

CHAPTER 4

RESEARCH METHODOLOGY

4. Research Methodology

Introduction

This chapter describes the research design, scale development, sampling, data collection process and statistical procedures employed for empirically answering the research questions. The research methodology is based on the theoretical framework which represents the objective of the entire research in a nutshell.

4.1 Research Design

The study adopts mixed method research design involving both qualitative and quantitative components. The mixed method approach helps in gaining benefit of the unique strengths of qualitative and quantitative techniques. This approach is beneficial in triangulating the findings thereby ensuring the consistency and validity of responses. The findings of qualitative research are useful in understanding and explaining the probable reasons underneath the statistical findings (Creswell & Clark,2017).

Qualitative part of the present study involved in-depth interviews of entrepreneurship education alumni to understand their perception about the role and significance of entrepreneurship education in their entrepreneurial career as well as scope of improvement. In depth interviews are helpful in gaining qualitative insights about the relevant aspects of entrepreneurship education as well as to understand the delayed impact of entrepreneurship education in addition to the immediate impact. Fayolle & Gailly (2005) proposed that sometimes the impact of entrepreneurship education may be delayed. Another objective of in-depth interviews was to triangulate the findings of quantitative study and comprehend the probable reasons for those findings.

Quantitative part of the study was conducted based on self-administered questionnaire method where respondents rated the extent to which entrepreneurship education enhanced their confidence in performing various tasks, skills and attitude involved in new venture creation. The independent variables were related to the type of education and year of study, moderating variables were related to demographic details including gender, family background, work experience and prior entrepreneurial experience and the dependent variable entrepreneurial self-efficacy included task-specific entrepreneurial self-efficacy as well as general entrepreneurial self-efficacy. The next section explains the operational definition of all variables included in the study and theoretical framework based upon it.

4.2 Scope of the Study

Gujarat and Maharashtra are among the most industrialized states in India with almost similar demography as well as geographical advantages and challenges. The first seeds of entrepreneurship training in India were also sown in Gujarat in 1970s when the first three-month Entrepreneurship Development Program was offered. Gujarat also pioneered the concept of full-time entrepreneurship education program in India by establishing the first national level institute for imparting entrepreneurship education, Entrepreneurship Development Institute of India (EDII), Gandhinagar in 1983. Even today, most of the leading colleges offering dedicated entrepreneurship programs are located in these two states. Hence the geographical scope of current study is limited to Gujarat and Maharashtra.

In terms of duration of entrepreneurship education, the current study takes into consideration only two-year full time entrepreneurship education programs. The rationale for selecting long term entrepreneurship education program to study the impact of entrepreneurship education on entrepreneurial self-efficacy include:

- Minimal research on effectiveness of long term entrepreneurship education programs. Review of literature suggests that majority of the existing studies are based on short duration entrepreneurship program (Fayolle & Gailly,2009; Mclellan et al., 2009; Barakat et al., 2010; Sánchez, 2011; Sánchez,2013; Hattab, 2014)
- Increasing focus on long term entrepreneurship education programs. Though most of the management as well as non-management colleges across India offer compulsory as well as specialization courses in entrepreneurship as a part of their curriculum at undergraduate and post graduate program, recently two-year full time entrepreneurship education has also started gaining momentum. In 2019, AICTE gave approval to 15 new colleges across India to offer Masters of Business Administration in Innovation and Entrepreneurship (AICTE,2020).
- More rational comparison with regular management education. As regular post graduate management education programs also predominantly consist of two-year courses, consideration of two-year entrepreneurship education programs would provide the ground for fair comparison thereby helping to identify distinct features and uniqueness of entrepreneurship education.

4.3 Operationalization of Variables and Theoretical Framework

The variables under consideration in the present study:

- Independent Variable : Entrepreneurship Education
- Dependent Variable : Entrepreneurial Self-efficacy (ESE)
- Moderating Variable : Gender, Family background, Prior work-experience and Prior entrepreneurial experience

Operational Definitions of the variables considered in the study:

Entrepreneurial Self-Efficacy (ESE):

Entrepreneurial self-efficacy refers to the strength of the belief of an individual in his/her capability to undertake various roles and tasks involved in entrepreneurial career. For the present study, tasks of an entrepreneurial career are classified into four phases based on review of literature (Stevenson et al.,1985).

- a) *Searching*: It refers to the tasks involved in identifying an opportunity and generating business idea. It requires innovation and entrepreneurial mindset.
- b) *Planning*: It refers to the tasks pertaining to formalizing business idea, checking its financial, marketing and operation feasibility and evaluating its future prospects.
- c) *Marshalling*: It refers to the task of gathering of financial and human resources for the implementation of idea as well developing the market for the proposed product and service. It also involves identifying suppliers, machinery and other operational requirements of the business
- d) *Implementing*: It refers to the tasks involving final execution of the idea and its sustainability and growth thereafter. It includes implementing tasks related to human resource, operations and finance.

In addition to task specific skills, generic self-efficacy requirement for the entrepreneurs like group inter-personal skills, problem solving skills, perseverance and risk and uncertainty management is also considered as a part of entrepreneurial self-efficacy for the purpose of the current study.

Entrepreneurship Education

According to UNESCO, “Entrepreneurship education is made up of all kinds of experiences that give students the ability and vision of how to access and transform opportunities of different kinds. It goes beyond business creation. It is about increasing students’ ability to anticipate and respond to societal changes.” (UNESCO, 2008).

For the purpose of current study, entrepreneurship education refers to two-year full time post graduate degree/diploma courses in entrepreneurship offered in the colleges located in Gujarat and Maharashtra. These long term entrepreneurship education programs mainly aim at imparting the domain specific knowledge and developing various abilities/skills of the participants to prepare them for starting and managing their own ventures. The major domain areas include marketing, finance, human resource, operations, strategic management, economics, legal aspects of business, business environment, creativity and innovation, feasibility analysis, project formulation, family business management etc.

Demographic Variables

The demographic variables considered in the study include gender, family background, prior work-experience and prior entrepreneurial experience. Gender is a dichotomous variable and objective in its measurement. Family background refers to involvement of parents, siblings, close friends or close relatives in business, interaction with the family members about business as well as involvement of the respondents in the family business. Family business is one of the most significant demographic variable influencing entrepreneurial self-efficacy and hence is considered in detail. Work-experience refers to the working in a small or medium enterprise or any domestic or multinational company or start-up before joining full time entrepreneurship education program. Prior entrepreneurial experience means experience of the starting and running one’s own venture. The venture may or may not be successful and may or may not be currently in existence.

Figure 4-1 below represents theoretical framework depicting the relation between all the variables considered in the present study.

