THE IMPACT OF PERSONAL NETWORKS ON STUDENT ENTREPRENEURSHIP

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Abstract

The present study focuses on students who have conceptualised the business idea during their academic studies and created the business venture during or within two years after graduation. The extant literature identifies social networks as a key factor not only for opportunity recognition but also for start-up survival. This study expands the knowledge about the roles of personal networks within the context of student entrepreneurs. By conducting focus group, interviews, and a survey at a top-ranked technological institute of higher learning in India, the current study analysed the role played by the personal networks in facilitating and enabling the creation of a venture by student entrepreneurs. Our study shows (1) student entrepreneurs' expectations from their personal networks are grouped under 10 topics, (2) the hierarchy of these roles indicates the triggering impact of business networking with a final outcome of motivational support, and (3) the degree which these expectations are realised show that business networking, venture financing and the founding team formation are the most important roles in the actual start-up phase. The present empirical study is an earliest attempt to address the gap in the entrepreneurship literature pertaining to analysing student entrepreneurs' perspectives on the role of personal networks during start-up. With theoretical and practical implications, this study tries to enrich the entrepreneurship literature.

Keywords: Entrepreneurship, personal networks, student entrepreneurs, Interactive Qualitative Analysis, Importance Performance Analysis

1. Introduction

Entrepreneurship along with entrepreneurial education has been a key interest among the researchers given its influence on the national as well as international economic growth (Dhliwayo, 2008). Due to declining employment rates across the globe, governments try to establish policies to support self-employment and various start-up initiatives. Almost all of these national policies consider universities as key contributors in fostering an entrepreneurial spirit among youngsters as well as encouraging to-be entrepreneurs to start their own venture. That is why, educational institutions around the globe are creating courses to encourage and develop these students (Katz, 2019; Rasmussen & Sørheim, 2006). Countries like the UK, Singapore, India and Austria have been focussing on entrepreneurship education programs since 1990s and have seen a tremendous increase in students taking up these courses (Dana, 2001). This in turn motivates researchers to study young entrepreneurs spinning out of universities (Dhliwayo, 2008; Balan & Metcalfe, 2012).

Given the variety of employment opportunities which students have, the stress and workload attached with these opportunities tend to make entrepreneurship more attractive. Studies show that when a student has a desire to be an entrepreneur and shows entrepreneurial intentions, he or she will likely build his/her own venture (Carey, Flanagan, & Palmer, 2010; Lüthje & Franke 2003; Etzkowitz, Webster, Gebhardt, & Terra, 2000). However, to build a new venture, any entrepreneur needs three major resources, namely human capital (i.e. team members), financial capital, and social capital (i.e. building connections with industries). Students' desire to start new ventures increases if their universities have a supporting infrastructure that helps to reach key resources such as access to incubators (Autio, Keeley, Klofsten, Parker, and Hay, 2001). Along with incubation support and education, networks in the form of either formal or informal have invariably contributed towards increasing the entrepreneurial intentions among students (Gelard & Saleh, 2011).

With the motive of building highly engaged and enthusiastic student entrepreneurs, this paper aims to examine the role of personal/informal networks in creating student-led ventures. As shown by Gelard and Saleh (2011), student's informal networks comprising of close family, friends and parents, escalate their aspirations to build and run their own ventures. Support from networks is a crucial resource, as they provide significant help to student entrepreneurs (SE) and offer guidance throughout their process of assessing the business idea, developing their product or service, running their business along with other key activities. In particular, Kristiansen and Indarti (2004) highlight that a person's social network, substantially influences their entrepreneurial intentions; for instance, it eases access to seed capital to set up the business, helps the individual to get relevant information from his/her social network, and most importantly motivates the individual enhancing his/her inclination thereby towards starting up a new venture (Sequeira, Mueller, & McGee, 2007; Lorrain & Laferté, 2006). Hills, Lumpkin and Singh (1997) found that entrepreneurs with a wider network are able to uncover more opportunities as compared to entrepreneurs who develop business ideas by themselves.

Due to a lack of work experience and the dearth of knowledge which is a key to start and run a business, SE tend to rely on their close networks comprising of their family members, friends, close relatives and professors at their university. Studies on SE have mainly focussed on evaluating entrepreneurial intentions among students, opportunity identification or identity formation (Etzkowitz et al., 2000; Gieure, Benavides-Espinosa, & Roig-Dobón, 2019; Pandit, Joshi, & Tiwari, 2018). However, there exist theoretical and empirical gaps within the domain of SE who by definition are students who have started or developed their business or business idea alongside their university education (Nielsen & Gartner, 2017). Thus, the present paper aims to explore the role of personal networks for SE in creating a venture.

Our research provides a starting point for understanding not only the expectations of the SE from their personal networks but also evaluating the performance of their personal networks compared to their own expectations. By doing so, we target to contribute to entrepreneurship literature by exploring the relationship between SE and their personal networks. As Vanevenhoven and Liguori (2013) point out, it is important to understand the needs and obstruction faced by students in order to improve and better design curriculum to fulfil the 'ever-changing needs' of SE.

Considering the limited studies on student entrepreneurship in relation to their network, this paper offers an empirical study. The goal is to analyse the role of personal networks for SE in Indian Institute of Technology Madras (IITM). By using a university in a developing country that tries to support employment and economic development through government-initiated entrepreneurship policies, observations will have potential generalisability for a large number of developing countries with similar goals.

After this short introduction, section two introduces extant literature. Section three provides the research objectives, followed by a detailed section on research method and data analysis. Section five discusses the results from the empirical analysis, then the paper ends with a summary of findings, the implications of the study, and suggestions for future research.

2. Entrepreneurship and Personal Networks

2.1 Student entrepreneur

Student engagement in entrepreneurial activities resulted in creating a new sub-category of entrepreneurs namely SE. Student entrepreneurs can be defined as students presently enrolled in university where they are supposed to attend classes and be involved in creating and/or running an innovative venture (Marchand & Hermens, 2015). These SE differ with others as they try to capitalise their university provided resources such as classroom learning, fellow students, professors, consulting and support services (Mars, Slaughter, & Rhoades, 2008). Furthermore, they might also take help from these resources to validate their business idea and to make a decision to move forward with their idea. Therefore, to support these budding entrepreneurs, universities are not only focussing on providing them necessary educational courses but also giving them a practical exposure of starting and running a business. According to Jansen, Van De Zande, Brinkkemper, Stam, and Varma (2015), universities need to encourage students via three sets of activities namely stimulating (working towards expanding their entrepreneurial awareness), educating (proving them with necessary knowledge and skill set necessary to create and run business) and lastly, incubating (providing them a platform to get help for their business). Thus, involvement of universities plays a key role in creating SE.

