. The optimum level for all other competencies is level 3.

### 3.8.1.3. ESCI norms - Average-Item Scores for Competency Levels

The average-item scores ranges presented for ESCI were adopted from ECI 2 norms. Table 1 shows the ranges of scores for a person to be considered low, medium, or high ability in each competency.

Average-item scores equivalent to high, medium, and low competency levels for emotional self-awareness were obtained as the result of averaging both emotional self-awareness and accurate self-assessment average-item score ranges and optimal competency levels. As a result of dropping of four ECI 2 competencies in ESCI namely, self-confidence, transparency, service orientation and change catalyst (Boyatzis, 2007), the average-item ranges and competency levels were dropped from ESCI framework. Positive outlook is a revised name of optimism scale; and coach and mentor is a revised name of developing others; hence, the same ECI 2 norms were retained without any modifications to the average-item ranges and competency levels. The ECI 2 standard
average-item scores equivalent to high, medium, and low competency levels can be found in Annexure 1.

**Table 1: Average-item scores equivalent to high, medium, and low competency levels**

<table>
<thead>
<tr>
<th>ESCI Cluster</th>
<th>Competency</th>
<th>Low Range</th>
<th>Medium Range</th>
<th>High Range</th>
<th>Optimal Competency Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-Awareness</td>
<td>Emotional Self-awareness*</td>
<td>&lt; 3.35</td>
<td>3.35 to 3.73</td>
<td>&gt; 3.73</td>
<td>3</td>
</tr>
<tr>
<td>Self-Management</td>
<td>Achievement Orientation**</td>
<td>&lt; 3.53</td>
<td>3.53 to 3.82</td>
<td>&gt; 3.82</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Adaptability</td>
<td>&lt; 3.72</td>
<td>3.72 to 3.98</td>
<td>&gt; 3.98</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Emotional Self-Control</td>
<td>&lt; 3.78</td>
<td>3.78 to 4.07</td>
<td>&gt; 4.07</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Positive Outlook</td>
<td>&lt; 3.98</td>
<td>3.98 to 4.25</td>
<td>&gt; 4.25</td>
<td>3</td>
</tr>
<tr>
<td>Social Awareness</td>
<td>Empathy</td>
<td>&lt; 3.92</td>
<td>3.92 to 4.21</td>
<td>&gt; 4.21</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Organizational Awareness</td>
<td>&lt; 3.68</td>
<td>3.68 to 4.02</td>
<td>&gt; 4.02</td>
<td>3</td>
</tr>
<tr>
<td>Relationship Management</td>
<td>Coach and Mentor</td>
<td>&lt; 3.66</td>
<td>3.66 to 4.03</td>
<td>&gt; 4.03</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Conflict Management</td>
<td>&lt; 2.95</td>
<td>2.95 to 3.26</td>
<td>&gt; 3.26</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Influence</td>
<td>&lt; 3.55</td>
<td>3.55 to 3.88</td>
<td>&gt; 3.88</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Inspirational Leadership</td>
<td>&lt; 3.71</td>
<td>3.71 to 4.08</td>
<td>&gt; 4.08</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Teamwork</td>
<td>&lt; 3.98</td>
<td>3.98 to 4.25</td>
<td>&gt; 4.25</td>
<td>3</td>
</tr>
</tbody>
</table>

*Emotional self-awareness scores were obtained by averaging it and accurate self-assessment scores
**Achievement orientation scores were obtained by averaging it and initiative scores

### 3.8.1.4. Reliability and Validity Overview of ESCI

Table 2 presents the reliability of the scales in the ESCI in comparison to the ECI 2 reliabilities (Haygroup, 2005). The ESCI reliabilities were based on the pilot study, which contained 1022 raters. The Cronbach’s alpha values for each competency calculated for rater group are high ranging from 0.74 to 0.87 as compared to the most similar ECI 2 competencies for total others ratings (N=22,089). A principal axis Exploratory Factor Analysis with promax rotation showed the factor analytic properties of ESCI to be outstanding (Boyatzis, 2007).

ESCI measures the behaviors that contribute to emotionally and socially effective performance. The psychometric standards achieved in the statistical analyses provides
reassurance that the ESCI focuses on behaviors – and the relationship between them – that are observable, recognizable and distinct (Boyatzis, 2007).