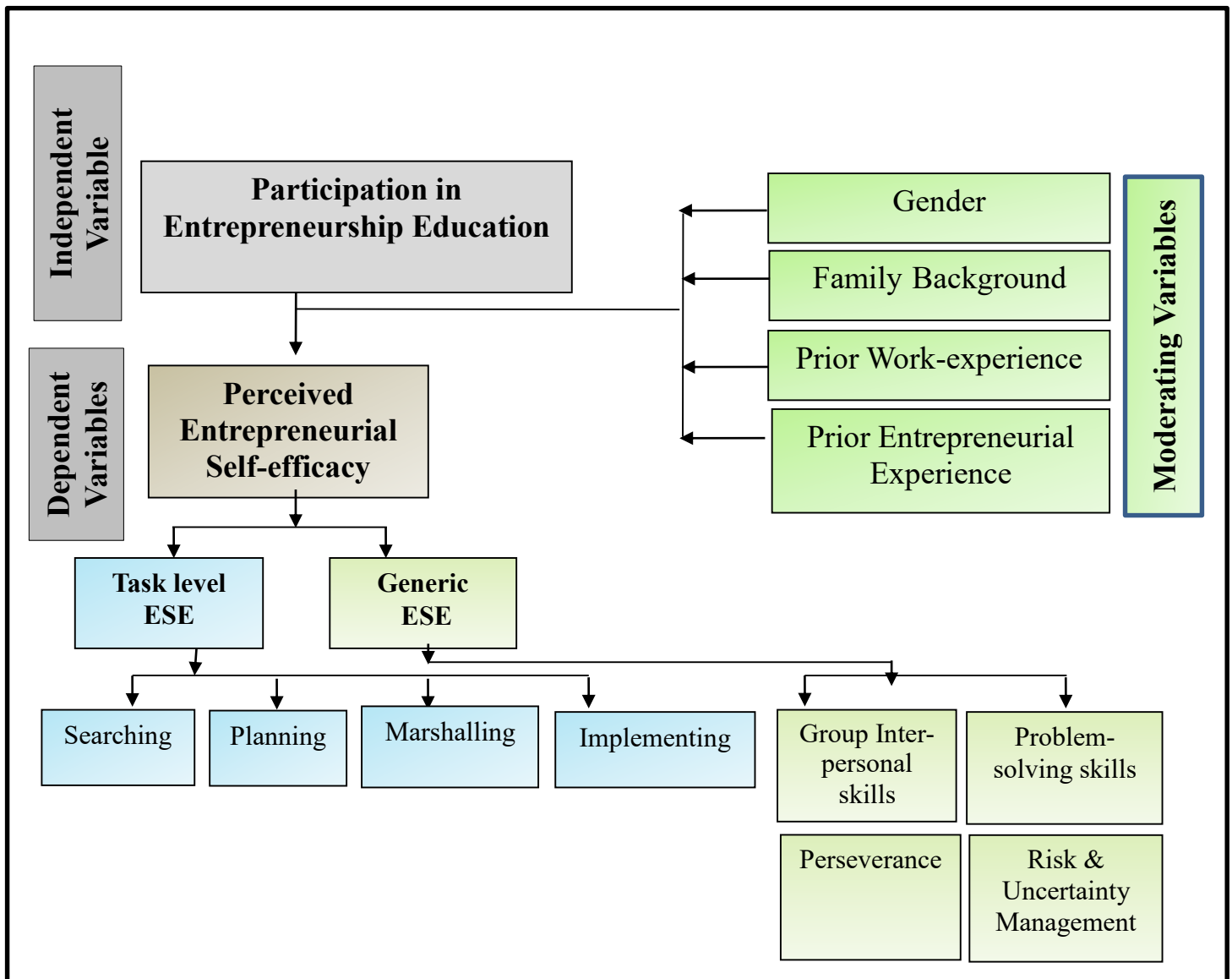


Figure 4-1: Theoretical Framework

4.4 Research Instrument

The review of literature revealed that the most prominent ESE scales are those developed by Chen et al.(1998), De Noble et al.(1999), Lucas & Cooper (2005) and Mc Gee et al.(2009). Most of the other scales have built upon these scales by adding few items identified through review of literature in their own context. The scales developed by Chen et al.(1998) and De Noble et al.(1999) were found to be divergent although measuring the same construct, thereby proposing the need for a better scale (Kickul & D’Intino, 2005). Mc Gee et al. (2009) ESE scale is mainly used in the contemporary studies but it does not take into consideration general ESE skills. Moreover, the existing ESE scales have been developed and validated in the western countries. In this context, it appeared that there exists a need to develop a more

comprehensive scale which includes the ESE tasks related to four phase venture creation model stated in Mc Gee et al. (2009) scale, distinctive ESE tasks in the pioneering scales of Chen et al. (1998) and De Noble et al. (1999), general ESE tasks considered in Lucas & Cooper (2005) as well as unique ESE related to creativity proposed by Barakat et al. (2014) and internet ESE recommended by Wang et al. (2019). Furthermore, the scale might have the potential and need to incorporate additional items in the Indian context, which could be suggested by practicing entrepreneurs and academic experts in the domain of entrepreneurship. The current study, therefore developed a new scale based on the existing prominent scales. The protocol followed for the development of scale is described below.

4.4.1 Protocol of scale development

An initial pool of 50 items measuring self-efficacy was developed by taking into consideration the items used in different ESE scales (Chen et al.,1998; De Noble et al.,1999; Lucas & Cooper,2005; McGee et al.,2009; Chan et al.,2012; Malebana & Swanepoel, 2014; Newbold, 2014; Ho et al., 2018). The items in the different scales were sorted to identify the common items in all the scales as well as the items unique to each scale. Based on that 37 items were selected to measure the entrepreneurial tasks involved in the four phases of entrepreneurship life-cycle i.e. searching, planning, marshalling and implementing. The items found common in all the scales were included in the instrument due to their repeatedly established significance in measuring ESE. In addition, few items unique to each instrument were selected to be incorporated in the instrument based on their relevance in the current context. The wordings of some of the items in the existing scales were modified to enhance the simplicity and some additional tasks were also added in each of the four phases. Six items measuring self-efficacy on group inter-personal skills and problem solving skills were also added to the scale as proposed by Lucas & Cooper (2005). The ESE instrument developed by EHGI group (Lucas & Cooper, 2005) incorporated self-efficacy items related to group interpersonal skills, problem solving skills and design skills in their scale in addition to the task specific items. The design skills were later found to be specific to the engineering background students by Barakat et al. (2009) and hence not included in the instrument. Another *two* items on perseverance as suggested by De Noble et al. (1999) and Mc Stay (2008) and *two* items on risk and uncertainty management as proposed by Chen et al. (1998) and De Noble et al. (1999) in their study on ESE were added to the instrument. Barakat et al. (2014) considered creativity as one of the dimensions in their seven-dimension ESE scale adapted from (Lucas & Cooper,2005), based on which *one* item on creativity was included in the instrument. McLellan et al. (2009) and

Wang et al. (2019) emphasized the necessity measurement of technology and online business related self-efficacy for entrepreneurs in the contemporary business scenario where majority of ventures are either web based or integrated to web in some way or the other. Hence, *two* items were included in the scale to measure ESE related to IT skills and knowledge. Leadership is another dimension of entrepreneurial self-efficacy that finds repeated mention in various ESE scales in literature. But leadership skill is not specific only to entrepreneurs and extends to the role of managers as well. Hence for the purpose of our instrument it was considered as a separate dimension but self-efficacy on the leadership skills was inherently examined while measuring entrepreneurial self-efficacy related to certain items in implementation phase and group inter personal skills.

The 50-item scale was discussed with the experts consisting of six faculties in the domain of entrepreneurship, marketing, finance and human resource from universities offering management education. The faculty experts were asked whether the pool of items in their respective domains adequately represented corresponding competencies required by an entrepreneur in that particular area. They were requested to identify any tasks they deemed irrelevant or repetitive and suggest additional tasks which may not be included in the existing instrument. The experts found few statement to be worded ambiguously and also suggested addition of *five* new items resulting in 56 item scale measuring ESE. On the basis of their feedback, *two* additional items were added on the legal entrepreneurial skills required by an entrepreneur, *one* item was included with respect to the exit strategy, *one* item was added pertaining to the skill of market segmentation. *Three* items measuring the IT related skills self-efficacy of the entrepreneurs were modified to make them more relevant. Some of the recommended items were reworded for better understanding. Double barreled question related to the estimation of fund requirement was split into two different items

The questionnaire consisting of 56 items was further validated by individually discussing it with eleven alumni of two-year entrepreneurship post graduate programs currently pursuing entrepreneurship. The experts were asked to review the list of items to ensure that it included necessary skills required by an entrepreneur based on their practical experience. This helped in establishing the content validity of the instrument. According to DeVon et al. (2007) and Kim (2009) content validity indicates that the items of the instrument encompass all the required attributes of the concept being measured and is usually done by seven or more experts.

Based on their feedback, in all, three new items were added to the instrument each related to liaisoning, perseverance and uncertainty management. After the two rounds of expert discussion, the instrument consisting of 59 items measuring entrepreneurial self-efficacy on

five point Likert scale with anchors 1 (strongly disagree) to 5 (strongly agree) was finalized. Table 4-1 summarizes the source of different items included in the scale and *Figure 4-2* represents the protocol of development of scale. The reliability of the scale was established by conducting pilot study explained in the next section.