Based on the definition of SE, limited studies have looked into student who are entrepreneur. As the literature is limited, there is a need to understand how these SE differ from other categories of entrepreneurs. Additionally, the rise in entrepreneurial courses around the globe direct towards need to study these new entrepreneurs (Marchand & Hermens 2015). Based on the Kauffman foundation report, the number of entrepreneurial courses have increased in four folds thereby concluding the increasing interest of students towards entrepreneurship as a career.

Given the need for studying these SE, past studies have focussed on entrepreneurial intentions among students. The main studies under this stream focussed on the traits or characteristics of these entrepreneurs along with factors influencing the entrepreneurial intentions of the entrepreneurs (Gieure et al., 2019; Pandit et al., 2018). Although these studies have found a positive influence of university on student's entrepreneurial intentions, but they have overlooked at the students who have already started their business (Marchand & Hermens, 2015). Therefore, the findings of these research may or may not be applicable

for SE. Thus, it is important to look at these sample of entrepreneurs, in order understand and expedite the process of venture creation among students.

2.2 Personal networks as a critical resource for entrepreneurs

Researchers have extensively studied entrepreneurship as a set of processes, consisting of idea generation, opportunity recognition, generating of seed capital, motivation, mentoring, planning and growth (Bhave, 1994). Various researchers identified the importance of opportunity recognition process in venture creation (Timmons, 1994; Webb, Kistruck, Ireland, & Ketchen, 2010), where opportunity recognition is defined as 'the potential to create value via providing a more desirable end product and/or providing a product more efficiently than what exists (or does not exist)' (Casson, 1982). Studies have identified that the support entrepreneurs seek to take help from their networks in order to identify and validate different opportunities (Bygrave & Hofer, 1991). Another key process in entrepreneurship includes collecting seed capital for starting the business. Number of researches identified the difficulties faced by the entrepreneurs in collecting seed capital for their venture (eg. Gopalaswamy & Mathew, 2012) as well as different sources of collecting seed capital which included government funding, venture capitalist, private and angel investors (Khavul, 2001).

Irrespective of the type of process, the entrepreneurs' social network has been one common source of support and help in carrying out these processes. Laumann, Galaskiewicz, & Marsden (1978) define a social network as 'a set of nodes (e.g. persons, organizations) linked by a set of social relationships (e.g. friendship, transfer of funds, overlapping membership) of a specified type'. An entrepreneur's social network plays an important role throughout the entrepreneurial process; the social network support starts from idea generation up to venture creation and beyond (Johannisson, 1988). Previous studies focusing on entrepreneurs' social networks emphasise the nature and typologies of networks used by the entrepreneurs. In addition, empirical studies confirm that social network plays a positive role in the success and growth of the business (Barr, 2002; Berrou & Combarnous, 2012).

It is well understood that entrepreneurs need support from different kinds of people for different business needs. Depending on the needs of the entrepreneurs, Johannisson (1988) categorized social networks into three types namely: (a) Exchange networks (includes all business relationships that one has formed, comprising of customers, suppliers, and distributors); (b) Communication networks (includes consultants, advisors and experts, who help the entrepreneur to take various business decisions); and (c) Personal networks (includes family, friends, relatives, mentors and professors). Among these three networks, entrepreneurs initially tend to use their personal networks in starting-up their venture; as the firm nurtures, the importance as well as the frequency of contact with the exchange and communication networks grow too (Peltier & Naidu, 2012).

Personal networks tend to support entrepreneurs at different entrepreneurial processes by providing tangible and intangible resources. According to Johannisson (1990), entrepreneurs' personal connections is strategically, one of the key resource for their venture. Not only have they helped in the initial starting phase but also, throughout their entrepreneurial journey. Entrepreneur's informal/ personal network is important part as when the entrepreneurs initially plan to start their venture, they prefer their close network to evaluate their business ideas and does planning along with them. Past studies have confirmed the involvement of personal network in venture creation. For example, studies conducted by Khavul (2001) and

Gartner, Frid, and Alexander (2012) found that generally an entrepreneur initially uses his/her personal funds, and later approaches their family, friends or close relatives for additional funds. The educational qualification of an entrepreneur seems to be one of the major elements in deciding the financial arrangements of the firm (Bates, 1990). Entrepreneurs' personal network helps in collecting resources for starting up the venture (Birley, 1985). These resources include raw materials, equipment's, employees, and customers for business. Apart from these resources, personal network also support in providing capital for business, advice and information related to business.

Entrepreneurs with prior knowledge of markets, modes of serving markets or customer problems tend to find more business opportunities (Shane, 2003). Timmons (1994) observes that to become a successful entrepreneur, a good fitment between an entrepreneur, the opportunity and the resources required for the business is a must. Ardichvili, Cardozo, and Ray (2003) and DeTienne and Chandler (2007) identify various factors responsible for opportunity identification processes such as education, prior knowledge about the area of business, customer problems, work experience, social networks, and entrepreneurial experience. Looking into these factors, Orwa (2004) found that social network is one of the key factors in an entrepreneur's opportunity identification process followed by mentoring, prior knowledge, alertness, and business information. An extended social network of entrepreneurs leads to increase the information level thereby finding more business ideas and opportunities (Hills et al., 1997).

During incubation stage of a firm and when the level of risk is very high, entrepreneurs mostly rely on their family and friends specifically for raising capital for their business (Anderson, Jack, & Dodd, 2005). And as the time passes by, with level of risk getting reduced and the venture is growing, entrepreneurs seek help from other networks. For example, in order to get funds for running their business, entrepreneurs might get connected to angle investors, venture capitalist or banks.

An important perception in studying entrepreneurs' personal networks involves that an entrepreneur with good connection get easy access to key resources required in the business due to the quality and structure of the personal network which helps in getting access to necessary information for the business (Zimmer, 1986). With better people in entrepreneurs' network, the launch of the venture escalates (Davidsson & Honig, 2003), entrepreneurs attain new competences (McEvily & Zaheer, 1999) and develop their ventures (Shane & Stuart, 2002).