### Table 2: Cronbach’s alpha reliability for ESCI competencies

<table>
<thead>
<tr>
<th>Cronbach’s Alpha Reliability for ESCI Competencies</th>
<th>Cronbach’s Alpha Reliability* for the most similar ECI-2 Competencies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emotional Self-Awareness</td>
<td>0.83</td>
</tr>
<tr>
<td>Achievement Orientation</td>
<td>0.74</td>
</tr>
<tr>
<td>Adaptability</td>
<td>0.76</td>
</tr>
<tr>
<td>Emotional Self-Control</td>
<td>0.80</td>
</tr>
<tr>
<td>Positive Outlook</td>
<td>0.76</td>
</tr>
<tr>
<td>Empathy</td>
<td>0.79</td>
</tr>
<tr>
<td>Organizational Awareness</td>
<td>0.76</td>
</tr>
<tr>
<td>Conflict Management</td>
<td>0.84</td>
</tr>
<tr>
<td>Coach and Mentor</td>
<td>0.83</td>
</tr>
<tr>
<td>Influence</td>
<td>0.74</td>
</tr>
<tr>
<td>Inspirational Leadership</td>
<td>0.79</td>
</tr>
<tr>
<td>Teamwork</td>
<td>0.87</td>
</tr>
<tr>
<td>Emotional Self-Awareness</td>
<td>0.87</td>
</tr>
<tr>
<td>Achievement Orientation</td>
<td>0.77</td>
</tr>
<tr>
<td>Adaptability</td>
<td>0.73</td>
</tr>
<tr>
<td>Emotional Self-Control</td>
<td>0.83</td>
</tr>
<tr>
<td>Optimism</td>
<td>0.75</td>
</tr>
<tr>
<td>Empathy</td>
<td>0.80</td>
</tr>
<tr>
<td>Organizational Awareness</td>
<td>0.80</td>
</tr>
<tr>
<td>Conflict Management</td>
<td>0.73</td>
</tr>
<tr>
<td>Developing Others</td>
<td>0.85</td>
</tr>
<tr>
<td>Influence</td>
<td>0.76</td>
</tr>
<tr>
<td>Inspirational Leadership</td>
<td>0.86</td>
</tr>
<tr>
<td>Teamwork &amp; Collaboration</td>
<td>0.75</td>
</tr>
</tbody>
</table>

#### 3.8.2. Leader’s Motivation Assessment Tool (LMAT)

In the current study leadership motivation is measured in terms of leader’s ability to motivate one-self and her team members using the revised versions of two very popular and widely used short online tests from the set of Leadership Motivation Assessment Tools (LMAT) designed by Mindtools (2008) for the purpose of coaching and mentoring the leaders to improve their motivating potential in order to build high performance teams. With permission, these online tests were reproduced as paper-pencil tests and their reliability and validity was tested through a pilot study prior to the research work and necessary minor modifications were done to the questionnaire based on the results and feedback of the pilot study. The revised version of LMAT consists of two self-assessment questionnaires namely LSMAQ and LTMAQ. The details of the tests are given below.
3.8.2.1. Leadership Self-Motivation Assessment Questionnaire (LSMAQ)

Leader’s self-motivation is measured using Leadership Self-Motivation Assessment Questionnaire (LSMAQ). This tool consists of 14 statements. The set of questions constructed for this self-assessment were patterned after that of Dubrin (1998). LSMAQ is structured using a typical five-point Likert-type scale which measures the leader’s level of agreement and disagreement on self-motivation.

3.8.2.2. Leadership Team-Motivation Assessment Questionnaire (LTMAQ)

To measure leader’s potential to motivate her team members, Leadership Team Motivation Assessment Questionnaire (LTMAQ) was used. This self-assessment tool consists of 15 questions which are construed around 4 major areas of motivation namely, providing productive and challenging work, setting effective goals, understanding individual differences in motivation and lastly providing rewards and recognition. LTMAQ is structured using a 5-point frequency interval scale which measures the frequency in which leaders exhibit team motivation practices on five value anchors, they are: (1) Not at all, (2) Rarely, (3) Sometimes, (4) Often, and (5) Very often.

