Identification and prioritization of factors and their influence on corporate venturing success

The analysis of influential factors affecting the success of the corporate ventures using the Best-Worst methodology and their prioritization assessment

By

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Master Thesis

Foreword

This research study has been part of the master's program Management of Technology (MoT) at the Delft University of Technology. In line with the three criteria given below. The thesis abides by all of them:

- The work reports a scientific study using qualitative analytical tools in a technological innovation context (e.g. knowledge processes, innovation programs and processes, organizational structures, venture and organizational practices, entrepreneurship, technology and strategy)
- The work shows an understanding of the complex interactions between participating actors of a venture program and their varying influences across the venture.
- A multi-criterion decision making method is used to analyse the problem as studied in the MoT curriculum.

As a study on the influencing factors that arise through the interactions between the participating organization in a corporate venture heavily focused on entrepreneurial management, this thesis aligns with my of the Master of Management of Technology program. This research focuses on breaking down and having a deep understanding of the said interactions that affect the success of a venture activity. How different structures of organization and innovation add into the output. In this research the objective was to identify relevant and crucial factors influencing the success of the venture. Lastly, an in depth qualitative scientific analysis broadly termed as Best-Worst methodology was incorporated into the study, a multi-criterion decision making methodology to arrive at our results to give us a crystal clear understanding of the prioritization of the factors involved in the study, from most crucial or influential to least crucial or influential towards success.

Furthermore, I would like to thank the organization and the people who provided me with valuable insights throughout the thesis process.

Firstly, I would like to thank my graduation committee for guiding me through the thesis process, with its many challenges and successes. The feedback from Dr. Ing. V.E. Scholten during the meetings throughout the thesis was crucial and essential in pushing my thesis to its maximum potential.

I would also like to thank the respondents from various parts of the port industry here in Rotterdam who were directly or indirectly involved with the innovation programs at Port XL, for their time and interest in helping with the thesis. The insights from these results has been very thought provoking therefore, has enthused me.

Lastly, I would like to thank my family and friends throughout this journey. Even during the tough times their support and mentorship has been an invaluable resource. I feel thankful and blessed to have such people around me.

Executive Summary

Corporate venturing practices have been one of the most successful practices in terms of shared innovation or leveraging outside talent to further one's competitive edge in the rapidly growing and evolving industry of technology. Since, technology has been one of the main driving factors in providing solutions for achievement of short term and long term goals in the space, organizations are interested in finding out potential research findings and data that will enable them to maximize their probabilities of success for the particular venture. Streamlining such points of interest will improve the innovative capabilities of all participating organizations. However, the complexity arises from the various interactions that happen between the organization, capabilities of said organizations in aspects like finance, talent, management practices, entrepreneurial skills and, nature of said organizations in terms of their structure, bureaucratic practices and culture. This is where the identification of such factors that have crucial impact on the success of the venture is of paramount importance, which is carried out through literature study. This research can be used as platform for further research by analyzing a novel research case study, Port XL. This novelty was intensified by taking a qualitative and explorative approach towards the case. Industry professionals were inquired for their input in their research based on their knowledge and industry expertise. This leads to the key research question of the thesis.

"How do organizations organize and strategize and leverage the multitude of factors involved to achieve success in their sustainable business goals?"

From the literature a repository is created of relevant information sources to identify the most important factors influencing the success of a corporate venture. The factors are venture manager, finances of the organization, venture organizational structure, core business identity, proximity, organization culture and, market knowledge and relevancy. Literature suggests that these are the most crucial factors in determining the success of a venture.

Port XL provided the perfect setting to observe organizations participating in corporate venturing. Industry experts were selected throughout this program to gain crucial insights for the research study(Boskalis). Port XL is an organization which acts as a 'Maritime port accelerator", where by creating a network of big multi-national companies, the leaders and experts of the industry and bringing them in contact with each other for possible collaborations or introducing the to new startups and small scale technology companies involved with scientific and technological innovations that might benefit both participating parties, through corporate venturing(Port XL). Through our survey we were able to contact 8 respondents who were then considered as source of data for the research.

The respondents were given detailed information on the objective of the study, its applications and our current findings of selected factors for the research. These respondents provided us with data which portrays their characterization of most and least important factors and the pairwise comparisons with others. This data was later fed into the best worst methodology to get a numerical weight value corresponding to the respective factors that showcased their importance in terms of the weights attributed to them. The pairwise comparison is crucial in identifying irregularities in data which is shown by the consistency ratio generated for each respondent and then one for the overall study. Given our consistency ratio was withing the accepted threshold and its margins of error we can confidently say that the results our reliable.

In conclusion, this study has presented a unique insight into the corporate venturing phenomenon in a very novel setting. The findings suggest that the head of the venture, the venture manager is the most important

factor whereas proximity is the least important factor followed by finances, venture organizational structure, core business identity, market knowledge and relevance and organizational culture in decreasing importance to the success of corporate venturing activity. Thus, the research generates new points of interest for the organization based on which organizations can streamline their operations, structure, technological and innovative capabilities and financial proficiencies to meet the demands of the venture. This creates new fields of research for academicians and industry professionals to realize and increase the rate of success, by manipulating or addressing these key points of interest that have huge impact on the success of the venture.

Table of Contents

1. Introduction

In the introductory chapter, we will go through the underlying motivation to perform the said research and gain insights into the industry to understand how different organizations in various technological fields cope up with the rapid changes in technology and the market to achieve their business goals.

In the introduction is set up in five stages. Firstly, we give a clear and summarized background of the study, its importance in a professional scenario and its impact on the industry. Secondly, we introduce our research question and break it down into sub questions which will help us to generate clear results for our study. Thirdly, we will give a brief introduction to the research design that we are going to employ in our study. Fourthly, a brief summary of the the practical implications that professionals and industry professionals can incorporate from the results of the study. Fifthly, we discuss the structure of the thesis so that the reader has a structured view of what is going to be discussed in the study.

1.1. Background

Technology is growing at an exponential rate and this growth is evident in all industries, be it the financial sector, manufacturing sector, fashion sector, etc. Technology is affecting the way organizations run their businesses more than anything. Technology is used by organizations to improve the various factors that affect their success in the business therefore improving their business. Starting from the industrial revolution where automation was the technology of the day confined mostly to the manufacturing sector, to now where internet and connectivity (Industry 4.0) is playing a major role and has expanded to other industries and to other departments within an organization.