2.3 Personal Networks and student entrepreneurs

Researchers accepted the prevalence of different types of entrepreneurs; and in order to understand them, they need to be grouped based on similar characteristics (Smith, 1967; Smith & Miner, 1983). Earlier studies thereby categorized entrepreneurs into various types based on the research focus and context; each author came up with different categorizations of entrepreneurs. Among these classifications, the key distinction based on business ownership includes nascent, novice, habitual, serial and portfolio entrepreneurs (Westhead & Wright, 1998; Wright, Westhead & Sohl, 1998; Delmar & Davidsson, 2000). Novice entrepreneurs are defined as 'those that have no prior entrepreneurial experience as either a founder, an inheritor, or a purchaser of a business' (Westhead & Wright, 1998). All SE by default are novice entrepreneurs; but on the other hand, not all novice entrepreneurs are

necessarily SE. This distinction has been warranted owing to limited studies available on student entrepreneurship notwithstanding the burgeoning literature on entrepreneurial training and education (Wright, Seigel, & Mustar, 2017).

An emerging type of entrepreneurs is SE, where SE develop their business idea and/or start their venture alongside their university studies whereas graduate entrepreneurs are the ones who develop their business idea and/or start their venture after graduating (Nielsen & Gartner, 2017). Existing research in the area of SE predominantly focuses on the initial phase of the SE process: evaluating entrepreneurial intention among students (Krueger Jr, Reilly, & Carsrud, 2000; Autio et al., 2001), effects of entrepreneurial education on students' entrepreneurial skills and perception (Collins, Hannon, & Smith, 2004) as well as students traits and experiences of entrepreneurship (Jones & Jones, 2014). Different stakeholders drives these SE differently such as entrepreneurial education help them gain necessary skills and knowledge, entrepreneurial parents where the scholars have argued towards the influence of entrepreneurial parents towards the likelihood of their child turning out to be entrepreneur (Lindquist, Sol, & Van Praag, 2015). Entrepreneur's parent support them by boosting their morale and providing them necessary guidance and resources required to run their business (Holienka, Gal, & Kovačičová, 2017).

However, wider complexities along with issues and process of what happens when students, in reality, acts as an entrepreneur are rarely been studied (Nabi & Holden, 2008; Marchand & Hermens, 2015). Thus, it is important to look into the student entrepreneurial process as a whole and further develop conceptual and theoretical framework pertaining to this idea. When the student opt for entrepreneurship early in their career, the complete process expand their experience both negatively and positively (Baron, 2008). Therefore, it is essential for them to get support in order to manage these experiences relating to starting of the venture (Mustafa, Hernandez, Mahon, & Chee, 2016; Ahsan, Zheng, DeNoble, & Musteen, 2018).

Past literature has certainly treated student entrepreneurial transformation process as a linear path where the student begins its journey as a 'student' and then become something and therefore 'graduate entrepreneurship' is highly preferred to 'student entrepreneurship' (Nabi et al., 2010; Nielsen & Gartner, 2016). The notion that student can be both, student as well as entrepreneur, is still a niche area which needs more attention and there is hardly any conceptual framework capturing the intricacies of these SE.

3. Purpose and significance of study

Since SE tend to have limited work experience and certainly have dearth of knowledge and expertise of creating and running a venture (St-Jean & Audet 2012; Wilson, Kickul, & Marlino, 2007), they might be lacking exchange and communication networks mentioned above. Thus, for building up these social networks, they need to rely on their personal networks. Extant research did highlight the importance of informal networks via the role of the family in entrepreneurs' careers; that is why, in our research, we propose to gain a deeper understanding of how SE actually consider the role of personal networks in creating their business ventures and whether their expectations did materialise or not.

The aim of this research is to explore the role of personal network in venture creation. Therefore, the research questions for the study are:

1. With respect to personal network, what are the different tangible or intangible factors/themes that help SE in venture creation?
2. How are these factors related to each other with respect to SE need?
3. Based on different factor identified, which factors are crucial in creating the venture?
4. How did the personal network perform based on the expectations set by the SE?

By understanding the need of SE, universities and other stakeholders can formulate their courses or policies or programs targeting the factors which SE's identified as most critical.

4. Methodology

4.1 Data

Due to the nature of the research goal and the lack of empirical studies in this field, this study adopts qualitative methods (Yin, 2009). By using a university in India as a case, we aim to explore perceptions of SE regarding the role of personal networks in creating new ventures.

This study collected data from Indian Institute of Technology Madras (IITM) that has a well-established incubation centre founded in 2009. IITM is one of the leading technical universities in India and has been active in contributing to India's technology revolutions such as Lema Labs or Pi Beam Labs[1]. IITM has a strong connection with industry because of its research park, called IITMRP, India's first university-driven research park. IITMRP supports all the entrepreneurs who are affiliated with IITM. They provide entrepreneurs with mentoring support as well as financial support. They allow an entrepreneur, having an innovative idea to start his or her venture. At the time of the research, IITM Research Park was hosting around 55 companies, where ten were incubated by IITM. Out of these 55 start-up companies, 26 joined our study.

Participants in this study are SE who have started their business or had the idea about their business during their graduation period. Based on purposive sampling, the study selected the respondents to be entrepreneurs who had started their venture during or just after their graduation (within two years of their graduation). Participants were selected from several units within the IITM campus that are directly related with entrepreneurship activities. These units included the initiatives like IITM Incubation Cell, Rural Technology and Business Intelligence (RTBI), IITM Bio-incubators, Entrepreneurship cell, and Centre For Innovation, all being part of IITM.

Overall, eight SE (seven males and one female) took part in the focus group study and 11 SE (10 males and one female) participated in the interviews. The number of participants for focus group study was big enough to facilitate thought-provoking discussion but small enough to create a safe environment for the participant (Northcutt & McCoy, 2004). Overall, it took 1.5 hours while each interview lasted for 45-50 minutes. The interview questions were prepared based on the themes identified from the focus group study and were centered on understanding the role of personal network in venture creation. The interview questions were pilot tested with experts and altered based on the feedback. All the interviews were tape recorded and analysed manually.

[1] http://respark.iitm.ac.in/our_clients/incubatees.php

4.2 Data Analysis using the Interactive Qualitative Analysis Method

Data collected through focus groups and face-to-face interviews were analysed by the Interactive Qualitative Analysis (IQA) method. This method that is widely used in uncovering the workings and relationships of social systems with the analytical assistance of research participants (Northcutt & McCoy, 2004). IQA being a qualitative analysis is based on TQM, and refers to collecting, organizing, and analysing text or other non-numerical data (Northcutt & McCoy, 2004). It aims at theory building by incorporating findings from focus group discussions (FCGs) followed by personal interviews with the participants, using thematic content analysis of data to capture the participants' experiences, identifying emergent themes or affinities. The result of the IQA process is a Systems Influence Diagram (SID), which is a visual representation of the phenomenon that is constructed through the lens of the constituents (Bargate, 2014). In our case, focus group and interviews resulted with a list of benefits / roles expected from the personal networks of SE and their relationships with each other.