3.8.3. Organizational Effectiveness Self-Diagnostic Tool (OEST)

Organizational effectiveness self-diagnostic tool is a revised version of Metrus Organizational Effectiveness Self-Diagnostic Tool developed by Metrus group (2002) to measure the organizational effectiveness levels within the groups and to identify the areas of concern/improvement. This scale consists of 16 questions which are grouped into four areas of organizational difficulties namely, capabilities and ownership (C&O); operational effectiveness (OpE); strategy and leadership (S&L); and, trust and motivation (T&M). OEST is structured using a typical five-point Likert-type scale which measures the level of agreement and disagreement on organizational effectiveness items.
3.8.4. Reliability and Validity of LMAT and OEST

The psychometric properties of the revised Leadership Motivation Assessment Tool (LMAT) and Organizational Effectiveness Self-diagnostic Tool (OEST) are presented below.

3.8.4.1. Content Validity

Content validity for the instruments Leadership Self-Motivation Assessment Questionnaire (LSMAQ) and Leadership Team-Motivation Assessment Questionnaire (LTMAQ) was established using expert judgment to determine these tests measured knowledge of the content domain that it intended to measure namely leader’s self-motivation and their potential to motivate-others. The subject matter experts were identified from the majorly active professional networking website. The subject matter experts included the professors of psychology and management, psychometric consultants, leadership training professionals, mentors, organizational consultants and others. A copy of the LSMAQ and LTMAQ self-assessment tools were purposively distributed to 30 senior experts asking them to review the content of the questionnaires in-line with the research objectives and to give their suggestions. The content validity was established for LMAT with ten experts. The minor changes made to the scale based on expert advice were: (1) The wordings of the statements for each scale were revisited and, (2) The wordings of the statements of the LTMAQ were reframed carefully to suit the rater’s perspective.

Content validity for Organizational Effectiveness Self-diagnostic Tool (OEST) was established using similar procedure followed to establish content validity for LMAT. In order to make sure the OEST survey measured all the criteria that constituted leadership based organizational effectiveness concept, the researcher identified a mix of 20 experts from academia and industry through a professional networking site and their
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expert opinion was sought on the adequacy of Metrus group organizational effectiveness self-diagnostic tool. Content validity of OEST was established with 15 experts. Based on the expert opinion, the wordings of the scale items were revisited and few of the items were reframed keeping in mind its applicability to the representative sample.

3.8.4.2. Face Validity

The face validity of the LMAT and OEST instruments were pilot tested using the research design of the main study. The pilot study was conducted two months prior to the commencing of the main study. The pilot study included 30 leaders and their 90 direct reports (three direct reports per leader) equally distributed between various IT/ITES and manufacturing organizations situated in and around the vicinity of Mysore and Bangalore. A set of two questionnaires containing a copy of the LSMAQ and OEST was administered to the leaders. Similarly, a set of two questionnaires containing the LTMAQ along with a copy of the OEST was administered to the direct reports. On completion, average time taken to complete the survey was noted and the rater’s comments to clarify and improve the wording of any items that users indicated problematic were re-examined and minor changes in word selection and instructions were made to the questionnaires.

3.8.4.3. Reliability

Reliability of the LMAT and OEST scales were established using one of the most popular reliability statistics i.e. Cronbach's alpha (Cronbach, 1951). Nunnaly (1978) has indicated 0.7 to be an acceptable reliability coefficient but lower thresholds are sometimes used in the literature. Using SPSS 20 reliability analysis was conducted to obtain Cronbach’s alpha internal consistency coefficients for the LMAT and OEST instruments. The results of the pilot test conducted on 30 leaders and their 90 direct reports served as the data source to support the reliability of these scales.
Alpha coefficient for LTMAQ was reported to be 0.925 while alpha coefficient for LSMAQ was 0.853 which indicated the LMAT scale to have highly adequate reliability. The item-total statistics showed that all the items of the LMAT self and others version were internally consistent with each other as none of the items increased the overall reliability coefficient if they were to be deleted. This shows that all the items of the LSMAQ and LTMAQ are reliable and the usage of this instrument on a larger sample can elicit consistent and stable responses. The revised LMAT kit can be used to measure self-motivation and team-motivation by the leaders in a single instrument. The outcome of the main research work would greatly support and validate the predictor value in scientific research.