We see that organizations always compete within a market to provide the customer with the best product or service possible. Now due to these changing times, it is interesting to see how organizations try to keep on with the times and how they try to guarantee their success in the future by working towards future goals through sustainable business plans (Nosratabadi et al., 2019). Sustainable business goals or plans are to meet the goals of the organization, its customers and its investors today while protecting resources and drafting policies and reforms that are sustainable into the future on a long term scale (Nosratabadi et al., 2019). Organizations realize many of their future goals and plans related to sustainability through corporate entrepreneurship and corporate ventures. These activities play an essential role in the success of an organization these days. In the research we will extensively focus on these concepts to understand how the organizations use these concepts and to what are the different factors that are organizations keep track of to ensure success in their venture projects (McCrath et al., 2006).

Due to the rapid advancements in technology the business scenario for many technological organizations is also changing rapidly where there is a constant need for novel ideas, systems, and products to keep the organization sustainable. These sustainability goals can only be achieved through continuous success in the industries where the organization operates. Often in these cases it is seen that there are high levels of competitiveness involved between different companies and companies invest massive amounts of funds to gain a sliver of competitive advantage that puts them apart from the competition (Badri Ahmadi et al., 2017). Due to the recent developments in extensive use of corporate venturing and corporate entrepreneurship in organizations it has helped many organizations to stay relevant to changing times and ensure their sustainability. Therefore, this research is crucial in the sense that it will help us to clearly identify the important factors based on which these venture activities take place. This will enable organizations to streamline their approach and therefore use targeted activities, actions and create policies that further increase the possibilities of success of the venture. This research opens up the strategic reality

based on which the managers of the organization can work together and form up the frameworks or systems that enable the organization to ensure its sustainability goals of the future.

In this research we will identify both theoretical knowledge and the practical situations that are relevant to the research. The theoretical context mainly refers to the key concepts and terminologies used in the space of corporate venturing and corporate entrepreneurship. In the practical context the research will try to identify factors that influence the success of a venture and how these factors influence the overall functionality of the organization and the interaction between the organization and its venture program.

1.2. Research question

In recent times, technological advancements in various industries are so rapid and frequent that organizations always must stay ahead of the curve to try to ensure their competitive advantage. This is where corporate entrepreneurship and venture plays a key role. These practices help the organization to stay relevant and, in some cases, help them to gain a competitive edge over their competition. The most prominent example of these practices can be found in the manufacturing and technology industries where technology is constantly evolving. In recent years there has been many developments where technology of various kinds has also taken a foothold and are influencing the practices and functioning in organizations in all kinds of industries like in the human resource sector, the hospitality sector, the banking sector etc. In their corporate venturing efforts companies usually look at the company's track record, their financial reports, and their innovation history to evaluate their potential as a corporate partner. But there are other intrinsic factors that are closely associated with individual companies like company culture and management practices that influence the performance of an organization in a significant way (Keil, 2000). Nowadays companies have developed various indicators that help them evaluate companies are potentially create alliances with them. These alliances have also evolved throughout time and have served different purposes from research partnerships to manufacturing partnerships (Keil, 2000). All the companies have their own unique approaches to corporate venturing therefore there is no common knowledge that becomes a determinant of success for any organization. Due to these changes the organizations have started to feel the need to focus their efforts to best ensure success of their venture activities. Therefore, the question is about, to what extent organizations can optimize their venturing activities to increase their chances of success. So, the research question that I am going to focus on is as follows.

"How do organizations organize and strategize and leverage the multitude of factors involved to achieve success in their sustainable business goals?"

Now to answer the research question we are going to break down our research question into sub questions that will help us answer our core research question. They are as follows.

- ***How do organizations structure their corporate ventures in a consortium?***
- ***What are the factors that play a crucial role in the interactions between the venture participants?***
- ***What will be prioritization ranking of these said factors in business decision making processes?***

By answering all these sub questions, we will be able pinpoint factors and criteria's that organizations create and fulfill during their venturing process. These factors are crucial in deciding the kind and type of venture to be created between an organization and its venture. These factors also enable us to identify the conditions that an organization looks for while identifying venture opportunities. Relevant literature will be examined to determine the pre-determined knowledge

available on these factors to try and understand how relevant these factors are now and what has changed in the practical scenario.

1.3. Research Design Employed

To fulfill our research goals to generate the best results we are going to incorporate heavy literature study about the general organization designs that companies work on. Through these designs we will be able to identify our potential factors, that based on the literature knowledge, have crucial influence on the success of a venture that the organizations are participating in. These factors will be then organized and defined clearly to be used in our data collection stage where we involve the industry professionals and gather data based on their knowledge to gain an insight into their perspective on how these factors influence and which of these factors, they feel are the most crucial ones in terms of success of the organization. This data will then be processed through one of the best multi criteria decision making methods, best-worst method, which conforms perfectly to enable us to come to a conclusive result.

1.4. Contribution for academicians and industry professional

The research emphasizes greatly on new areas of interest where the organizations could focus on to increase their efficiency and rate of successful venturing activities. In a time where multitude of muti national companies are working together in consortiums and ventures with smaller organizations to leverage new venture organizational structures to their maximum benefit. It is important for academicians and industry professionals to realize that the rate of success of these ventures can be manipulated by addressing key issues that have a massive amount of influence in their success. These fields of research are highly suited for operational managers and academicians of similar fields to leverage these factors for maximum benefit of their organizations.

1.5. Thesis Structure

The thesis is structured as follows; besides and introduction to the theoretical and practical context, chapter 1 introduces the industry, study and our focus in the study. Chapter 2 focuses on the analysis of the literature to gain an in-depth knowledge on the subject and solve our research objectives. Chapter 3 focuses on the research design incorporated to arrive at results for our study. Chapter 4 focuses on the case study Port XL Rotterdam which is the consortium of multiple companies working together on innovation and breakthrough technology to satisfy their sustainable business goals. business goals. Chapter 5 focuses on results and analysis of the study where it will portray all the data collected for the study and summarizes the results. Chapter 6 is the conclusion where limitations and future research will be discussed and assessment of possible future implications of the results of the study in the industry space will be stated.