IQA study began with the focus groups study followed by interviews. Our focus group study included setting the scene (providing background information about the research), silent brainstorming, interpretation of each thought, axial coding, theme description, compiling and analysing interrelationship diagram (IRD) from all participants and finally creating the system influence diagram (SID). Based on the output of brainstorming and interpretation of each thought, all the participants came together and formed cluster of similar thoughts together and provided name for each cluster. The focus group study concluded with participants identifying relationships among the theme using IRD. Compiling the IRD of focus group study and interviews the final SID was created. With the help of SID, it became possible to see the hierarchy between these affinities. Similar process was followed for interviews where the outcome of themes from the focus group study formed the basis for interviews questions. Thus, IQA helped in identifying 9 key factors that help SE in venture creation along with creating the mental map through SID.

For answering our third and fourth research question a survey instrument was developed based on the IQA study. With the help of different pre-developed scales, focus group study and interviews, a survey instrument was developed to analyse the performance of personal network in venture creation.

4.3 Data Analysis Using the Importance Performance Analysis Method

Martilla and James (1977) introduced a technique named as Importance Performance Analysis (IPA), in order to analyse the marketing strategy of an automobile dealer's service department. IPA, which was first designed to study the market strategies, is now being largely used in different industries in order to identify vital areas that require attention where the areas under concern are service quality, customer satisfaction, health, education and other areas (Chu & Choi, 2000; Ford, M. Joseph, & B. Joseph, 1999; Ennew, Reed, & Binks, 1993). IPA was built on the idea that evaluation or feedback can be obtained from the consumer (Martilla & James, 1977).

IPA technique works on the fundamental assumption that the level of customers' satisfaction with each attribute is the resultant of their expectation and conclusion of performance of the

products or services (Chu & Choi, 2000). According to Pezeshki, Mousavi, and Grant (2009), it is very critical to define the importance and performance of the attributes in order to have a successful customer relationship. IPA model aids to provide answer to two important questions under study (Martilla & James, 1977): (1) How important is the item? and (2) How well is the item performing?

In order to understand the importance of each perceived benefits of personal networks for SE and whether these expectations are realised or not, we used Importance Performance Analysis (IPA) method (Martilla & James, 1977). To generate a list of important roles of personal networks, there has to be a set of attributes to judge on the importance of any particular role of personal networks in venture creation. IPA is a multi-attribute choice model and hence IPA helps in understanding the importance as well as the performance of each attribute by asking the participants to rate the attributes in a Likert-scale. Output of IPA is a visual representation of attributes in a four-quadrant grid, where vertical axis indicates the importance rating of each item and horizontal axis rates on how well did each item perform. The intersection of both the axes is the grand mean or median of importance and performance rating (For details of the overall process of IPA see Appendix A).

Based on the interviews conducted as a part of IQA study, SE consistently reported 'Founding Team', which was not mentioned in focus groups as well as rarely referred in literature (Yusuf, 2012; Yusuf, 2015). That is why we added this construct as the 10th role in Table 1, with two items helping to measure it.

Reliability and Validity: The most common measures of reliability are test-retest, and internal-consistency reliability. Trochim (2003) suggested that internal- consistency method is the best for estimating reliability in case a single measurement instrument is administered to a group of people on one occasion. This form of reliability is particularly suitable when summated scales are used to measure variables. Since this study uses summated scales to measure variables, this measure of reliability would be appropriate. Cronbach's alpha is one of the widely used measures on internal consistency reliability (Hair, Anderson, Tatham, & Black, 1998).

Hair et al. (1998) suggested that the generally agreed value for Cronbach's alpha was 0.70, and it could be 0.50 for exploratory research. All the reliability measures in this study are in acceptable range. Most of the constructs show reliability of more than 0.7 indicating a very good level of the reliability of the instrument.

Face and content validity: Rossi, Wright, & Anderson (2013) stated that content validity can be confirmed if the items measuring different constructs of an instrument were authenticated by a comprehensive review of the relevant literature. As discussed in the review of literature, all except one item were based on extant literature itself; hence, the selection of the constructs is absolutely justified with reference to the existing literature, thereby ensuring content validity of the instrument.

A total of 59 SE participated for the survey. Out of these 59, 2 were females and remaining 57 were male entrepreneurs. All the SE who participated in the study were from IIT Madras. With the use of purposive sampling, the researcher communicated a total of 67 participants

out of which 59 agreed to participate in the survey getting a response rate of 88 per cent. The participants took around 20-25 minutes to fill the survey. Data was collected during the

Themes	Items	Mi	SD	Mp	SD	Mi-Mp

period of January to July in 2016.

After filling the importance and performance rating for each factor influencing venture creation, all the survey form were collected from the SE. The mean score of importance and performance rating was calculated for each item based on the 5-point Likert scale (1- least important to 5- most important). Table 1 shows the mean scores of importance and performance for each item.

Table 1. IPA Mean Importance (Mi) and mean performance (Mp) rating

Idea Refinement	Providing feedback on your business idea	3.76	1.04	3.76	0.93	0.00
	Validating my understanding of the needs of the customers	3.80	1.17	3.59	1.08	0.20
Business Opportunity Identification	Identifying customer value proposition (benefits offered by the company to its customers)	3.64	1.17	3.42	0.89	0.22
	Positioning your product/services (why should customers use your product)	3.75	1.21	3.54	0.97	0.20
	Identifying market segments (grouping of consumers with similar needs)	3.44	1.26	3.37	1.03	0.07
Market Validation	Analysing competitive positioning (differentiating your offerings from the competitors)	3.36	1.21	3.17	1.13	0.19
	Exploring the market feasibility (size of the market, requirement of your product, time-to-market)	3.49	1.29	3.25	1.09	0.24
	Identifying target customer groups (group of people willing to buy the product)	3.76	1.19	3.53	1.07	0.24
Venture financing	Identifying sources of finance (venture capitalist, angel investors, banks)	3.92	1.07	3.71	1.08	0.20
	Tapping financial sources (venture capitalist, angel investors, banks)	3.56	1.13	3.41	1.18	0.15
	Refining the business plan as per venture financing requirements	3.44	1.22	3.17	1.15	0.27
Business Model Refinement	Identifying strategic partners (suppliers)	3.37	1.20	3.42	1.09	-0.05
	Analysing the value chain of the firm (core and support processes)	3.12	1.12	3.10	1.17	0.02
	Designing channels of distribution of product/service (company's interface with the customers)	3.29	1.30	3.14	1.18	0.15
Business Mentoring	Providing professional advice relevant to business operations (eg. logistics, commercial, financial)	3.85	1.11	3.46	1.16	0.39
	Honing managerial skills (time management, accountability, and public speaking)	3.68	1.25	3.37	1.27	0.31
	Mitigating business risk (operational, financial or compliance risk)	3.53	1.18	3.29	1.19	0.24
Motivational Support	Encouraging to take risk	4.20	1.05	3.86	1.24	0.34
	Building self-confidence	4.36	0.98	4.20	1.17	0.15
	Providing emotional support	4.22	1.07	4.29	1.08	-0.07
First Sale Opportunity	Closing the first deal	3.47	1.30	3.44	1.29	0.03
	Identifying sales leads and prospects	3.46	1.21	3.34	1.08	0.12
	Contacting sales leads and prospects	3.34	1.24	3.12	1.20	0.22
Technical Know-how	Providing information about technological issues related to product/service	3.39	1.33	3.31	1.18	0.08
	Providing information on regulatory compliance (eg. registering the business, legal issues, government policies)	3.59	1.16	3.53	1.18	0.07
Founding Team	Choosing founding members	3.76	1.51	3.53	1.48	0.24
	Facilitating hiring of executives and staff	3.69	1.30	3.41	1.29	0.29