Table 4-1 : Source of different items considered for development of ESE scale

ESE tasks/skills	Number of items in scale	Source
Searching Phase	5	Chen et al.(1998); De Noble et al.(1999); Mc Gee et al.(2009); Vanevenhoven & Liguori (2013); Newbold (2014)
Planning Phase	11	Chen et al.(1998); De Noble et al.(1999); Lucas & Cooper(2005); Mc Gee at al.(2009); Newbold (2014); Malebana & Swanepoel (2014); Ho et al.(2008); expert discussion
Marshalling Phase	10	De Noble et al.(1999); Lucas & Cooper(2005); Cox et al. (2002); Mc Gee at al.(2009)
Implementing Phase	13	Chen et al.(1998); De Noble et al(1999); Mc Gee at al.(2009)
Perseverance	3	De Noble et al(1999); Mc Stay (2008); expert discussion
Risk and uncertainty management	3	Chen et al.(1998); De Noble et al(1999); Newman et al.(2019)
Creativity	1	Barakat et al.(2014)
Group inter-personal skills	4	Lucas & Cooper(2005)
Problem solving skills	2	De Noble et al.(1999); Lucas & Cooper(2005)
IT related skills	3	Wang et al.(2019) and expert Discussion
Liasoning skills	1	Expert discussion
Legal knowledge	2	Expert discussion
Exit strategy	1	Expert discussion

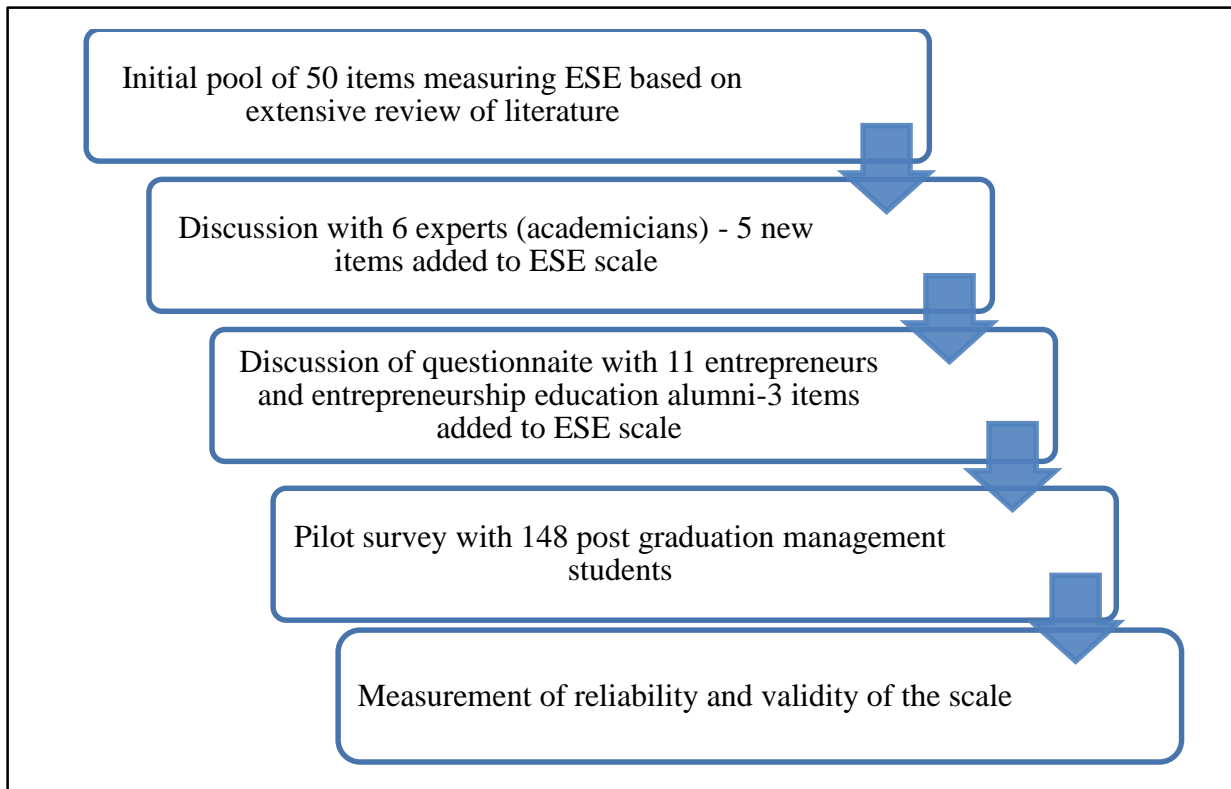


Figure 4-2: Protocol of Scale Development

4.4.2 Pilot Study (Empirical Evaluation of Scale)

In order to establish the reliability and validity of the instrument, the questionnaire was distributed to more than 500 students through email or personally contacting them. 171 responses were received over the period of 40 days. The sample consisted of students pursuing post graduate management education at various colleges across Gujarat. Gujarat is among the most industrialized and entrepreneurial state in India. It also pioneered in introducing the concept of entrepreneurship education in India and hence may be considered as an ideal geography for data collection pertaining entrepreneurship studies. The examination of data collected revealed that few respondents had not completed the questionnaire and few of them had selected the same option for all 59 questions. Such responses were eliminated before further analysis of the data. This resulted in total usable sample of 148 respondents.

Table 4-2 represents descriptive statistics of the sample. The objective of conducting descriptive analysis was to ensure that sample adequately represented the diversity in the demographic profile relevant for the study pertaining to gender, family background and prior work experience. The sample consisted of 75 males and 73 females equitably representing both the gender. With respect to the family background, 49% of the respondents had parents (father or mother or both) running business, 18% had sibling involved in business, 47% had close friends involved in business and 68% had some or the other relative involved in business. Most

of them occasionally or often talked about the business to their parents, siblings and friends, although interaction with relatives about their business was found to be comparatively lesser. Approximately 40% of them had been involved in their family business in the past or were currently involved in family business. 35% of them had experience of working with domestic company, multinational company, small and medium enterprise or start-up with duration varying from six months to three years. In terms of entrepreneurial experience, 5% of them had started their venture, and 50% of those who had started their venture had already closed the venture, hence the entrepreneurial experience of the respondents was very low. Only 9% of them did not intend to start business in the future. However, 43% were sure about starting the business on future and 47% were indecisive about their entrepreneurial intention.

Table 4-2: Demographic profile of the sample in pilot study

Gender	Respondents	Percentage			
Male	75	51%			
Female	73	49%			
Family background					
			Talk to them about their business		
			Never	Occasionally	Often
Father running business	73	49%	4	24	45
Mother running business	12	8%	1	6	5
Sibling running business	26	18%	2	9	15
Close friend running business	69	47%	4	34	30
Relative running business	100	68%	20	54	25
<i>Table 4-2 continues on next page</i>					

			Level of involvement(time spend)				
Involvement in business	58	39%	Very less	Less	Mode rate	High	Very high
			3	16	22	13	4
Prior Experience							
			Duration of work experience				
Work experience	52	35%	6 months	6 months -1 year	1 -2 years	2-3 years	> 3 years
			15	16	8	11	2
			Nature of company				
			Domestic company	MNC	SME	Start-up	
			9	10	27	4	
Entrepreneurial experience	7	5%					
Intention to start own venture							
May be	70	47%					
No	14	9%					
Yes	64	43%					

4.4.2.1 Reliability of the instrument

The reliability of the ESE instrument was established using Cronbach alpha as it is the most widely used measure of instrument reliability (Nunnally & Bernstein,1994; Kim, 2009; Hair, Black, Babin, & Anderson, 2014; Bolarinwa, 2015; Taherdoost,2016). Cronbach (1951) proposed alpha coefficient reliability measure as an extension of split half method by calculating the correlation among each of the items included in the measurement instrument. The commonly agreed minimum cut-off value of alpha is 0.7 and if some important decisions are to be made based on the test scores, coefficient value of 0.9 is recommended (Nunnally & Bernstein,1994). Table 4-3 represents the reliability of the entire instrument as well as reliability of the different dimensions of the questionnaire. The reliability of the instrument was

found to be good as all the values of cronbach alpha are greater than 0.82. Moreover, the total reliability of the instrument is considerably high at 0.983 (presented in Table 4-3).