Reliability analysis was done for all the four subscales of OEST which consisted four items each and the alpha coefficient obtained for leaders as well as direct reports sample was reported to be between 0.79 and 0.90 indicating adequately high reliability. The average alpha coefficient obtained for all the subscales ranged from 0.84 to 0.87 while for the rater group of leaders and direct reports the average alpha coefficient was reported to be 0.82 and 0.88 respectively. Table 3 shows the alpha coefficient for OEST subscales where the alpha coefficient for leaders sample is ranging from 0.79 to 0.86 while it is ranging from 0.86 to 0.90 for direct reports sample which is consistently higher than the leader’s sample. The item-total statistics also showed that all the items of the OEST scale were internally consistent and reliable hence, they can be used in the research as a predictor variable.
Table 3: Reliability properties of OEST

<table>
<thead>
<tr>
<th>Rater Group</th>
<th>Cronbach’s Alpha reliability for OEST</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Capability &amp; Ownership</td>
</tr>
<tr>
<td>Leaders</td>
<td>0.84</td>
</tr>
<tr>
<td>Direct Reports</td>
<td>0.89</td>
</tr>
</tbody>
</table>

3.9. Procedure

3.9.1. Sampling Procedure

All the renowned IT/ITES and manufacturing organizations located in and around the vicinity of Mysore and Bangalore (two urban areas of Karnataka, India) were listed and consent for undertaking research was obtained from the respective Human Resource Department (HRD). Necessary demographic details of the leaders along with their team details were collected from the HRD. Purposive sampling procedure was applied to obtain the population of the respondents and their raters. The leaders not meeting the sample inclusion criteria were eliminated. Finally, an overall population of 800 leaders and their 2400 direct reports were selected from eight IT/ITES and 14 manufacturing organizations.

All the chosen leaders were contacted in person and/or in groups and a set of three questionnaires containing the ESCI self-report version, LSMAQ and OEST were administered with clear instructions. Similarly, each of the leader’s three direct reports was chosen randomly from the pool of subordinates based on their accessibility. The chosen direct reports were then contacted in person or in groups and one set of three questionnaires containing the ESCI 360-degree version, LTMAQ and OEST were administered with clear instructions. On completion, the filled questionnaires were collected personally by the researcher from the respondents and their raters.
3.9.2. Data Collection

Questionnaire return rate among leaders was 70% while 50% among raters. Overall average questionnaire return rate was 1.5 - 2 raters per leader while, the study required a minimum of three raters per leader. Hence, respondents having less than three raters were listed (n=400) and the others-version of the questionnaires were issued to additional two to three raters (n=1000) of the respective leaders. Rigorous follow-ups were done by the researcher with the help of the respective HRD. After six to seven months of follow-up, completed questionnaires for the population of 650 (81.25%) leaders and 2200 (64.8%) raters were gathered. This comprised of 380 leaders and 1350 raters from IT/ITES; 270 leaders and 850 raters from manufacturing organizations. From this, the respondent leaders having less than three raters and the completed questionnaires with more than 75% don’t know answers in ESCI (self and others) or incomplete questionnaires were eliminated. This accounted for an overall eligible population of 263 leaders and their 789 raters from IT/ITES organization and 265 leaders and their 795 raters from manufacturing organization.

Finally, from the eligible pool of 528 leaders, the study sample of 500 leaders containing 250 leaders each from IT/ITES and manufacturing organizations were randomly selected and their three direct reports accounting for a total of 1500 raters were purposively gathered and tested against the hypotheses of the study.

3.9.3. Data Preparation

All the submitted questionnaire sets for leaders and their raters were gathered and the data obtained on the questionnaires was electronically fed into the datasheets. The primary data of self-version and others-version of the ESCI, LMAT and OEST were scored using the standard norms and the scoring key of the questionnaires. Two of the three questionnaires used namely, ESCI and LTMAQ contained reversed scored items.
Hence, reversed scoring was done to all the reverse scored items of ESCI and LTMAQ. On scoring, each of the scored items of the leader’s version of the questionnaires were averaged based on the subscales. Similarly, the average ratings for each of the three raters were calculated for all the 500 leaders individually and the total rater’s sample of 1500 was averaged to 500 raters based on the leader. The overall averaged scores of 500 leaders and their averaged 500 raters were scrutinized for each subscale of ESCI, LMAT and OEST and were processed for further analysis. In the same way, the secondary data collected from leaders and their direct reports through the personal information sheet attached alongside questionnaire contained the demographic information was uniquely coded so as to protect the confidentiality of the participant’s information and to maintain privacy.