5. Findings

5.1 Key roles of personal network as perceived by student entrepreneurs

Focus group discussion and interviews with the SE show the nine roles of personal networks (the tenth role -founding team- is observed during survey, so it is not included in this analysis) as described below:

1. **Idea Refinement:** Idea refinement is a process of iterating, developing and fine-tuning a business idea and converting it into a realisable one by defining and understanding

mission, vision and goals of the new venture. For some, personal networks enabled them to interact with different entrepreneurs of similar domain in order to gain deeper understanding of the industry. For a few others, networks assisted in developing a business plan, providing ideas and professional network meetings. Eg. "I got introduced to few mentors through my personal network. These mentors helped me in refining ideas and gave a good direction to my thought process."

2. **Market Validation:** Personal networks could help to explore the market need and aids to check the viability of the idea. To validate the ideas of entrepreneurs, personal networks guided them in providing resources (mostly contacts) for their demo sessions, giving reviews and feedback about their plans. They facilitated them in selecting the target market segment for the new business. For example, one participant responded "When I had my idea finalised, first I discussed with my friends in order to take their opinions about it. I met my professors in order to find whether my idea is possible or not and their feedback helped me validating my idea."
3. **Venture Financing:** Entrepreneurs defined venture financing as bootstrapping stage of scaling up. Entrepreneurs initially used the capital that they had and contacted their family and friends to further raise initial seed capital for the venture. Eg. "My friends knew few people who were interested in investing money in new start-ups, so they fixed our meeting with them, and hence we were able to generate enough capital to start our business."
4. **Business Mentoring:** It is the expert advice received encompassing all facets of the business. It gives clarity and increases focus on reaching out to the target segment. It also support in providing information about the legal issues, accounting, company registration and marketing. Eg: "My personal network gave me financial and legal advices related to my business".
5. **Technical Know-How:** It includes technical development and guidance for business development. Personal networks were source of information and data whereas professional network provided retail data and trends. The focus group used networks for developing and marketing the product. For some, networks guided in refining the business plans. "My friends helped in creating the first prototype for my business as well as created website for me free of cost".
6. **Motivational Support:** It is defined as providing emotional support as well as fillip to move forward in order to achieve the objectives. Personal Networks provided motivation and encouragement. Entrepreneur's family gave moral support when things did not proceed as planned whereas mentors, guides, professors and professional colleagues provided inspirational guidance. Eg. "My family and friends supported me throughout the process. An old flat of my father was our office where we use to do designing of our website. One of my friend handed me over his old computer which was used for basic coding purposes."
7. **Business Model Refinement:** Personal networks could help to deal with solving problems and issues related to business model in order to know the market strategy and monetize the business. Participants sought business and technical support from their mentors for refining their business approach or technical solution. Eg. "My professor

aided me in preparing business model for my business and assisted me to fine tune every aspects of the idea."

8. **Business Opportunity Identification:** This role is related with finding partners for the business, explore opportunities, lead generation, sales and business development. It consist of tapping into other networks. Participant's network introduced them to various people from their business domain and gave referrals for the same. Professional networks aided them to find stakeholders and mentors, and lead them to other networks for tracking business opportunities. Eg. "My personal network informed me about the opportunity available and assisted me to get clients."
9. **First Sale Opportunity:** Identifying qualified leads and introducing to prospective clients form part of this role expected from personal networks. Personal networks helps in providing clients contacts, references to other people by word of mouth, connecting to investors, mentors and entrepreneurs of similar background, who gave different ideas to implement and find clients in the industry. Eg. "My friends publicized my business by distributing pamphlets and sending messages and e-mails to their contacts and spreading about my business, in order to get my first clients."

The analysis of the hierarchical relationship among these nine individual roles through SID analysis is shown in the following Figure 1 and Figure 2. Accordingly, 'Business Mentoring' was the primary driver of the system. SE identified this role of personal networks as the key driving force for creating a venture. As highlighted by Waters, McCabe, D. Kiellerup, and S. Kiellerup (2002), business mentoring does play a crucial role in new venture creation; in fact, this was highlighted in the focus group study too. Mentoring helps in preventing risks and possible failures, and also helps in getting relevant information in creating a venture per se. 'Technical Know-how' and 'Market Validation' emerged as the secondary driver of the system. SE said that getting market information and help in creating prototype from networks were important. Personal networks supported SE by getting them acquainted with the skills required for business, along with all necessary information.