Table 4-3: Reliability scores of ESE scale in Pilot study

Factors	Number of items	Cronbach Alpha
Over all questionnaire	59	.983
Searching ESE	5	.844
Planning ESE	14	.925
Marshalling ESE	11	.936
Implementing ESE	17	.960
Perseverance ESE	3	.851
Risk and Uncertainty Management ESE	3	.889
Group interpersonal skills ESE	4	.863
Problem solving skills ESE	2	.820

4.4.2.2 Validity of the instrument

Reliability measure of the instrument is important and necessary but not sufficient unless combined with validity measures to establish the robustness of the instrument. The validity measures of an instrument encompass content validity, face validity, criterion validity and construct validity (Bolarinwa,2015; Taherdoost,2016). Validity refers to the extent to which the questionnaire measures the construct it is intended to measure. The content validity of the instrument was established with the help of expert discussion before collecting empirical data. Construct validity comprising of convergent and discriminant validity needs to be essentially established for empirical constructs. Convergent validity determines whether the multiple items measuring the same construct have sufficient degree of correlation to be called as the valid measures of same construct whereas discriminant validity defines the degree to which the variables measuring different concepts are unique (Campbell & Fiske, 1959; Bagozzi, Yi, & Phillips,1991). Exploratory factor analysis(EFA) and confirmatory factor analysis(CFA) are the most prevalent measures for determining the construct validity (Fabrigar, Wegener, MacCallum & Strahan,1999; Conway & Huffcutt,2003; Carr & Sequeira,2007; Kim,2009; Mc Gee et al.,2009; Hof,2012; Vanevenhoven & Liguori,2013; Taherdoost,2016). In order to establish the validity of this instrument, exploratory factor analysis was conducted as the instrument was developed based on various different existing instruments and new variables were also incorporated in the instrument based on literature review and expert discussion. Also

the reliability and validity of existing instruments have been substantiated in the different geography.

Table 4-4 provides the details of the KMO and Bartlett's Test of sphericity considered as the pre-requisite for conducting factor analysis. The calculated KMO value was found to be 0.929 and *p* value for Bartlett's Test of sphericity was 0.000. The measure of sampling adequacy (KMO) is considered meritorious if it is 0.80 or above (Field,2013) and the significance level of chi-square calculated through Bartlett's test of sphericity should be less than 0.05 to suggest the presence of significant correlation among at least some variables (Hair et al.,2014). Hence, both of the criteria were fulfilled for performing factor analysis. An additional criterion suggests that the all the diagonal elements of anti-image correlation matrix should be more than 0.5 (Yong & Pearce,2013). This criterion was also met as all the diagonal elements of anti-image correlation matrix were greater than 0.854, thereby confirming the patterned relation among the variables. Hence the data was found appropriate for identifying distinct and reliable factors through exploratory factor analysis.

Table 4-4: KMO and Bartlett's Test result for Pilot study

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.929
Bartlett's Test of Sphericity	Approx. Chi-Square	8535.759
	df	1711
	Sig.	.000

The factors were extracted using Principal Axis Factoring method as the major objective was to identify the latent constructs or factors that define the set of variables by accounting for correlation among them. Though Principal Component Analysis is the most widely used factor analysis technique, most of the studies recommend common factor analysis techniques (like Principal Axis Factoring, Maximum Likelihood Method) over the component analysis techniques (Sherer et al.,1989; Fabrigar et al.,1990; Gorsuch,1990; Conway & Huffcutt,2003; Kim,2009 ; Yong & Pearce, 2013) if data reduction is not the only objective of the study. Factor rotation was performed using Varimax orthogonal rotation to obtain a simple structure where each variable predominantly loads on a single factor thereby simplifying the interpretation. The Varimax rotation method has been found to be used most widely by the researchers. Ford, Mac Callum & Tait, (1986) found that nearly 80% of EFAs applied orthogonal rotation (Varimax) whereas only12% used oblique rotation methods.

Factor analysis suggested that nine factors should be retained based on the criteria that Eigen value greater than 1 (Table 4-5). Based on the Scree Plot in (Figure 4-3) factor 7,8 and 9 were located almost on the horizontal line. Also the rotated factor matrix (Table 4-6) did not reveal factor loading of any variable to be greater than 0.45 on eighth and ninth factor. The minimum cut-off limit for the factor loading was considered as 0.45 based on the sample size (Hair et al.,2014). Also, only one variable loaded significantly on seventh factor. Using the combination of techniques to determine the appropriate number of factors as suggested by (Ford et al., 1986 and Fabrigar et al., 1999); six factors were retained for the final consideration. The six factors together explained 61.75% of total variance (Table 4-5). In all, factor analysis result suggested that 8 items should be removed from the instrument either due to low loading or cross loading. The result of factor analysis is depicted in Table 4-6 representing rotated factor matrix using varimax rotation. Of the eight items that did not meet the criteria of factor loading greater than 0.45, two were retained as their factor loading (0.449 and 0.45) was very close to the required cut-off. Also one of the 2 items which resulted in cross loading was retained due to its theoretical significance. The final scale consisted of 54 items measuring six different dimensions of ESE. The factors were labelled based on the existing literature of four phase venture creation model as applied in ESE scale development by Mc Gee et al. (2009). The other ESE items pertaining to perseverance, group interpersonal skills, problem solving skills, risk and uncertainty management and IT related skills were labelled as 'general ESE'. Table 4-7 represents the final structure of the instrument proposed as a result of this study including the nomenclature of each factor and the number of items corresponding to each factor.

Table 4-5: Eigen values and variance from Factor Analysis-Pilot study

Total Variance Explained									
Factor	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
	1	29.917	50.707	50.707	29.61	50.181	50.181	9.957	16.877
2	2.738	4.641	55.348	2.408	4.081	54.262	7.155	12.128	29.004
3	2.189	3.710	59.058	1.906	3.231	57.494	6.222	10.546	39.550
4	1.674	2.837	61.895	1.367	2.317	59.811	4.602	7.800	47.350
5	1.527	2.588	64.483	1.196	2.027	61.837	4.254	7.211	54.561
6	1.508	2.556	67.040	1.130	1.915	63.752	4.242	7.190	61.751

Extraction Method: Principal Axis Factoring.

Table 4-6: Rotated Factor Matrix using Varimax Rotation-Pilot study

Rotated Factor Matrix ^a									
	Factor loading more than 0.45								
	1	2	3	4	5	6	7	8	9
S1			.515			.466			
S2						.577			
S3						.594			
S4						.548			
PL1						.554			
PL2						.456			
PL3			.461						
PL4									
PL5			.479						
PL6			.477						
PL7			.617						
PL8			.700						
PL9			.683						
PL10			.557						
PL11			.665						
PL12			.470		.489				
PL13					0.448				
MA1									
MA2					.458				
MA3					.458				
MA4					.579				
MA5					.582				

Table 4-6 continues on next page

Rotated Factor Matrix ^a									
	Factor loading more than 0.45								
	1	2	3	4	5	6	7	8	9
MA6					.540				
MA7		.615							
MA8		.508							
MA9		.521							
MA10									
MA11									
IM1				.532					
IM2				.477					
IM3				.589					
IM4				.698					
IM5				.631					
IM6		.600							
IM7		.730							
IM8		.718							
IM9		.704							
IM10		.722							
IM11		.546							
IM12	.453								
IM13	0.45								
IM14	.494								
IM15	.525								
PR1	.516								
PR2	.690								
PR3							.512		
RI1	.661								
RI2	.607								
RI3	.667								
S4	.560								
GI1	.479								
GI2	.487								
GI3	.628								
GI4	.602								
PS1	.697								
PS2	.720								
PL13	.642								
IM16	.620								
IM17	.590								

Extraction Method: Principal Axis Factoring.
 Rotation Method: Varimax with Kaiser Normalization. a. Rotation converged in 12 iterations.