3.10. Data Analysis

The data collected from the participants was electronically scored and analyzed using the popular statistical methods such as: Descriptive statistics, Reliability analysis, Independent samples T-test, One-way ANOVA, Multiple regressions and Bootstrapping by making use of statistical tools such as SPSS (statistical package of social sciences) version 20 and PROCESS for SPSS and SAS (version 2.03) developed by Hayes (2013) to analyze multiple mediation and moderated mediation models in the current study.

PROCESS is a computational tool for path analysis-based moderation and mediation analysis as well as their combination as a “conditional process model” (Hayes and Preacher, in review; Hayes, 2013) developed by Hayes (2013). In a single command, it provides many of the capabilities of SOBEL (Preacher and Hayes, 2004), INDIRECT (Preacher & Hayes, 2008), MODPROBE (Hayes & Matthes, 2009), MODMED (Preacher, Rucker, & Hayes, 2007), and MED3/C (Hayes, Preacher, & Myers, 2011) while greatly expanding the number and complexity of models that combine moderation.
and mediation (“mediated moderation” and “moderated mediation”). In addition to estimating the coefficients of the model using OLS regression (for continuous outcomes) or maximum likelihood logistic regression (for dichotomous outcomes), PROCESS generates direct and indirect effects in mediation and mediated moderation models, conditional effects in moderation models, and conditional indirect effects in moderated mediation models with a single or multiple mediators. PROCESS offers various tools for probing 2 and 3 way interactions and can construct percentile based bootstrap confidence intervals for conditional and unconditional indirect effects. In mediation models, multiple mediator variables can be specified to operate in parallel or in sequence. Heteroscedasticity-consistent standard errors are available for inference about paths coefficients, in the Sobel test for indirect effects, and when probing interactions in moderation analysis. Various measures of effect size for indirect effects are generated in mediation models, along with bootstrap confidence intervals for effect size inference. An option is available for partialing out contextual level variation when individual data are nested under a higher-level organizational structure. Individual paths in moderated mediation models can be estimated as moderated by one or two variables either additively or multiplicatively. Some models estimated by PROCESS allow up to four moderators simultaneously.

Since, the current study consisted two mediator variables (leaders self-motivation and leaders motivating-others) to be tested for its links with IV (leader’s EI) and DV (OE), multiple mediation (Model 6) outlined by Hayes (2013) was used. Similarly, to test the differences in industry sector (moderator variable) in OE (DV) based on leader’s EI (IV) and motivation (MV), the moderated mediation (Model 59) outlined by Hayes (2013) was used. Detailed procedure for testing the hypotheses using the above mentioned statistical methods has been illustrated in the following section.
3.11. Procedure for Testing Hypotheses

3.11.1. Testing the Main Features of the Sample

- **Descriptive Statistics**: Descriptive analysis is conducted on the demographic variables namely, age, gender, marital status, work experience, job level, size of the team, annual income to understand the basic features of the respondents and raters sample to arrive meaningful conclusions.

- **Reliability Analysis**: Internal consistency reliability using Cronbach’s alpha is used to check the degree to which the research measures are error-free on the given sample of leaders and their direct reports from manufacturing and IT/ITES industry. The alpha coefficient ranges obtained for the subscales of ESCI, LMAT and OEST are compared to the norms of the respective pilot tests and interpretation is drawn.

- **T-Test to compare the self & others ratings**: Current study is designed to evaluate leader’s EI, motivation and organizational effectiveness through upward feedback method. Independent-samples T-test is used to compare the variances and equality in the means of both the groups namely leaders and their direct reports.

3.11.2. Testing the Links between Emotional Intelligence, Motivation and Organizational Effectiveness

The aim of the study is to explore the unidimensional and multidimensional links between leader’s EI, leader’s self-motivation, leaders motivating-others and OE. This necessitates the need for testing the multiple mediation model. A mediation model is one that seeks to identify and explicate the mechanism or process that underlies an observed relationship between an independent variable and a dependent variable via the inclusion of a third explanatory variable, known as a mediator variable. Rather than hypothesizing a direct causal relationship between the independent variable and the dependent variable, a
mediation model hypothesizes that the independent variable influences the mediator variable, which in turn influences the dependent variable. Thus, the mediator variable serves to clarify the nature of the relationship between the independent and dependent variables (MacKinnon, 2008).