2. Literature Study

This chapter aims to get an overview of the literature about the research question and its influence on this research. The research question of this thesis is:

"How do organizations organize and strategize and leverage the multitude of factors involved to achieve success in their sustainable business goals?"

The theoretical framework is set up in four stages to review the literature on the research question. The research question contains four subjects of review based on which literature will be reviewed. Firstly, the theoretical review investigating the current market scenario where open innovation in its organic form is being implemented across research and development programs in ventures. Secondly, the corporate entrepreneurship and venture practices are reviewed to get a deeper understanding of how the current organizations might be structured. Thirdly, alliances or partnerships will be reviewed as they are a growing trend where organizations participate together to achieve business goals in the market that they operate. Fourthly, a literature study to identify and understand the different factors that interplay and affect the degree of success of the companies. Fifthly, a compilation of all the selected factors that we have selected for our study through the literature work.

The main objective of the introduction of theoretical concepts is to give the reader a basic understanding of the concepts and ideas that form the foundation of corporate venturing in various organizations. Since we are focusing on corporate venturing activities, we will confine our theory to that particular topic. As Markham said in his paper, "Corporate Venturing must be assessed in relation to other alternatives, but bringing the most value when one recognizes that one's own company is not the sole proprietor of innovation and ideas" (Markham et al., 2015). This statement provides us with the starting point of all kinds of corporate venturing activities i.e., finding the best people or a support structure to achieve the long term or short-term goals of any organization, and work together on commonly agreed terms. This is in a way the basic idea behind corporate venturing in big multinational organizations.

2.1. Open Innovation

One of the most basic concepts behind the idea of shared technological growth or prosperity in organizations towards their goals is open innovation, which is the most rudimentary concept for what corporate venturing stands for. It is a fact that all the smart people in the world are not working for your particular organization, therefore there was a need in various industries to somehow compensate for that deficiency. This is where the idea of open innovation comes up to compensate for those inadequacies within the country. Since knowledge and capability is distributed within an industry and is not confined to a particular organization, the idea of open innovation was coined by Chesbrough in 2003(Chesbrough & Bogers, 2014). Chesbrough defined this concept as a inflow and outflow of knowledge across organizational boundaries with the intention to leverage these sources of external knowledge to gain commercialization opportunities based on mutually agreed terms and conditions (Chesbrough & Bogers, 2014). This concept helps organizations functioning in various technological industries to accelerate their growth by overcoming the knowledge barriers that are part of a closed innovation model. Therefore, in an open innovation system numerous external actors or partners are involved in innovation activities. The key part of this innovation process is the exploitation of external tangible resources. Lauren and Salter state in their paper "Firms who have an

open strategy, firms that search widely and deeply, tend to be more innovative" compared to firms adopting closed innovation strategies (Chesbrough & Bogers, 2014).

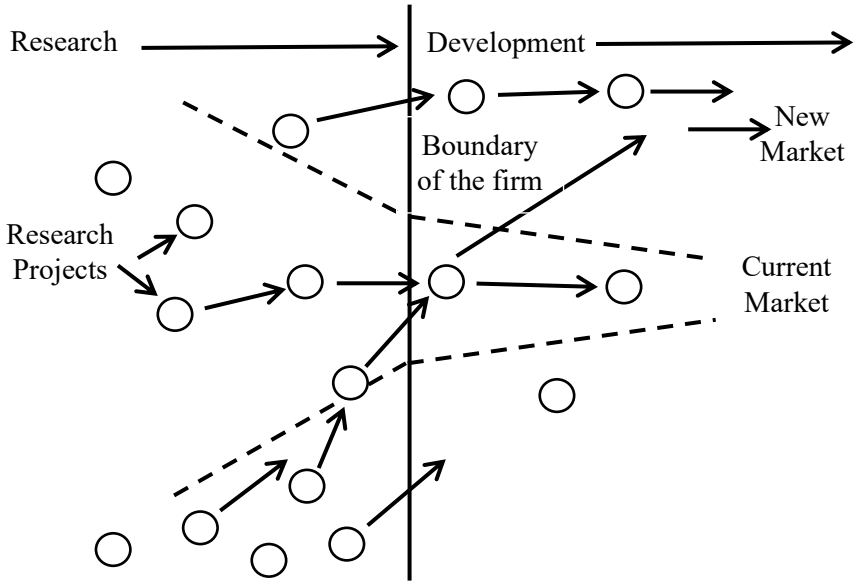

Figure 1 Open innovation paradigm (Chesbrough, 2003)

These strategies help in the development of linkages and networks between different actors that are open to leverage from both sides. The Schumpeterian idea of an individual entrepreneur innovating on his own is no longer relevant. The new idea as proposed by Lauren and Salter is that the practice of different actors working closely through process of trial and error bring forward more new ideas and success (Laursen & Salter, 2006). This concept shows that the advantages of these interactions between actors far outweigh the disadvantages for innovation. As we all know, innovation requires the cooperation of suppliers, customers, lead users, research institutes, government etc. In this concept, the innovators work together rather than innovating alone. On further research it can be seen that networks, connections and linkages between actors involved in an open innovation funnel play an important role in the organization's performance (Laursen and Salter, 2006). Also, it has been seen that there is a proportional relation between association between cooperation and innovative output (Laursen and Salter, 2006).

Chesbrough has depicted this concept of open innovation in a diagrammatical manner in his paper, which can be seen below. This model also showcases the interaction that different actors can have on different stages of the innovation process.

2.2. Corporate Entrepreneurship (CE) and Corporate Venturing (CV)

Due to their strategic visions to overcome the closed innovation system for the future of the organizations, these organizations started developing Corporate Entrepreneurship (CE) and Corporate Venturing (CV) programs to stay relevant and up to date with the changing times (Chesbrough & Bogers, 2014). Large organizations often face difficulties and challenges to maintain the target growth rate, strategic renewal and expanding knowledge base or even achieve their future goals of sustainability of an organization, a trend of corporate entrepreneurship has been acknowledged as a solution in the rapidly changing technological scenario (Keil, 2000)(Burgers et al., 2009). This process is somewhat a new concept being widely used in various technologically oriented organizations. This concept refers to a process in which organizations

invest in innovation, creation of new businesses and often transforming their own processes or structure within the organization(Teng, 2007). It has also been established that due to swift changes in the industries corporate entrepreneurship provides organizations with a unique competitive advantage over its competitors and therefore reaping greater financial rewards (Zarah & Covin J G, 1993). This concept allows an organization to stay relevant by continuous innovation of products and strategies therefore expanding its knowledge base for future leverage (Zarah & Covin J G, 1993). This is the most prominent reason for the acceptability and popularity of the concept in the current schemes.