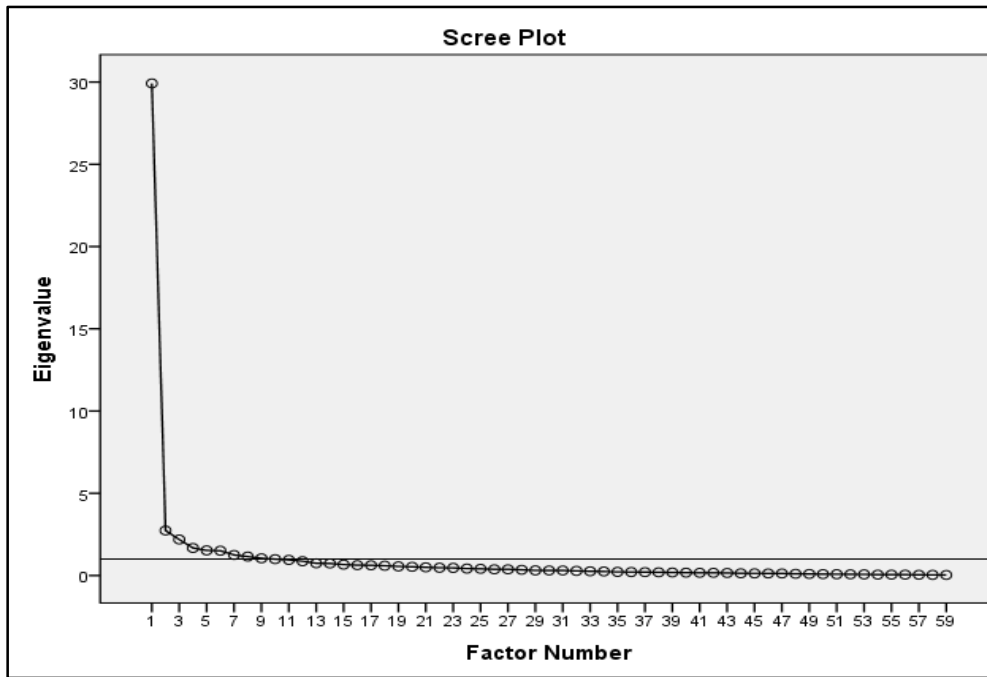


Figure 4-3: Scree Plot of exploratory factor analysis-pilot study

Table 4-7 : Structure of final questionnaire

Factor number	Factor	Number of questions
1	Searching	5
2	Planning	8
3	Marshalling	7
4	Implementing –People	5
5	Implementing-Finance	9
6	General ESE	20
	TOTAL	54

4.4.3 Qualitative data collection instrument

For the purpose of qualitative study, semi-structured interview schedule was prepared on the basis of the 54 ESE variables identified in the process of developing quantitative research instrument described above. The questions in the interview schedule were mix of rating scale questions and open-ended. The respondents were asked about the role of entrepreneurship education in enhancing their self-efficacy in the various entrepreneurial skills involved in the four-stage venture creation model as well as their overall feedback about the role of entrepreneurship education and scope for its improvement.

The entrepreneurial skills and knowledge questions in the interview included tasks related to the searching phase, planning phase, marshalling phase, and implementation phase of the entrepreneurial venture creation model proposed by Stevenson et al. (1985).

- The searching phase tasks included questions related to opportunity recognition, idea creation, brainstorming, and basic market research.
- The planning phase tasks included selection of appropriate idea, identifying an appropriate form of business, determining market segment, estimating prospective customer base, determining appropriate pricing, assessing the required start-up and working capital fund requirement.
- The marshalling phase entrepreneurial tasks comprised of identification of appropriate marketing strategy, writing a complete business plan, networking, liaising, and identifying the sources of funding and other resources.
- The implementation phase mainly included the tasks related to convincing investors (angels/ venture capitalists/banks etc.), obtaining finance, organizing financial assets, maintaining financial records, obtaining required intellectual property rights, recruiting, training, supervising, and motivating employees. These tasks were identified based on the most prominent entrepreneurial self-efficacy scales developed by Chen et al.(1998); De Noble et al.(1999); Lucas & Cooper (2005) and McGee et al. (2009).
- Besides, the respondents were also enquired regarding the role of entrepreneurship education in enhancing their internet and technological entrepreneurial skills and group interpersonal skills. With the advent of technology; Wang et al. (2019) proposed the indispensable need for internet entrepreneurial self-efficacy among entrepreneurs. The respondents were asked questions related to the use of e-commerce, digital marketing, and identification of required business management software.
- The entrepreneurial attitude related questions included risk and uncertainty management and persistence as proposed in the scale developed by De Noble et al. (1999).

In addition, interview also comprised of discussion related to:

- Professional journey of respondents since the completion of entrepreneurship education
- Understanding of their current entrepreneurial venture
- Most significant contribution of entrepreneurship education in their entrepreneurial career

- Their views on shortcomings and scope of improvement in the entrepreneurship education.

4.5 Sampling

The discussion on sampling includes sampling method, data collection, sample size and sampling mix of the respondents considered for the study.

4.5.1 Sampling Method

Purposive Sampling and snowball sampling techniques were used for collecting data related to quantitative and qualitative study respectively. In purposive sampling, researcher uses his/her own judgement to decide upon the respondents who would be in best position to answer the research questions (Saunders, Lewis & Thornhill, 2009). For the purpose of self-administered questionnaire, students of entrepreneurship education and regular management education were approached. In each of the two groups of respondents, students who had just enrolled for their respective courses (referred to as prospects in the further part of study) as well as those who were on the verge of completion of their respective courses (referred to as graduates in the further part of study) were included in the study. Hence, the respondents were selectively approached after the analysing post graduate program they had opted for and their year of study. Respondents from entrepreneurship as well as non-entrepreneurship management courses were included in the study as the previous studies suggested the relevance of including and comparing both the groups to understand the relevance and influence of entrepreneurship education on entrepreneurial behaviour (Robinson et al. ,1991; Tan et al.,1996; Gurrero et al.,2008).

On the other hand, for the purpose of interviews as a part of qualitative study, entrepreneurship education alumni, who had undertaken two-year full time entrepreneurship post-graduation course in the past were contacted. In this regard, snowball sampling was found to be the best fit as the initial respondents referred and provided contacts for the other students in their batch who in turn provided reference of other such individuals from their acquaintance.

4.5.2 Data Collection

Quantitative data collection:

To administer the questionnaire with entrepreneurship education graduates and prospects prior approval was obtained from the relevant institutes so as to collect data during classroom sessions in order to ensure maximum participation. The institutes offering entrepreneurship education in Gujarat were visited personally whereas online sessions were conducted for

institutes in Maharashtra. During the sessions, respondents were oriented and briefed about the concept of entrepreneurial self-efficacy using power point presentation and were also assured regarding the confidentiality and academic use of the data provided by them. The students were then asked to fill the questionnaire and ask for doubts, if any. The data collection from the respondents during the regular classroom sessions ensured that respondents filled the questionnaire sincerely and spent due time in filling the questionnaire. As a motivation, the interested respondents were also provided with the analysis of their task specific self-efficacy to help them understand their strength and weakness. This was of benefit to the respondents, particularly entrepreneurship education prospects who could identify the areas they should focus upon during their two years of entrepreneurship education. The data from management education prospects and graduates was collected using mixed methods i.e. personally visiting them and administering the questionnaire during their classroom sessions as well as by sending the questionnaire online as a google form and requesting them to fill the questionnaire. Due to presence of large number of institutes offering regular management education online questionnaire method was feasible as even with low response rate we could obtain the required number of respondents. Entrepreneurship education institutes, on the other hand are very limited and hence it was indispensable to personally visit and collect data during regular classroom sessions to ensure maximum participation resulting in adequate sample size. The data was collected from entrepreneurship and management graduates during mid-March 2020 when they were on the verge of completion of their two-year course. On the other hand, the data from entrepreneurship and management prospects was collected in the first few days of joining the program. The data collection from prospects extended from July 2020 till end of August 2020 as commencement dates for the two-year management and entrepreneurship program varied from institute to institute. Delayed commencement and lower strength of students was observed in few institutes due to Covid 19 pandemic.

Qualitative data collection:

The interviews for the qualitative data with entrepreneurship education alumni were conducted through multiple modes including face to face interviews, video conferencing interviews as well as telephonic interviews depending upon the availability and convenience of the respondents. The respondents included alumni from different colleges across Gujarat and Maharashtra. Each interview varied from 40 minutes to 90 minutes depending upon the interest and inputs of the respondents. The initial respondents for the interview were identified through reference as well as professional social network like LinkedIn. The initial respondents in turn

provided reference of their friends and batch-mates who they believed would be willing to contribute to the research by sharing their experiences. All the interviews were audio-recorded for future reference with the consent of the respondents. A deliberate effort was made to ensure that respondents represented all the major institutes offering two-year entrepreneurship courses in western India.