Multiple mediation model in the current study is tested using PROCESS for SPSS macro developed by Hayes (2013) and casual step approach (Baron and Kenny, 1986) as the PROCESS macro is designed to test only single dependent and single independent variable while, the current study required to study multiple IV and DV. Hence, first the multiple mediation model was tested using Bootstrapping approach (Hayes, 2013) which was further elaborated using simple and multiple regression analysis described in the causal steps approach (Baron & Kenny, 1986) in order to explain the relationship and effects of all the 12 predictor or criterion variables on the four outcome variables through the illustrated paths of the conceptual model described in Figure 4 to arrive meaningful conclusions. Justification for choosing Bootstrapping approach in the current study has been justified in the following sections.

Figure 4: Conceptual diagram of the Multiple Mediation Model (Hayes, 2013)
3.11.2.1. The Causal Steps Approach to Testing Intervening Variable Effects

Although, there are many methods available for testing hypotheses about intervening variable effects, the most widely-used method is the causal steps approach popularized by Baron and Kenny (1986). This approach requires the researcher to estimate each of the paths in the model and then ascertain whether a variable functions as a mediator by seeing if certain statistical criteria are met. Unbeknownst to many, the causal steps grounds. Most notably, simulation studies have shown that among the methods for testing approach has been criticized heavily on multiple intervening variable effects, the causal steps approach is among the lowest in power (Fritz & Mackinnon, 2007; Mackinnon, Lockwood, Hoffman, West & Sheets, 2002; as cited in Hayes, 2009).

3.11.2.2. Modern Approaches to Inference about Intervening Variable Effects

One inferential technique is the product of coefficients approach, most well known as the Sobel test (Sobel, 1982). This test requires an estimate of the standard error of ‘ab’ (Preacher & Hayes, 2004). The ratio of ‘ab’ to its standard error is used as a test statistic for testing the null hypothesis that the ‘true’ indirect effect is zero, with the p-value derived from the standard normal distribution. Although the Sobel test enjoys some use, frequently it is used as a supplement to the Baron and Kenny approach rather than instead of it. The Sobel test has a major flaw. It requires the assumption that the sampling distribution of the indirect effect is normal. But the sampling distribution of ‘ab’ tends to be asymmetric, with nonzero skewness and kurtosis (Bollen & Stine, 1990; Stone & Sobel, 1990).

Of the alternatives, two seem to be winning the battle: bootstrapping, and the empirical m-test. Simulation research shows that these methods tend to have highest power and the best type I error control. Although the empirical m-test (also known as the distribution of products approach) is advocated by Holbert and Stephenson (2003) as ‘the
best option available to media effects scholars”, it suffers the major weakness that it is somewhat cumbersome to conduct without the assistance of tables (although Mackinnon, Fritz, Williams, & Lockwood, 2007, offer an algorithm to reduce some of the computational burden) and it requires additional assumptions that bootstrapping does not. In contrast, bootstrapping is already implemented in some SEM software (most extensively in MPLUS, EQS and AMOS to a lesser-extent) and routines are available that allow users of other popular programs such as SPSS, SAS, and R to bootstrap indirect effects (e.g., Mackinnon, 2008; Preacher & Hayes, 2004, 2008; Shrout & Bolger, 2002). So, the current study focuses on bootstrapping as the better of the two options.

Discussions of bootstrapping indirect effects have been in the literature since the 1990s (e.g., Bollen & Stine, 1990; Lockwood & Mackinnon, 1997), but the method has started to catch on only recently. There are actually many different bootstrap-based methods that are available for testing hypotheses about intervening variable effects (Mackinnon, Lockwood & Williams, 2004). Simulation research shows that bootstrapping is one of the more valid and powerful methods for testing intervening variable effects (Mackinnon et al., 2004; Williams & Mackinnon, 2008) and, for this reason alone, it should be the method of choice. One of the beauties of bootstrapping is that the inference is based on an estimate of the indirect effect itself, but unlike the Sobel test, it makes no assumptions about the shape of the sampling distribution of the indirect effect, thereby getting around this problem that plagues the Sobel test. Additionally, notice that no standard error is needed to make the inference, rendering the controversy about how to best estimate the standard error of the indirect effect moot. Finally, it is a very general approach, in that it can be used for making inferences about indirect effects in any intervening variable model, regardless of how complex and how numerous the paths between x and y. Bootstrapping is being used with increasing frequency, although
like the Sobel test, it is sometimes reported as a supplement to the causal steps approach rather than instead of it (Hayes, 2009).