As stated by Zahra, corporate entrepreneurship is made up of three dimensions that is innovation, corporate venturing and strategic renewal. Many other scholars have also arrived at similar conclusions and have been explained in different practical contexts, the conclusion made by Zahra has most often been used and referred (Tirtea et al., 2006)(Sakhdari, 2016). Therefore, in this research we will be using previously established concepts, items and scale to measure the factors of corporate entrepreneurship based on Zahra, also used by Simsek and Heavy. Corporate entrepreneurship's importance is held by organizational survival; profitability, growth and renewal. Radical innovation in products and processes, proactiveness, risk assessment, business venturing and organizational renewal are included in the corporate entrepreneurship practices.

In this research we will be analyzing the corporate entrepreneurship activities of a firm by going through three distinct factors. Innovation can be referred to as the level of commitment that an organization upholds to pursue creation and development of new products, organizational practices and processes (Covin and Slevin, 1991). Corporate venturing is the practice where an organization gets involved in the process of creating new business opportunities in new or existing markets and integrating them with the ethos of the existing organization (Narayanan et al., 2009). Strategic renewal is a remodeling or renovating process within an organization where the organization stimulates its operations by changing its scope or goal of business, approach etc. It also refers to the process of undergoing learning experiences to acquire new skills and leveraging them to gain a competitive edge or financial gains (Zahra, 1996). All these components of corporate entrepreneurship are complementary and mutually supportive to each other. So, in recent times it is observed that in most cases organizations innovating frequently outgrow their competition and therefore have more chances of success. In summary, the ability to innovate faster is about identifying new methods, practices, skills and implementing them both within their product and their organizational system and processes.

Corporate entrepreneurship actually consists of the core entrepreneurial activities and is a bit different in terms of construct from intrapreneurship and entrepreneurial orientation. Intrapreneurship is usually focused on the point level that is an individual or a cohesive team of an organization and their entrepreneurial activities (Stevenson and Jarillo, 1990). These entities are usually responsible and key to create entrepreneurial opportunities therefore promoting and boosting innovation within an organization. Entrepreneurial orientation is the mindset of the organization to induce strategy making processes, activities and practices to stimulate required outcomes (Simsek and Heavey, 2011).

Corporate venturing is also a similar concept born out of the same needs and foundation as corporate entrepreneurship. It can be defined as a process of corporate entrepreneurship where it leads to the creation of new ventures or partnerships, both internal and external to the organization. Therefore, these corporate venturing activities are classified into two different segments separated by the boundary of the organization into internal and external corporate venturing. Internal corporate venturing is the process where the organization focuses on development and exploitation of business models and resources generated within the domain or boundary of the organization (Maula, 2007); (Reimsbach & Hauschild, 2012). On the other hand, the concept of external venturing can be defined as the process of achieving strategic goals of an organization by investing in (start-ups) organizations that are external to the corporation. The main objective of such activities is to create a window of technology by boundary expanding operations which helps to create entities or supports outside the organizational boundary of the company (Maula, 2007); (Reimsbach & Hauschild, 2012). Reimbasch and Hauschild illustrated the concept of internal and external corporate venturing through the diagram below.

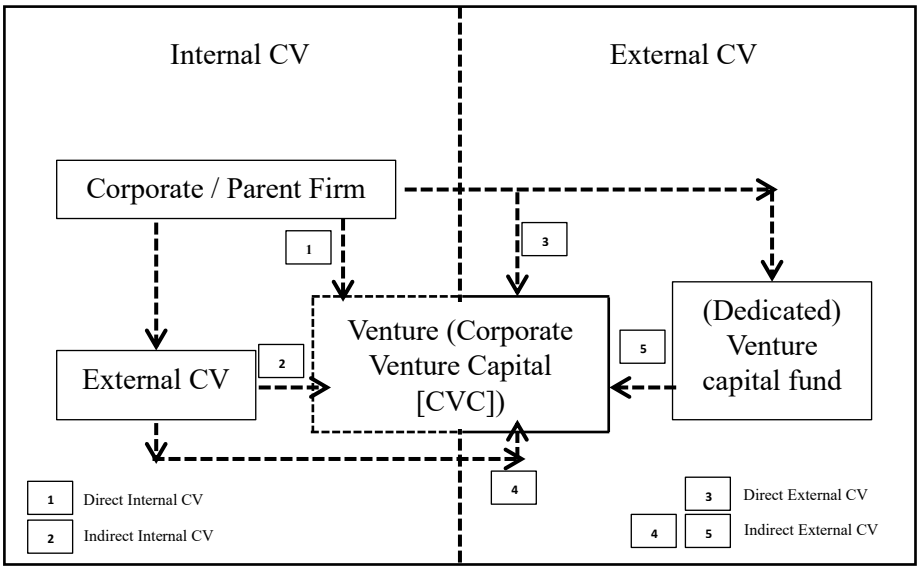

Figure 2 Illustration of corporate venturing (Reimbach & Hauschild, 2012)

Due to limitations in terms of capacity and variety of internally generated knowledge by research and development done within the organization there is crucial need for external knowledge to be incorporated within the organization (1). Therefore, companies are creating creative institutions and pathways to acquire new innovative technologies from outside the boundaries of the parent organization from other firms and create a mutually beneficial relationship (1). These external innovations can be acquired by purchasing or licensing new technologies, by acquiring startups or their R&D pipelines (1). These kinds of purchasing and licensing of external technologies fall under the corporate venturing activities of an organization (1). These activities are usually undertaken by large corporations, banks and asset management funds who try to profit off of these investments (1). In some cases, the parent organizations try to create separate smaller entities legally separated from the parent endowed with a investment budget (1). This entity acts as an intermediary for the parent firm to act as the investment manager for all its investments. These investments are made as a sole investor or in collaboration with other venture firms called as syndicated investments (1). The startup companies that form the portfolio of the investments create these new innovative

technologies that is absorbed by the parent organization and is marketed through a spin off organization or an independent new ventures (1).