4.5.3 Sample Size

Sample size for Quantitative data:

For the purpose of self-administered questionnaire all the students across the four most prominent institutes offering two-year full time program in entrepreneurship education across Gujarat and Maharashtra were reached out. The corresponding sample size of the other group consisting of management education students was decided accordingly so as to have comparable number of respondents in both the categories. 250 entrepreneurship graduates and 200 entrepreneurship prospects were given the self-administered questionnaire out of which responses were received from 248 entrepreneurship graduates and 171 entrepreneurship prospects. The comparatively lower return rate among the entrepreneurship education prospects was due to data collection during online classes as institutes were not conducting offline classes because of government guidelines related to Covid 19. The total responses received from regular management students consisted of 226 regular management graduates and 232 regular management prospects. More than 500 questionnaires were sent online through various references and professional social media and rest were administered personally. Of the responses received, incomplete responses were discarded. Also, the responses where the same option was selected on scale of five for all the ESE dimensions were not considered for further analysis. The final sample size in each category and collectively is mentioned in Table 4-8 below. The total effective sample size for the study was 848, which was found to be adequate considering the requirement of the statistical analysis techniques applied in the current study. The minimum sample size for factor analysis should be ten times the number of variables to be analysed. The current study involved 54 variables based on the results of EFA in pilot testing, hence sample size greater than 540 sufficed the requirement of factor analysis. Further application of MANOVA (Multivariate Analysis of Variance) requires minimum sample size of 20 per cell and moreover, there is very marginal increase in power of test with increase in sample size once each cell has 150 respondents (Hair et al., 2014). The sample size in the present study for each of the group of respondents (see Table 4-8) is greater than 150, thereby indicating a robust sample size for MANOVA analysis.

Table 4-8 : Sample Size

Category	Sample Size
Entrepreneurship education Graduates (EMBA(G))	243
Entrepreneurship education Prospects (EMBA(P))	164
Management education Graduates (RMBA(G))	214
Management education Prospects (RMBA(P))	227
TOTAL	848

Sample size for Qualitative data:

For the purpose of in-depth interview nearly 70 two-year entrepreneurship education alumni were contacted through personal contacts, social media, external references and references provided by the interviewees themselves. Nearly 40 respondents agreed to spend time for interview and 32 interviews were conducted successfully. Of the 32 interviews conducted, 30 were considered for this study as two of the respondents did not spend enough time to answer all the questions of the interview schedule.

4.5.4 Sampling Mix

Sample mix for Quantitative data collection:

To understand the demographic composition of the sample, the percentage frequency for each of the demographic variables was calculated (represented in Table 4-9). Further, demographic profile of regular management students was compared with entrepreneurship education students to understand the difference in the composition of students opting for these two types of education programs respectively. The demographic variables taken into consideration included gender, involvement of family members in business, interaction with family members involved in business about their business, involvement in business with family members, level of involvement in family business, prior work-experience, duration of prior work-experience, entrepreneurial experience and duration of prior entrepreneurial experience.

The descriptive statistics for gender revealed the sample consisted of two-thirds of male and one-third female. The gap between male and female respondents was even wider in case of entrepreneurship education respondents suggesting that much lesser number of female opt for the course as compared to the males. The gender difference among regular management respondents may be attributed to chance but in case of entrepreneurship education respondents, the gap was factual as the sample comprised of almost all the students from a particular batch.

The analysis with respect to family background revealed that father of 63.8% of the respondents were running their own business and this percentage was even higher for entrepreneurship education students. 80.84% of entrepreneurship education students had father running their own business. On the contrary, only 17.45% of the entrepreneurship education respondents had mother involved in business. Siblings of 36.6% of entrepreneurship education respondents were involved in business compared to only 17% of management education respondents 'siblings involved in business. Both the groups of students had nearly 60% of the close friends involved in business. Relatives of nearly 81% of entrepreneurship education students and 69% of regular management students were involved in business. Over-all, family members of entrepreneurship education respondents had higher involvement in business but management education respondents also had considerable involvement of family members in business.

In terms of interaction about the business with family members involved in business, the maximum interaction of the respondents was observed with their father and least with relatives. The interaction of respondents with their mother involved in business was also considerably high with 63% of them interacting often and 33% interacting occasionally. Nearly 55% of the respondents interacted often about business with their siblings involved in business and 47% often interacted with close friends involved in business.

Higher number of entrepreneurship education respondents (64%) had been involved in business with their family members compared to regular management education respondents (39%). Among those involved in business, the level of involvement in terms of amount of time spent in business varied from moderate to high for nearly 76% of respondents. 24% of the respondents involved in business, had very high involvement.

46% of entrepreneurship education respondents and 49% of management education respondents had prior work experience but the duration of work experience was short for most of the respondents. Nearly 75% of the respondents with prior work experience had work experience of less than two years. On the other hand, entrepreneurial experience was even lower among the sample respondents. Only 18% of the total respondents had prior entrepreneurial experience of starting their own venture. Among those with prior entrepreneurial-experience, the majority opted for entrepreneurship education. 25% of entrepreneurship education respondents and 11% of management education respondents had prior experience of starting and running their own venture. The duration of entrepreneurial experience was also very limited among those with prior entrepreneurial experience. 71% of the respondents with prior entrepreneurial experience had entrepreneurial experience of less than one year and only 8.6% of them had greater than 3 years of entrepreneurial experience.

Table 4-9: Demographic profile of the sample

Gender	Respondents		Percentage		EMBA		RMBA		
Male	565		66.6%		286	70.27%	279	63.27%	
Female	283		33.4%		121	29.73%	162	36.74%	
Family background									
Family members running their business					Talk to family members about business (among respondents with family members running their business)				
			EMBA	RMBA	Never	Occasio- nally	Often		
Father	541	63.8%	329	212	1.9%	24.2%	73.9%		
			80.84%	48.07%					
Mother	128	15.1%	71	57	5.5%	31.3%	63.23%		
			17.45%	12.93%					
Sibling	224	26.42%	149	75	3.1%	42.4%	54.5%		
			36.6%	17%					
Close friends	542	63.92%	274	268	4.1%	49.1%	46.9%		
			67.32%	60.77%					
Relative	633	74.65%	329	304	20.1%	56.4%	23.5%		
			80.84%	68.93%					
					Level of involvement(time spent)				
Involvement in business	431	51%	260	171	Very less	Less	Moderate	High	Very high
			63.88%	38.78%	6.5%	16.0%	40.6%	35.8%	23.5%
Prior Experience									
					Duration of work experience				
Work experience	404	47.64%	188	216	6 months	6 months -1 year	1 -2 years	2-3 years	> 3 years
			46.19%	48.98%	17.3%	24.5%	33.2%	15.1%	9.9%
					Duration of entrepreneurial experience				
Entrepreneurial experience	151	17.81%	101	50	6 months	6 months -1 year	1 -2 years	2-3 years	> 3 years
			24.82%	11.34%	45.7%	25.8%	14.6%	5.3%	8.6%

Sample mix for Quantitative data collection:

A total of 30 respondents who had undergone two-year entrepreneurship education were interviewed to understand their perception about the relevance of entrepreneurship education in enhancing various task-specific ESE and its limitations. The sample consisted of 80% males and 20% females. 56% of the respondents were running their own venture, 27% were involved in family business and 17% were working with pursuing a job. The sample was heterogeneous with respect to the representation from varied industries including logistics, hygiene, event management, edu-tech, online puja services, food, real estate, hardware, online aggregation, etc.