### 3.11.2.3. Procedure for Measuring the Mediation Effects

The total effect measures the extent to which the dependent variable changes when the independent variable increases by one unit. In contrast, the indirect effect measures the extent to which the dependent variable changes when the independent variable is held fixed and the mediator variable changes to the level it would have attained had the independent variable increased by one unit (Robins & Greenland, 1992; Pearl, 2001). In linear systems, the total effect is equal to the sum of the direct and indirect effects. In nonlinear models, the total effect is not generally equal to the sum of the direct and indirect effects, but to a modified combination of the two (Pearl, 2001).

A mediator variable can either account for all or some of the observed relationship between two variables. Maximum evidence for mediation, also called full mediation, would occur if inclusion of the mediation variable drops the relationship between the independent variable and dependent variable to zero. This rarely, if ever, occurs. The most likely event is that ‘the path of total effects’ becomes a weaker, yet still significant path with the inclusion of the mediation effect. Partial mediation maintains that the mediating variable accounts for some, but not all, of the relationship between the independent variable and dependent variable. Partial mediation implies that there is not only a significant relationship between the mediator and the dependent variable, but also some direct relationship between the independent and dependent variable.

### 3.11.3. Testing the Influence of Demographic Variables on Leader’s Emotional Intelligence and Motivation (Self and Others)

The leader’s and direct reports demographic factors are grouped into various categories based on the nature of the variable. The group means are compared using t-test.
and one-way ANOVA. T-test is used to comparing means of two groups and one-way ANOVA to compare more than two groups.

3.11.4. Comparing the Organizational Effectiveness of IT/ITES and Manufacturing Sector

The objective is to examine the moderation (Mo) effects of industry sector on the mediation model. Hence, PROCESS for SPSS is used where the interpretation is directed at estimates of the conditional indirect effect of ‘IV’ on ‘DV’ through ‘MV1,2’ at the values of ‘Mo’ (Hayes, 2009). Bootstrap methods are implemented in PROCESS for inference about indirect effects in moderated mediation models (Hayes, 2013). A mediator variable is a variable that sits between an independent variable and the dependent variable such that some of the effect of the independent variable on the dependent variable passes through the mediator variable. This is known as the indirect effect. A moderator variable is a variable involved in an interaction with another variable in the model such that the effect of the other variable depends upon the value of the moderator variable, i.e., the effect of the other variable changes depending on the value of the moderator. Moderated mediation occurs when a moderator variable interacts with a mediator variable such that the value of the indirect effect changes depending on the value of the moderator variable. This is known as a conditional indirect effect, i.e., the value of the indirect effect is conditional on the value of the moderator variable (Preacher, Rucker & Hayes, 2007). The conceptual diagram of the conditional process model of the study has been presented in Figure 5.
Figure 5: Conceptual diagram of Moderated mediation model (Hayes, 2013)

*Model 59 allows up to 10 mediators operating in parallel (Hayes, 2013); the study model consisted of 2 mediators and 1 moderator

Muller, Judd, and Yzerbyt (2005) and Preacher, Rucker and Hayes (2007) outline that, essentially, in moderated mediation, mediation is first established, and then one investigates if the mediation effect that describes the relationship between the independent variable and dependent variable is moderated by different levels of another variable (i.e., a moderator).

2.12. Ethical Considerations

The present research has been carried out in keeping with the highest ethical standards of scientific integrity. The study is free from all sorts of scientific misconduct in terms of fabrication, falsification, or plagiarism in proposing, performing, or reviewing research, or in reporting research results and all the ethical guidelines in regard to the research subjects have been strictly adhered. The present study values integrity, impartiality and respect for persons and evidence and establishes the highest ethical standards in work.