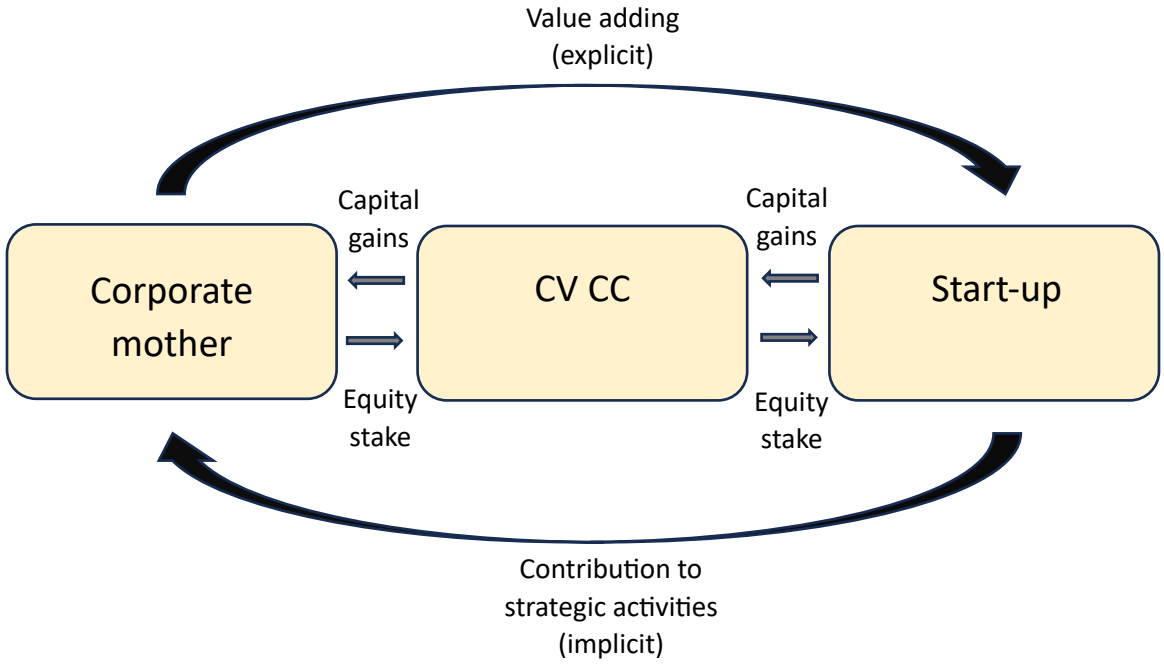

Figure 3 Illustration of relationship influences between the actors in corporate venturing activity

2.2.1. Objectives of CV

The central idea behind this corporate venturing system is to have an entity that monitors external technological developments in other firms, research institutions etc. to acquire them so that they can be added into there existing technologies or can be made into new technologies for new opportunities in the marketplace. We will be breaking down the different strategic goal that CVC's operate under to achieve their goals.

- The first goal is the scouting and monitoring of new innovative radical developments in the industry which have the potential to positively affect the parent organizations future growth. It is not possible for organizations to solely rely on their internal R&D divisions to explore every possible avenue and keep generating new knowledge on all fronts. Therefore, not relying on a single source for their technological advancements.

- The second goal for the CVC is to get gain access to researchers who are work in startups and know their respective fields in depth. These researchers do not prefer to work in large organizations as they feel the structure and protocols of the organization inhibits their creativity. Therefore, the CVC becomes an important instrument in getting these highly skilled researchers working indirectly for the bigger organization that otherwise would not be possible.

- The third goal for the CVC is to create future opportunities for the parent organization to recoup their investment and generate profits. In some cases where the parent organizations are not able to

transfer the innovation into their own product line, the CVC has the ability to increase demand for its own products by supporting the startups and making them customers of the parent organization itself (1).

- The fourth goal for the CVC is to generate an entrepreneurial environment into the parent organization and to attract entrepreneurial employees. Due to the size and rigidity of the corporations there is often a lack of entrepreneurial spirit, which sometimes hinders the spirit and process of innovation by the employees.

- The final and fifth goal for the CVC is to improve the internal efficiency of the R&D by learning new knowledge and techniques to improve the process and its administration. The CVC also try to leverage on the R&D structure of the startups which are more flexible and independent due to the smaller size and higher flexibility of the startups, and try to assign some of their projects to them.

2.2.2. Managing the CVC process

Corporate venturing arms of the organizations have to prioritize there focus while on the lookout for investments and have a sufficiently large deal flow. The size of the deal flow is dependent on various things like; from the start-ups point of view giving up equity, advantages in terms capital investments, value of strategic synergies etc. During these kind of collaborations there are concerns for both parties. The founders of the startup may fear that the parent company may steal their ideas to nurture similar technologies and products in the mother company. Also, founders cannot expect higher investments than venture capital funds for the same amount of valuation. This is because of the fact that even the medium sized venture funds in the US and Europe are larger and have more disposable capital than the corporate venturing counterparts (Chesbrough & Bogers, 2014). When it comes to the speed of the decision making process, it should not take linger than the venture capital funds. The main advantage that corporate ventures have over the venture capital funds is their knowledge in the respective field both in terms of market and technical knowledge other than the financial resources that they are able to support the startup with. Therefore, Corporate ventures focus more on startups that operate with similar core competencies to the parent company, therefore the parent company is able to provide more support than the capital funds. These ventures also enable the venture to build technological and managerial synergies, successful transfer of brand image, create customer contacts and successful external innovation. The technological competencies of the venture and the parent firm should be complementary or similar to ensure the best relationship between the mangers of the parent firm and employees of the venture or startup (Hellmann, 2001).

The corporate venture should be able to provide the startup with independence to make their own decisions and manage their work. The parent organization should also be able to share its technical prowess, market knowledge and operational support that the start-ups might need. Examples of operational support might include marketing services, controlling services, financial and accounting services, recruitment services, industry expertise, technical knowledge, reputation and potential business partners and customer contacts. Close communication and transparent communication is crucial between the venture actors for a healthy and successful venture. This communication can be improved by giving the investment managers of the venture a seat in the board of directors in the parent organization (Albrinck et al., 2000). These managers

also need to be experts in the respective fields to provide necessary support in organization and management that can be later passed onto the employees. In an ideal scenario, the employees of the parent organization have the technical know how and extensive networks to potential partners for the start-up (Block & Ornati, 1987).