4.6 Statistical techniques for data analysis

The preliminary descriptive statistics involving mean, standard deviation and cross-tabulations were used at several instances to understand the average scores and dispersion in ESE of various groups of respondents. It helped in comparing and contrasting the ESE scores of different groups of respondents classified based on their type of education, year of study as well as various demographic factors including gender, family background, previous work experience and prior entrepreneurial experience. Further, in order to analyse the data in accordance with the objectives of the study, following statistical tools were applied in their relevant context. The data analysis was conducted using statistical software IBM SPSS (Statistical Package for the Social Sciences) version 27.

a) Exploratory Factor Analysis(EFA)

Exploratory factor analysis helps in identifying the underlying structure of the variables considered in the study. It groups the highly correlated variables into a common factor, thereby classifying the variables into distinct meaningful factors that represent the main dimensions of the study. These dimensions can be further used to analyse and summarize the data in much more meaningful manner as compared to individual variable-wise data summarization for the data involving large number of variable. It also helps in data reduction by eliminating those variables that do not load sufficiently on any factor from further analysis. The recommended sample size for conducting factor analysis is five times the number of variables under study. Other assumption for factor analysis include degree of inter-correlation among the variables measured through Bartlett test of sphericity, measure of sampling adequacy (MSA) and anti-image correlation matrix. In order to conduct EFA, MSA should be greater than 0.5 and p-value of Bartlett's test should be less than significance level (0.05). The two commonly used methods for EFA are Component factor analysis (like principal component analysis) and Common Factor analysis (like principal axis factoring, maximum likelihood etc.). Component

factor analysis is most appropriate when the primary objective is data reduction whereas common factor analysis is most appropriate for identifying the latent dimensions represented by the variables under study though most of them yield the similar results for more than 30 variables. Number of factors to be retained depends on the various criteria like scree test criteria, eigen value criteria (eigen value should be greater than 1) and the percentage of variance explained by all factors considered should not be less than 60%. The solution obtained is then subjected to factor rotation either by using orthogonal rotation methods (like varimax, equimax, quartimax) or oblique rotation methods (like oblimin). The retention of the variable depends upon its factor loading and significance of factor loading varies based on sample size. For sample size of 150, factor loading of 0.45 is considered significant but as sample size increases further even lower factor loading like 0.3 is also considered acceptable (Hair et al., 2014). In the present study, exploratory factor analysis was applied to assess the validity of the instrument based on the data collected from the pilot study to determine the main dimensions of ESE and their constituent variables. EFA was again applied on the data collected for the main study to re-assess the validity of final data collection instrument and confirm the ESE factors established based on pilot study.

b) Independent sample t-test

Independent sample t-test helps in understanding the differences in the mean of two groups and hence can be used for identifying the group differences when the independent variable has only two levels. The assumptions for the test include normality of the data and homogeneity of variance across two groups (Black, 2019). Normality of data can be tested using Shapiro Wilk's test and Kolmogorov–Smirnov test and homogeneity of variance can be verified using Levene's test (Hair et al., 2014). If the p statistic for these tests is greater than significance level (0.05), the data fulfils the assumption of normality and homoscedasticity. In the present study, independent sample t-test was applied to understand the difference in the overall ESE of entrepreneurship education graduates' vs prospects, entrepreneurship education graduates' vs management education graduates as well as entrepreneurship education prospects vs management education prospects.

c) Two-way mixed design ANOVA (Analysis of Variance)

Two-way factorial ANOVA helps in measuring the influence of two independent variables simultaneously on the dependent variables, thereby reducing the error and effort. Moreover, it also provides the opportunity to study the interaction effect of independent variables in addition to the main effect (individual effect of each independent variable). Interaction effect helps to understand whether the effect of one independent variable (treatment) varies based on the level

of another independent variable (Black, 2019). The interaction effect can be graphically examined using **Profile Plots**. The lines in the profile plot connecting the mean value of the dependent variable for different levels of independent variables may or may not intersect with each other. If the lines of profile plot do not cross each other, the interaction is known as ordinal interaction and if the lines cross each other, interaction is called disordinal interaction. The interaction effect between the two variables is significant only when the lines of profile plots are not parallel to each other. In the presence of interaction effect it is further meaningful to explore ANOVA simple effect. Simple Effect refers to examining the effect of one independent variable at a particular level of another independent variable (Howell, 2012). In the current study, mixed design ANOVA was applied to individually understand the moderating role of each of the demographic variables i.e. gender, family background, prior work-experience and prior entrepreneurial experience in influencing the impact of entrepreneurship education on entrepreneurial self-efficacy of the respondents. Further, if the profile plots suggested the presence of interaction effect, the results of ANOVA simple effect were also examined. The appropriateness of the data to apply ANOVA was ensured by examining the data for normality and homoscedasticity.

d) Post-hoc ANOVA

If ANOVA reveals significant differences among the group means, post-hoc ANOVA tests are recommended to identify the particular groups among which the differences exist as independent variable has more than two levels/groups in ANOVA testing. The most prominent post-hoc ANOVA tests include Fisher's least significant difference (LSD), Bonferroni t test, Tukey's HSD (honestly significant difference) test, Scheffé test, Newman-Keuls test, Dunnett's test etc. (Howell, 2012). For the purpose of current Tukey HSD was used to compare different group means in case of multi-level independent variables like involvement of family members in business, level of interaction with family members about business, level of involvement in business, duration of prior work experience and entrepreneurial experience.

e) MANOVA (Multivariate Analysis of Variance)

MANOVA finds application in survey based research to understand the influence of defined categories of independent variables like gender, age etc. on the various dependent variables measured on metric scale simultaneously. Application of MANOVA requires minimum sample size of 20 per group of independent variable and other assumptions including independence among the observations, equality of variance-covariance matrices across groups (homoscedasticity), normality of dependent variable, linear relation among dependent variables and absence of high multi-collinearity among dependent variables. Homoscedasticity

can be tested using Box's M test and due to high sensitivity of the test, significance level of much less than 0.5 are also considered acceptable for this test. Normality is ensured with the help of univariate normality tests like Shapiro Wilk's and Kolmogorov–Smirnov test and absence of multi-collinearity is examined using Bartlett's test for sphericity. The different measures for testing the group differences in MANOVA include Roy's greatest characteristic root (gcr), Wilks' lambda, Pillai's criterion and Hotelling's T^2 . Pillai's criterion is considered to be more robust among these test to any violations of assumptions or in case of inadequate sample size (Hair et al.,2014). In the present study MANOVA was applied to understand the differences in task-specific ESE as well as factor specific ESE of entrepreneurship education graduates' vs prospects, entrepreneurship education graduates vs management education graduates as well as entrepreneurship education prospects vs management education prospects.

f) Content Analysis

Content analysis refers to summarizing the qualitative data by analyzing and extracting the information from the texts. The summary is based on the themes that emerge by classifying the data into various categories. Firstly, the data is coded line by line or sentence by sentence and similar codes either based on the pre-existing codes from theory and codes arising out of the data collection. The codes are then grouped into categories created based on the conceptual similarity between the codes. Finally, the themes that emerge from these categories help in understanding the over-all data (Cohen, Manion & Morrison,2018). The current study uses content analysis for the purpose of understanding the responses of in-depth interviews conducted with entrepreneurship education alumni to understand their experience related to relevance and shortcomings of entrepreneurship education.

4.7 Reliability and Validity of Research Instrument

4.7.1 Validity of research instrument

Exploratory factor analysis (EFA) is the most prominent method for establishing the validity of the research instrument thereby ensuring that the instrument is measuring what it is intended to measure. It determines the appropriateness of the items used in the instrument as well as helps in establishing the internal structure of the instrument based upon the relationship between the items (Netemeyer, Bearden & Sharma, 2003). At the end of EFA, inappropriate items are removed from the data and related items are grouped together to form factors which can be used for further analysis.

In the present study, the appropriateness of data for conducting exploratory factor analysis was determined based on KMO Measure of Sampling Adequacy and Bartlett's Test of sphericity

(results are presented in Table 4-10). The recommended threshold for KMO is 0.70 (Field,2009) and the significance level of chi-square calculated through Bartlett’s test of sphericity should reach statistical significance of less than 0.05 to propose sufficient correlation among the variables (Hair et al.,2014). Additional criteria for EFA based on diagonal elements of anti-image correlation matrix suggests that all the diagonal elements should be more than 0.5. For the given data, the minimum diagonal value in the anti-image correlation matrix was found to be 0.953, thereby fulfilling the final pre-condition for applying exploratory factor analysis. The data sufficiently represented the appropriateness for conducting EFA.