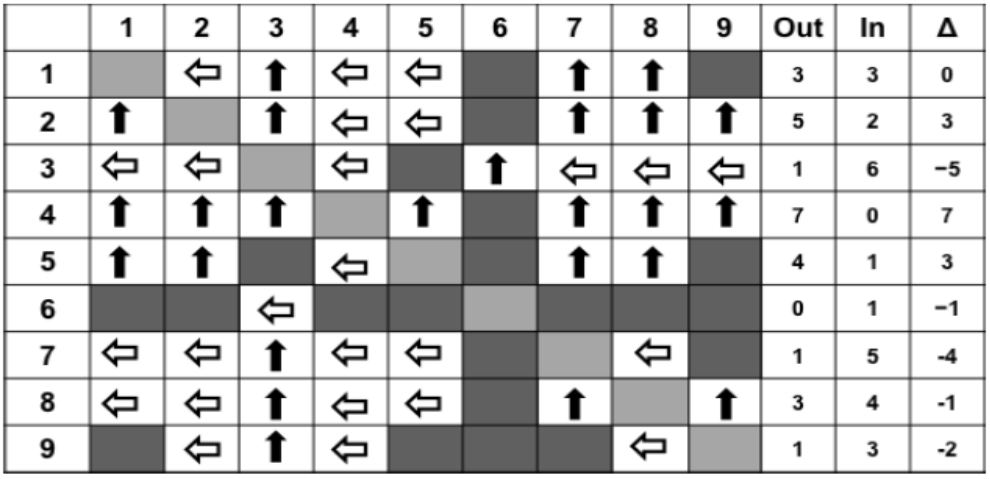

Figure 1. Inter-relation Diagram
Source: The author

Another important role of personal networks was related to 'Market Validation'; the participants stated that by getting all the technical information that is required by their business, it was easier to know about the market where their product/service is entering into.

'Idea Refinement' was a pivotal role; in other words, it symbolises the number of roles that it can influence is equal to the number of roles it is actually influencing. The participants highlighted that after studying the market and collecting all the information, then an idea gets fine-tuned. Further, they acknowledged that 'Idea Refinement' was indeed one of the most important themes for which they require support from their personal network, which not only supports them in providing feedback about various business ideas, but they also aid in fine-tuning the one that is selected for creating a venture per se.

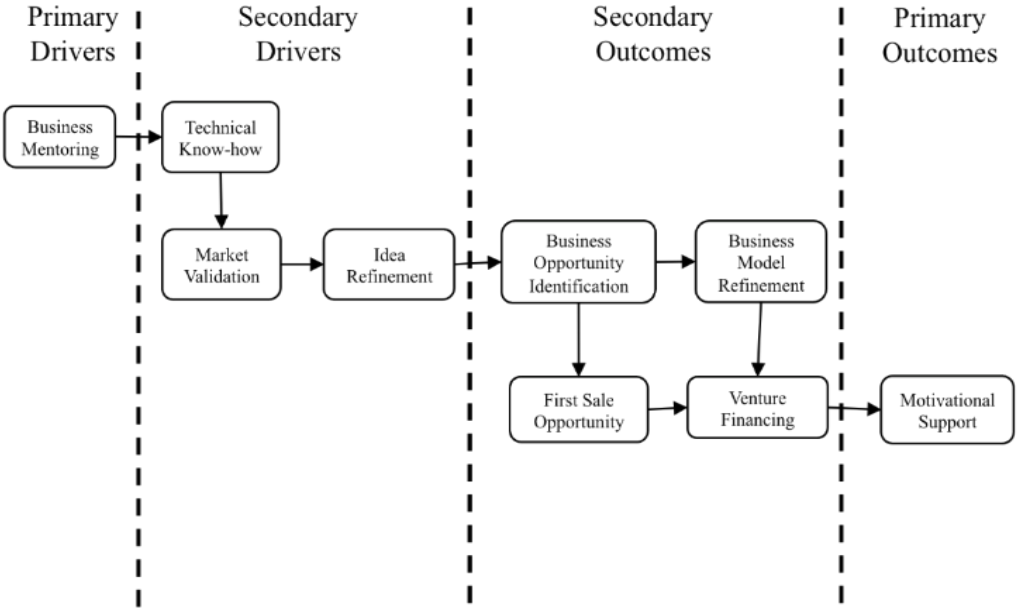

Figure 2. The SID Results Showing the Roles of Personal Networks
Source: The author

'Business Opportunity Identification', 'First Sale Opportunity', 'Business Model Refinement' and 'Venture Financing' appear as secondary outcomes. Many researchers have highlighted the importance of opportunity identification in the context of social networks as well as for SE (DeTienne & Chandler, 2007; Bell & Bell 2016). Hills et al. (1997) found that with wider network, an entrepreneur can get more information as well as can get more opportunities, which is supported by research performed by Birley (1985) and Aldrich and Zimmer (1986). Both the latter researchers highlighted the importance of informal networks in getting access to wider range of information in finding opportunities, as well as providing necessary knowledge and skills required for venture creation.

One of the SE stated that 'First Sale Opportunity' is important to finally start-off their business, and support from personal network was required to get the initial sales for their business. 'Business Model Refinement' expectation highlights the fact that SE need guidance from their personal network in finding partners for their ventures and refining the business model as well as providing feedback for the same.

Another highly researched topic includes financing for start-ups; SE think that their personal network should support them for collecting seed capital for starting their business. One of the SE stated that his personal network supported him by investing in his business; another entrepreneur's personal network sponsored their trips for market validation. Gartner, Frid,

and Alexander (2012) stated that entrepreneurs, after using their personal saving would contact their personal network for collecting seed capital and starting their venture.

'Motivational Support' came out to be primary outcome of the system. 'Motivational Support' required by SE includes boosting morale, supporting them when things don't go as planned, encouraging them to take risk and providing emotional support as and when required by the entrepreneurs. Though 'Motivational Support' is the primary outcome, it is still an important factor for encouraging SE, and helping them to create and start their venture.

Overall, the study finds business mentoring as the primary driver and motivational support as the primary outcome of personal networks created by SE during their new venture creation process.

5.2 Perceived Importance of different roles of personal networks and the reality check of these perceptions

Survey results brought to our attention a tenth role of personal networks. The student entrepreneurs stated that they selected founding team members from their network. At the gestation period, entrepreneur's network become the employees or partner of the firm in order ensure higher quality of work, more alert, and they were available at very low cost (Anderson et al, 2005). The networks either refer to suitable people for the work or help in recruitment process.

Survey findings are used to understand the perceived importance of different roles of personal network and their reality check as shown in Table 1. Results clearly highlight that a SE feels that motivational support is the most important factor among all ten roles expected from personal networks. SE rate 'Building self-confidence' as being the most important factor from their personal network, indicating their need for moral and encouragement in taking entrepreneurship as their career. Another important factor for SE is finding different sources for finance for their venture. They think that personal network's support is important for searching different financial sources for their business.

Again, from Table 1 it is visible that personal network of the SE performed very well in providing motivational support to these entrepreneurs. From the above analysis, it is thereby clear that SE's personal network performed up to their expectations. The SE's personal network encouraged and motivated them during their venture creation. Another important finding was that the SE's personal network evaluated each and every idea identified; the personal network performed well in all the aspects identified.