The parent company establishes milestones that the venture follows and instructs if they have been met or not. Usually, these milestones are combined with staged financing that ties with promises of further future investments based on successful milestone achievements. These ventures end with an exit for the parent organization i.e. dissociating equity stakes from the start-up where it eventually tries to make a profit on its investment in the venture. There are many different exits possible which are all dependent on the scenario that the venture exists in. These exit strategies can be; integration with the parent company, start-up going public and selling part or whole of its technology to the parent organization. This process is known as exit management. In exit management it is also crucial to know to make exit decisions timely in case of unsuccessful venture or startups.

These decisions are more paramount and crucial for corporate ventures compared to the venture capital funds as cutting losses on unsuccessful ventures can make a big difference in the overall profits and financials of the parent organization. Abandoning ventures is never an easy task when large corporations due to personal relationships, political concerns and vague strategic objectives often fail in their ventures (Ehrlich, 1998).

In our research, the prominent focus will be on external corporate venturing activities of the organization. Since there is a certain amount of ambiguity in the exact definition of the concept a simple definition by Sharma and Chrisman is “refers to corporate venturing activities that result in the creation of semi-autonomous or autonomous organizational entities that reside outside the existing organization” (Sharma et al., 1997). From this our research will go onto focusing on the different types of external corporate venturing; spin-offs, partnerships, alliances, acquisitions and capital investments.

2.3. Alliances

When we look at the literature we are able to identify different kinds of venture alliances that companies create such as; inter-firm alliance, strategic alliance, partnership, collaboration, cooperation and joint R&D. All these terminologies are found in the literature and have been used interchangeably (Forrest & Martin, 1992; Kilubi & Haasis, 2015). In one of the literature Franco and Haase defined strategic alliance as ‘Mutual decision agreed by two or more parties to share or exchange resources’ (Franco & Haase, 2010). They can also be defined as an alliance where the parties share risk and resources to expand their knowledge base therefore gaining opportunities to enter new markets or innovate in existing markets (Hitt et al., 1997). These alliances also include joint ventures, non-equity ventures and other kinds of inter-organizational relationships. As stated by another expert, strategic alliance is a partnership between multiple parties that come together to pursue common goals or separate goals in line with the project, in which the benefits are shared between the parties while enjoying their organizational freedom (Rangan & Yoshino, 1996).

Therefore strategic alliances are used to gain access to resources that other firms have. The basic reason for using such kinds of alliances is because to gain competitive advantage or to gain new knowledge on upcoming technologies that the current firm lacks expertise on. Competition is more and more crucial due

to the constant technological developments and faster business cycle of companies. This has led to the belief that success of the firm and its sustainability lies in the collaborative efforts of its strategic partners (Das & Teng, 2000).

Alliances cover a broad varied range of forms, from basic and simple unilateral contracts, in other words technology for money, examples as such are licensing agreements, through more complex contractual agreements, such as technology sharing and joint R&D development arrangements, to equity joint ventures, where ownership in a separately incorporated entity is shared by the partner firms (Mowery et al., 1996). Different types and characteristics of an alliance influence the extent of inter-firm resource transfer in alliances. Inter-firm resource transfer is likely to be limited to unilateral alliances, such as a licensing agreement between two firms. The technology that is licensed by the partner is generally well demarcated, which is more difficult when firms have a bilateral agreement, such as is the case with R&D and technology transfer agreements. A simpler or unilateral alliance, therefore, creates fewer opportunities to acquire resources from the alliance. In other words, the more complex the alliance is, the more likely it is that resources are acquired from the business partner. Further is describe by Colombo (2003) that equity forms are more suitable for governing technological alliances, in which mutual learning is of more importance.

2.4. Factors affecting corporate venturing success

In this we will be conducting a thorough a study and research on identification of different reasons that influence the success or the failure of a corporate venturing activity. We will be defining these reasons as factors that influence these activities. These factors work between the interactions and the layers of the venturing activities between the organizations participating in the consortium. These factors affect the relationship and dynamics between the participating actors therefore, influencing the success rate of the collaboration. These factors can be easily divided in to two major categories i.e. intrinsic and extrinsic factors. Intrinsic factors are factors that are inherent to the organization itself and can be further classified into two groups, which are product related or managerial (Michalski et al., 2006). Extrinsic factors are more about the environmental factors which could be the structure of the venturing activity, other companies participating in the consortium etc. Extrinsic factors can also be divided in to two major categories which are, structural i.e. factors determining the organizational and functional relationship between the participating actors and, procedural factors i.e. those associated with the managerial processes linked with the organization and its collaborating partners. In this research we will be giving equal importance to both the intrinsic and extrinsic factors affecting the venturing activity(Michalski et al., 2006). In the table below, we showcase the explained classification of intrinsic and extrinsic factors to be used as a reference for the discussion below.

Extrinsic Factors	Intrinsic Factors
Procedural Differences	Product related factors
Control (Autonomy over decision making)	Technical development
Selection of Venture Manager	Market Development
Incentive Compensation	
Financing	
Structural Differences	Managerial Factors
Market and Technical differences	Venture Champion or manager
Cultural and organizational differences	Team
Structural congruence	

Table 1 Classification of influential factors

2.4.1. Extrinsic Factors – Procedural differences

The extrinsic factors are mainly dependent on the relationships and dynamics between the organization and its consortium partners. These factors and their influence particularly stand out between venturing activities involving other organizations or a consortium similar to our case than most internally developed corporate ventures. These factors usually play a role in areas of; incentive and compensation, finances, control and selection of venture management (Michalski et al., 2006).

- Control (Autonomy over decision making)

In corporate venturing activities, ventures that receive financing from other organizations, venture capital funds or the public equity market operate relatively autonomously, most of the decisions are made by the venture management which usually includes representatives from all the invested parties. General strategic decision and objective decisions are made by the board of directors which is a level above the venture management (Sykes, 1986). In case of start-up ventures, the board includes the investor representatives who have influence over the strategic and objective decision making unlike in the case of more renowned or comparatively larger organizations. But at the end of the day the most important approval for any business is the customers approval (Sykes, 1986).