Table 4-10: KMO and Bartlett's Test result for research instrument

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.972
Bartlett's Test of Sphericity	Approx. Chi-Square	30709.104
	df	1431
	Sig.	0.000

For the purpose of factor extraction, Principal Component Analysis (PCA) with varimax rotation was performed as this is the most widely used factor analysis technique (Ford et al., 1986). Our EFA results revealed 7 factors based on scree plot, total variance explained, eigen values as well as explanation of total variance. Scree plot depicted that the slope of the graph approaches almost zero after 7 factors (refer *Figure 4-4*). Rotated factor matrix also recommend the loading of all the variables on 7 factors only (refer Table 4-11). The total variance explained by these factors (given in Table 4-12) exceeded the minimum threshold of 50%. Taking into consideration the findings of multiple criteria for selecting the number of factors as suggested by Ford et al. (1986) and Fabrigar et al. (1999), seven factors/dimensions of ESE were finalized for further consideration.

The item loading on these seven factors based on minimum loading of 0.4 (considering sample size >200), further theoretically supported the grouping of related variables on these seven factors. The seven factors collectively explained 61.49% of the total variance (Table 4-12). Result of factor analysis revealed, 17 items loaded on Factor1, 10 items loaded on Factor 2, five items loaded on Factor 3, eight items primarily loaded on Factor 4, five items loaded on Factor 5, five items loaded on Factor 6 and remaining three items loaded on Factor 7. Few

items loaded on two factors with score greater 0.4 and were considered under the factor where the loading was higher. These items were not eliminated due to their theoretical significance. One of the items did not load sufficiently (i.e.>0.4) on any of the seven factors and hence was eliminated and remaining 53 items were retained. The factors were labelled based on the theoretical understanding of task specific ESE derived from literature review. Factor 1 consisted of items related to general ESE, Factor 2 consisted of items related to marshalling ESE, Factor 3 consisted of items related to implementing(people), Factor 4 related to planning, Factor 5 related to implementing(finance), Factor 6 related to searching and Factor 7 related to implementing (Information Technology). The percentage variance explained by each factor were 16.09% (general ESE), 9.62% (marshalling ESE), 8.5% (implementing-people ESE), 8.38% (planning ESE), 8.08% (implementing ESE), 6.09% (searching ESE) and 4.74% (implementing-IT ESE). Table 4-13 represents the seven factors and their corresponding number of items measuring factor specific ESE.

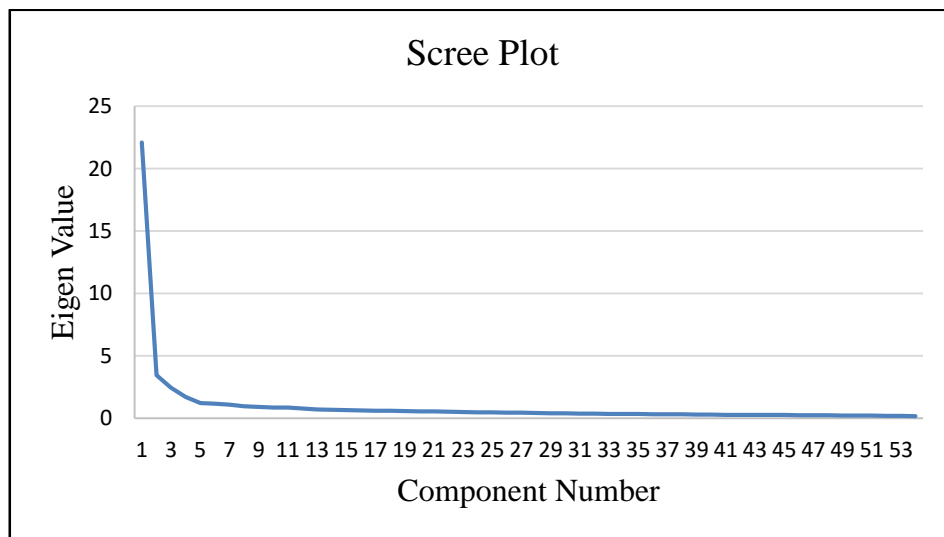


Figure 4-4 : Scree Plot for exploratory factor analysis

Table 4-11: Rotated Factor Matrix using Varimax Rotation

		Rotated Factor Matrix ^a						
		Factor loading more than 0.4						
		1	2	3	4	5	6	7
1	S1						0.640	
2	S2						0.698	
3	S3						0.602	
4	S4						0.552	
5	S5						0.405	
6	P1				0.553			

Table 4-11 continues on next page

Rotated Factor Matrix ^a								
		Factor loading more than 0.4						
		1	2	3	4	5	6	7
7	P2				0.606			
8	P3				0.455		0.419	
9	P4				0.468			
10	P5				0.664			
11	P6				0.682			
12	P7				0.639			
13	M1		0.531		0.441			
14	M2		0.556		0.448			
15	P8				0.425			
16	M3		0.453					
17	M4		0.451	0.410				
18	M5		0.547					
19								
20	M6		0.652					
21	M7		0.542					
22	M8		0.656					
23	M9		0.637					
24	M10		0.629					
25	IM1			0.625				
26	IM2			0.632				
27	IM3			0.704				
28	IM4			0.741				
29	IM5			0.716				
30	IF1					0.627		
31	IF2					0.777		
32	IF3					0.812		
33	IF4					0.784		
34	IF5					0.755		
35	G1	0.456						
36	G2	0.613						
37	G3	0.623						
38	G4	0.614		0.415				
39	G5	0.627						
40	G6	0.707						
41	G7	0.701						
42	G8	0.740						
43	G9	0.706						
44	G10	0.652						
45	GI1	0.596						
46	GI2	0.634						
47	GI3	0.668						

48	GI4	0.608					
49	G15	0.577					
50	G16	0.556					0.426
51	G17	0.516					
52	IIT1						0.678
53	IIT2						0.662
54	IIT3						0.604
Extraction Method: Principal Component Analysis.							
Rotation Method: Varimax with Kaiser Normalization.							
a. Rotation converged in 7 iterations.							

Table 4-12: Eigen values and variance explained through Factor analysis

Total Variance Explained						
Component	Initial Eigenvalues			Rotation Sums of Squared Loadings	% of Variance	Cumulative %
	Total	% of Variance	Cumulative %			
1	22.100	40.927	40.927	8.686	16.086	16.086
2	3.460	6.407	47.333	5.194	9.619	25.705
3	2.442	4.522	51.855	4.590	8.500	34.204
4	1.705	3.157	55.013	4.525	8.380	42.585
5	1.230	2.278	57.290	4.363	8.080	50.665
6	1.163	2.153	59.443	3.287	6.088	56.752
7	1.105	2.047	61.490	2.559	4.738	61.490

Table 4-13 : Structure of final questionnaire

Factor no.	Factor	Number of questions
1	Searching	5
2	Planning	8
3	Marshalling	10
4	Implementing –People	5
5	Implementing-Finance	5
6	Implementing-IT	3
7	General ESE	17
	TOTAL	53

4.7.2 Reliability of Research Instrument:

Cronbach alpha was used to measure the overall reliability of the instrument as well as reliability of each factor of the ESE scale. Cronbach alpha is the most prominent measure of instrument reliability with minimum recommended value of 0.7 to ensure the internal consistency of the instrument (Nunnally & Bernstein,1994). The overall reliability of the ESE instrument was found to be 0.972 reflecting high internal consistency of the scale used for the study. Cronbach alpha for searching ESE, planning ESE, marshalling ESE, implementing(people) ESE, implementing(finance) ESE, implementing(IT) ESE and general ESE were 0.81, 0.867, 0.914, 0.891, 0.91, 0.806 and 0.949 respectively (see Table 4-14). Hence, all the factors of ESE had high rating for reliability, further establishing the validity of the instrument.

Table 4-14 : Cronbach alpha for each factor of ESE and over-all ESE

Factor	Number of items	Cronbach Alpha
Over all questionnaire	53	.972
Searching ESE	5	.81
Planning ESE	8	.867
Marshalling ESE	10	.914
Implementing (people) ESE	5	.891
Implementing (finance) ESE	5	.91
Implementing (IT) ESE	3	.806
General ESE	17	.949

The research instrument for the study was found to be sufficiently reliable and valid in measuring the ESE construct in total as well as dimension-wise. The data obtained based on this instrument was hence subjected to further analysis to gain insights into the objectives of the research.

The next chapter explains data analysis and findings based on quantitative data for the present study.