The action grid in Figure 3 shows that 'Business Mentoring', 'Founding Team' and 'Venture Financing' comes under 'Concentrate Here' quadrant; about 15 per cent of the items fall under this quadrant. This quadrant helps in identifying key areas of concern, and all the themes falling under this quadrant shows that these themes should be given more emphasis; more resources should be used in order meet the expectation of the SE. In our scenario, SE felt that personal networks support is required more, although the personal network gives mentoring support, but it is not enough.

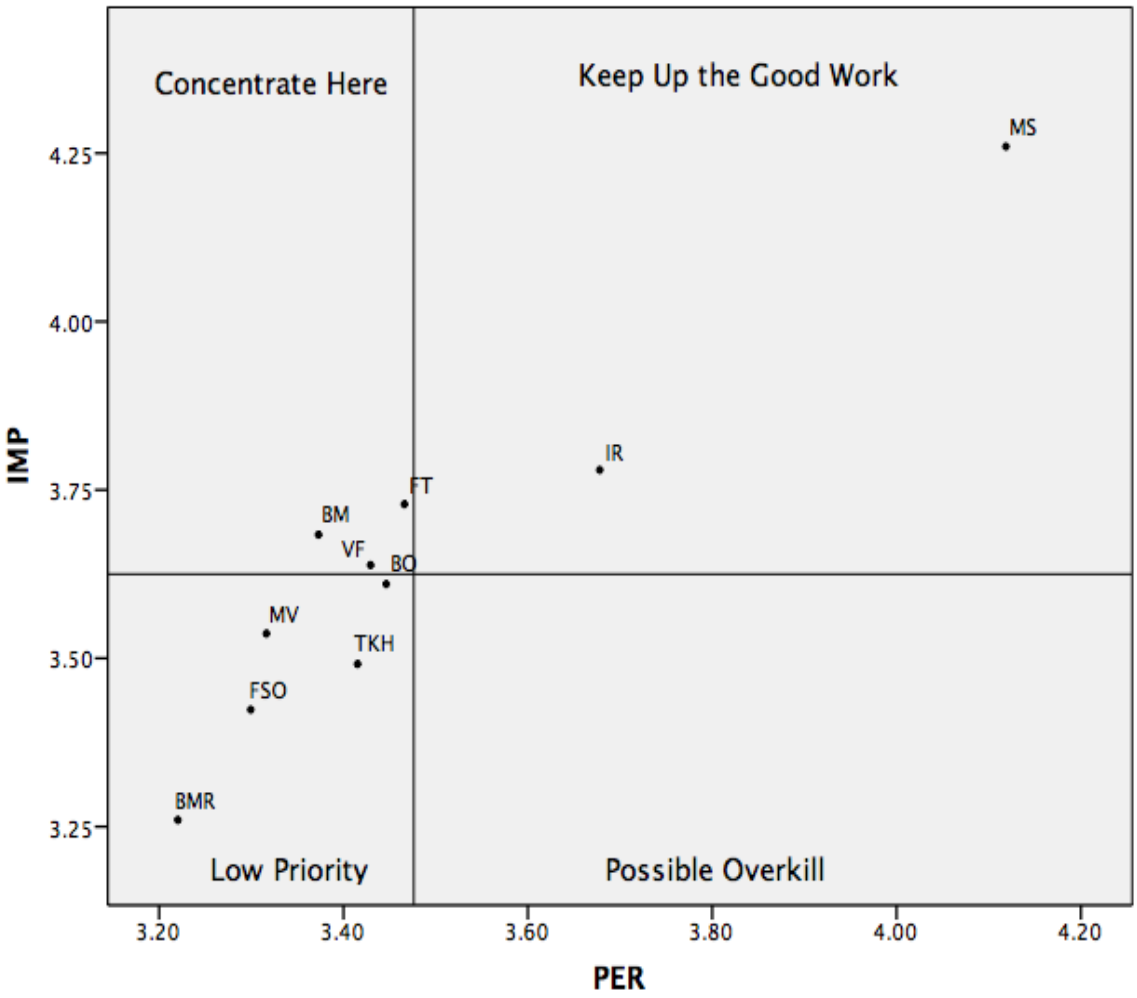

Figure 3. The expected Importance of each roles of personal networks and their Realisation
Source: The author

SE place 'Motivational support' and 'Idea refinement' in 'Keep up the good work' quadrant, which includes 33.33 per cent of the total item. All the themes that fall under this quadrant, shows that SE were particularly satisfied with their personal network on these aspects. On all the aspects falling under this quadrant, personal network performed to the expectation of SE.

Remaining themes, 'Business Opportunity Identification', 'Market Validation', 'Business Model Refinement', 'Technical Know-how' and ' First sale opportunity' lied under "Low Priority" quadrant. Almost 49 per cent of the items were under this category. For these themes, importance rating given by SE were low and even the performance were low too.

Discrepancy analysis identifies the gap between the importance and performance. It is calculated by deducting mean performance score from mean importance score (Ford et al., 1999). If the score has positive value, it means that the performance of that item is not up to the level of the importance of that item. Positive score indicates concern with that particular item; while negative score of any item indicates that the participant is satisfied with performance, or it may also indicate that too much effort is being given for that particular item which is 'overkill'. The discrepancy score indicates factors, which require immediate action (Ford et al., 1999).

The discrepancy analysis score displayed in Table 1 showed that SE feel that though venture financing is an essential support required from personal network, the performance of the network was not up to expectations. Even for business mentoring, the discrepancy score was high, showing that the performance of personal network was not equal to the level of importance. This information is important for policy makers, incubation centers as well as universities providing entrepreneurship education, as it tells us about the support required by entrepreneurs. These stakeholders need to look into these aspects and create their plans, policies and strategies in order to encourage SE. Venture financing is one of the key aspects for starting the business; from the IPA study, SE' importance rating was higher as compared to performance rating. This, in turn, shows that more support is required by SE in order to collect funds for their business; by getting support from the ecosystem, the SE will be encouraged to start a business.

Personal network performed as per the expectation of the SE in the area of idea refinement and motivational support. This shows that personal network should continue in the same way as they are doing now. SE stated that encouragement from their personal network is very important in order to start and keep running the business and their networks are providing that support along with boosting their morale.

6. Discussion

The present study focus on a unique group: SE. With the increase in various entrepreneurship education programs as well as increase in number of university incubators, there is a need to understand SE in order to be able to help them during the establishment of their start-ups.