On the other hand, in case of internally developed corporate ventures there is often a pattern of review levels that passes through staff and the management. This kind of corporate decision review process depends upon the stage at which the venture is in and the similarity between the technology and the products between the parent organization and the start-up. During the course of growth of the start-up and its increasing resource and financial needs, the reviews adapt and grow wider and higher. Therefore, this battle with the parent organization for the resources as the venture grows, an intensive oversight by the top management is essential and must be planned for as part of the whole venture program (George and MacMillan, 1985). The author also believes that the corporate review and decision making process are important in affecting the success of the venture as they are critical in influencing the entrepreneurial environment (George and MacMillan, 1985).

- Selection of Venture Managers

As part of the investment process, the investors focus a lot on the history of the company, its performance, a history of their founders and the venture management team (Bruno and Tybejee, 1986; Kotkin, 1986). These investors look for managers who have the capability and experience to build the company from hundred thousand to million dollar in sales. Alternatively, when corporations often start internal ventures with less experienced teams, throughout time the venture progresses and the venture team is upgraded with better resources and personnel (Sykes, 1986). Therefore, the venture team keeps on replacing it with more

seasoned managers throughout the venture progress from ideation, to development, to manufacturing, to marketing and sales.

- Incentive Compensation

Incentive compensation for important personnel is a key difference when it comes to ventures, as it is different for different types of ventures i.e. internal corporate ventures and venture capital investments. A popular approach is where the key individuals are awarded equity in the venture as compensation which is determined by the market and the revenue profits are taxed based on the local tax systems (Sykes, 1986). These kind of incentive plans create issues and complications regarding control, legal and tax, therefore companies are discouraged to implement them. But, still to date these kinds of compensations are used to ensure commitment and interest of key individuals from top management from the two parties involved in the venture. The other side is that companies through this provide job security to people with new ventures and may fail.

- Financing

Usually in case of funding, a lump sum amount is given directly to the startup to give them the required initial boost to achieve their milestones such as prototype funding, manufacturing investment, test marketing etc. These ventures are very persistent on completion of goals by the milestone's timeline, if they are not met funding can be put on hold until a review by the venture management. Corporate venture funding is often provided on a continued basis that is reviewed at regular intervals and that fits the companies budget cycle for the basic business activities. These funding activities are dependent on the venture agreement and policies that are susceptible to change based on new market trends and company orientation. Therefore, Block and MacMillan (1985) have recommended milestone planning and funding for ventures.

2.4.2. Extrinsic Factors – Structural differences

The interactions and the relationship between the ventures and the parent is affected by these key structural factors; technology market, organization and people. These factors can be qualitatively measured as a degree of difference between the venture and the parent's business.

- Market and Technical Differences

As Robert and Berry concluded, that through research and observation the most popular opinion is that the greater the difference between the internal venture's technology and customer base and that of the parent organization, the higher the chances of failure for the venture (Roberts and Berry 1985; Fast 1979; Drucker 1985). Higher the differences the more difficult it is to provide necessary financial support and business knowledge that can be passed down to the venture. These differences increase the dangers of unsuitable business advice and decisions due to lack of understanding of the business scenario. The authors also suggest that the choice of appropriate strategy and decision making should be based off on the degree of difference between the two partners involved in the venture (Roberts and Berry 1985). In case that the degree of difference is high the author suggests to incorporate joint venture with companies in the new market or industry or use probes to learn the new business. There are exceptions as mentioned by the author, but in those cases the ventures operate autonomously with minimal interventions from the parent (Roberts and Berry 1985).

- Cultural and Organizational Differences

These two factors focus on the internals of the organization in which we talk about the employees who make the company and the degree to which the organization has the ability to act independently and make decisions for themselves.

As the venture is a completely different entity consisting of people from outside the parent organization, as aptitudes different from the base business is required. Therefore, the performance, culture and behavior of the employees of the venture and the personnel of the parent organization will differ. These differences need to be kept in mind and should be included in the decision-making process to gauge the success of the venture as accurately as possible. These differences in company culture may lead to inefficiencies and miscommunication between the actors due to differences in expected behavior. As stated by Tichy and Ulrich, training the employees into the organization's culture and practices will help them to execute their roles efficiently and conform to the organizations structure (Tichy and Ulrich, 1984, p, 67). As stated by Block, these differences in goals, attitudes, personality, values and work ethic should be considered while designing the appropriate strategy to go about the venture relationship (Block, 1983).

In ventures an organizational environment that has been given the independence to make venture level decisions without any reviews from the parent, encourages initiative and self-confidence, therefore can be a good motivator for the venture employees. As a result of the positive work ethic and quick decision-making process, the venture could fast track its product development to market introduction with less expense and time compared to the rigid corporate functional systems. The rigid corporate bureaucracy in order to do things right often inhibits the entrepreneurial processes and innovation (Hanan 1976). But, sometimes during the integration process the entrepreneurial environment brings certain complications to it. Venture managers behave reluctant to give up control and their decision-making powers. Promotions are often offered to these entrepreneurial managers but in some cases it might not be suitable to do so. As stated by the authors Jemison and Sitkin, the ventures usually focus more on 'strategic fit' therefore neglecting the 'organizational fit' (Jemison and Sitkin, 1986).

- Structural Congruence

The four structural factors i.e. market, organization, technology and people all together comprise the overall degree of structural congruence. The author suggests that this congruence has direct correlation with the success of the venture. In case of complete congruence which means that the venture acts as a new product extension by an existing operating division, even if it is innovative the venture would not be referred as a internal venture or a corporate entrepreneurship venture. To get into new markets and new technological products some degree of incongruence is mandatory. Also on the other hand high degree of incongruence pushes the venture towards higher chances of failure. Corporations sometimes ignore the opportunities that act as extensions to their core business and pursue diverse opportunities based on synergistic reasonings that after a certain amount of time prove inadequate. A study by Rumelt shows that the profitability of the business is inversely proportional to the diversity of the venture (Rumelt, 1982).