Driven by the social network approach, this paper is focused on the investigation of the roles of personal networks within the context of SE who have started a business in the last two years of their graduation. This is done by conducting an empirical work at one of the most entrepreneurial university in India, namely IITM. Using explorative approach, study collected data through a focus group, a set of interviews, and a survey. Then the results are analysed adopting two key methods: IQA and IPA to find out what are the expected role of personal networks by SE and whether these expectations have been realised. The findings of this explorative study might contribute to literature as well as policy discussions.

Theory-building efforts

The present empirical study is an earliest attempt to address the gap in the entrepreneurship literature pertaining to the analysis of SE' perspectives. Our study contributes to the literature in three ways. First, our study offers a list of 10 key roles that are expected from the personal networks of SE. Second, by using IPA, we show the hierarchy of these roles. We find out that business networking is the major role that initiate various benefits resulting with a final outcome of motivational support to SE. This finding challenges the extant literature that overemphasizes the role of venture financing for start-up and further it raises the issue of what might be practical value for each entrepreneurial type such as SE. Third, the expectations from personal networks might not match with these networks' actual role in venture creation. As shown in the case of SE for the present study, personal networks generate value through their role in business networking, venture financing and the founding team formation during the start-up phase.

Besides theoretical contributions, the current study expands the entrepreneurship literature through its empirical work in two ways. First, we introduce a case study of a leading university in India, which is an emerging economy. Second, no research in this domain integrated the findings of IQA and IPA methodologies. IQA helped in identifying various themes for which the SE needed support and it also helped in developing system level maps. Another advantage of applying IQA is that, it helps in further analysis of problem. SID generated through IQA helped in creating the conceptual framework for understanding the possible role expectations of SE from their personal networks. Despite the obvious help in financing the new venture, business mentoring is the key expectation of SE. Although SE do need their personal network to contribute when generating the start-up capital, venture financing came out to be the secondary driver in the study concluding that, despite its importance, SE tend to focus more in developing different business skills and knowledge and then move towards the financing part. IPA methodology helped in finding the performance of the personal network on different aspects. It divided all the themes into four quadrants and identified areas in which entrepreneur require immediate support. Themes like Business Mentoring and Venture financing are the two most concerned areas in which SE needed support. Getting help in these areas will motivate entrepreneurs as well help in increasing the number of entrepreneurs. Thus our study findings might be able to help both the SE as well as different stakeholders of start-up ecosystem such as university administration in establishing healthy environment for SE at the macro level (Wright et al., 2017).

Entrepreneurial Support Themes

The present study highlighted 10 themes, which were found by SE themselves. This study could therefore help budding SE by showing them different ways in which their personal network can help. This study can also indicate the role of different sources of support like universities, professors, mentor as well incubation centers.

Entrepreneurs require support in all stages of business starting from developing the idea, creating the venture till running the business. With proper support system, entrepreneurs can reach to the level they desire. Different entrepreneurial programs are required for entrepreneurs in order to support them (Wright et al., 2017). However, these programs should be formed according to the needs of the entrepreneurs. For example, entrepreneur during the starting phase of their business would require more information about the industry, how to approach for finance, how to register for a company or how to approach a client therefore interactions with people who can provide these information will be helpful where as an entrepreneur in maturity stage of their business would like to grow their business thereby needing contacts or groups of people where they can validate their efforts that they have put up for their product/ services. With the help of educational institute's well designed policies and support infrastructures such as incubators (Åstebro, Bazzazian, & Braguinsky, 2012), SE can get social support they need, which, in turn, increases their success during start-up.

Limitations and Suggestions for Future Research:

The study has three limitations that offer opportunity for future studies. First, the study presented an in-depth case study conducted in a top-ranked university in India: Indian Institute of Technology Madras (IITM). SE in India appear to be utilising their personal

networks for a wide variety of reasons ranging from business opportunity identification to venture financing. Replicating this study in other countries with different cultural nuances and varied socio-economic contexts can offer interesting glimpses into the venture creation processes. Second, this study adopts two methodologies (IQA and IPA), the future studies might apply different methodologies developed for qualitative studies. Third, this study focused merely on the role of personal networks without taking into consideration other potential factors critical in the start-up phase such as age, gender or type of business. These groups could be analysed to check if there are any similarities or differences between the groups, which possibly could bring additional findings that could enrich our understanding of SE. While the study findings are generalisable in the context of similar universities in emerging economies, more empirical research is warranted to explore newer themes related to SE – be it venture creation, business model sustenance, and firm profitability.

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8. APPENDIX

8.1 Appendix A. Details on the Process of IPA Method

IPA method is carried out through four steps that results with an action grid.

STEP 1: involves identifying key attributes for analysing the problem. Martilla and James (1977) stated that this step is very critical in addressing the problem under study, because if any of the factors is overlooked from the perspective of the participants under study, the effectiveness of the model is lost. In order to collect all the important attributes for the study other than literature survey, different types of qualitative techniques should be used like focus group study or personal interviews or managerial judgment (Martilla and James, 1977).

STEP 2: includes creating and conducting survey for the selected attributes. This step involves identifying participants under study and providing them the survey. Either 5-point or 7-point Likert-scale can be used for the IPA study. The participants will have to give a rating to each of the item under study. The participants rate each question in two aspects: one is how important is the item under ideal situation and second is how well did the item perform in the actual scenario.

STEP 3: subsumes collecting all the survey data and analysing importance and performance of each attribute. Martilla and James (1977) suggested that either mean or median value could be used for analysing data. Using a median value is preferable, as true interval scale may not exist; but, if the values of mean and median are close, the mean value is preferred, as all the additional information will be retained.

STEP 4: contains plotting the mean or median values of each attribute in the four-quadrant grid. This is the final step, which gives a visual representation of the survey data. According to Martilla and James (1977), and Chu et al. (2000) the grid will position each items into four quadrats namely:

- Concentrate Here: In this quadrant, the perceived importance of the attributes is high whereas the performance of that same attribute is low. This means that attributes in this quadrant needs attention as the performance of these attributes do not match with the expectations of the participants under study and efforts are required to meet the expectations.
- Keep Up the Good Work: The importance as well as the performance of the attribute is high, which means that for the attributes lying in this quadrant performed well to meet the expectation of the participants.
- Low Priority: In this quadrant, the importance as well as the performance of the attribute is low. The researcher should not concern more about the attributes in this quadrant because the participants' expectation from these attributes is low and the performance is also low.

- Possible Overkill: In this quadrant, the importance is low whereas the performance of the attribute is high which means that though the participants do not consider these attributes as important but the performance of these attributes are more than expected.