2.4.3. Intrinsic Factors

These factors are inherent properties of the venture. These are factors that are initially influenced by the environment that the investor is from, but later will have an independent (from the influence and plan of action of the investor) effect on the venture success. The factors will be listed below:

Product related factors

As described by the author there are mainly three product related factors that affect the success of the venture i.e. The extent to which the technology has been developed by the time of the investment, the extent

to which the feasibility of the technology in the market has been proven by the time of the investment and finally the projected time period from the investment to sales including the development and start-up time. If the venture in its initial days requires development of radical technology for their products and is in its research and development stage, there is a high risk of failure. Also, the extent to which the market is novel, less information is known about the customer base and other aspects of the market, thus increasing the risk of failure (MacMillan and George 1985). Also since it is a fast moving market it is safe to assume that there are similar developments being done in other competitive organizations across the industry, therefore risking the invalidation of their own products. The success and failure history of the parent in terms of venture influences the duration of the venture. Also, the parent organization should have an assessment regarding the tolerances regarding its failure rate, financial risk and capacity, developmental costs etc. to establish its venture strategy. As stated by the author sometimes, a mistake that venture companies make is that majority of their investment portfolio consists of companies that are long term and high risk investments (Fast, 1979).

Managerial Factors

According to most of the venture capitalists, the main determinant factor in investing in a venture proposal is the management. To evaluate the capabilities of the management, the 'track record' of the management is reviewed including a performance check on the key individuals who are part of the management team. These capitalists also look into the experiences that the management team has in regards to managing ventures also they focus on at what level of control they were operating at to assess their responsibility towards the project. Through these reviews the top management of the parent organization is able to gauge how well the management team knows the technology, the target market, customer behavior and preferences etc., their capability to manage growth of a new business and assess risks at various stages.

Most of the capitalists are usually generalists which means that they do not have specific knowledge rather a general idea about everything therefore are sometimes are unable to make critical decisions regarding specific technology and markets. Therefore, they prefer to consult experts of their respective fields who conduct research to assure the capitalists regarding their decision on the venture and the management team. This method bolsters the familiarity criteria that was proposed by Roberts and Berry, regarding familiarity to a business or market as a prerequisite to successful entry (Roberts and Berry, 1985).

Proven managerial experience for e.g.; prior profit/loss responsibility, growth management, management of research and development of a product, successful market research and product launch and successful sales; makes the capitalists more likely to invest. According to research conducted by MacMillan, Siegel and Narsimha found two other factors influencing intrinsic factors i.e. the entrepreneurs familiarity with the market and their leadership skills (MacMillan, et. Al. 1985).

2.5. Selected factors

These factors form the baseline which explains in great detail the variables that are involved in the functioning of an organization when they are in a consortium. These variables are where our research is going to be focused on, to understand through industry contacts which are the most important or crucial factors that play an important role in the success of an enterprise where multiple organizations or parties are involved. Through our in-depth research and understanding we are going to define the factors that through our literature study form the key variables in success of the organization and will try to find out their priority levels according to industry experts who will be our selected respondents for the study. The factors are defined as follows;

1. Venture manager – This factor talks of the capability and skills of the individual that is at the helm of the venture, responsible for planning, execution and business-related decision making both in terms of managerial and financial decisions. This factor is crucial in terms of the vision and skills of the respective individual and their capability to make sound and fruitful decisions for the direction of the venture.
2. Finances – This factor talks of the capability of venture to have a constant and guaranteed source of funding to ensure the growth and sustainability of the venture. These finances could be in form of liquid cash available or a prospective capability to raise cash or capital based on the current performance of the venture and its future prospects.
3. Venture organizational structure – This factor talks about the structure of the venture program, where if it is an open innovation structure, an external corporate venturing structure or an alliance or partnership structure. In short, the engagement and transparency between the organizations is at its highest in open innovation structure and it is the least in alliances or partnerships.
4. Core business identity – This factor talks about the core business identity of the participating companies and the impact of the degree of differences in their vision and goal as a company. The goals may involve economic, social, or business goals that the organizations might want to pursue in the future.
5. Proximity – This factor talks about the physical proximity between the operation centers of the participating organizations and its impact on the venture that it may present.
6. Market knowledge and relevancy – This factor talks about depth of knowledge and experience that the participating companies have and the ability of the organizations to find a potential gap in the market for their product. Their ability to monitor the gap as it is evolving through time and adjust your potential solution, application, product or service accordingly.
7. Organization culture – This factor talks about the differences in the core culture, practices and behaviors of the employees between the two or more different organizations participating in a venture activity. A small example could be the company culture practiced in Google vs culture practiced in an organization like NASA (both pioneers in excellence and innovation but different in their cultures).

3. Research Design

The chapter aims to get an overview of the research design being incorporated for best possible results in the study. This chapter is divided into six sub chapters. Firstly, we explain and summarize our research question in detail. Secondly, we discuss possible techniques of data collection with respect to our study and our characteristics around which we design our methodology. Thirdly, we discuss possible data collection methods along with their pro's and con's. Fourthly, we discuss our selected data collection methodology and its reasons for selection for our case study. Fifthly, we discuss our methodology in designing the questionnaire used for the survey of the study. Sixthly, we introduce our multi-criterion decision making methodology, Best-Worst Methodology and its concepts.

Research design is a blueprint of the scientific research study that we are going to perform. It consists of the research methodologies adopted, various tools equipped, and techniques and skills used to conduct the research and arrive at a conclusion. Having such a systematic approach towards the research helps in categorically monitoring the various problems that may arise during the process of the research term all the way through to analysis and result compilation. Therefore, we are organizing our research design in such a manner that we are able to have a methodical and structured approach towards the research we are undertaking. This is crucial as this would ensure our study to be valid, reliable and would produce meaningful results that are applicable in the real world. Successful research with proper designs and methodologies will result in insights that are reliable and unbiased. To do so we need to create a research design which is as follows:

1. Research question: This includes identification of objectives and research questions of the study and finding theoretical frameworks and concepts and methodology that are required as a prerequisite for the study.
2. Techniques: This includes methods that can be implemented for the collection of details and data best suited for our research.
3. Analysis Methodology: This includes the scientific or mathematical method that will be used to put the data through to produce results.
4. Advantages and disadvantages of the design: In this we will discuss the pros and cons of the system that we are implementing for our research.

3.1. Research question

Research question that will help our research to be focused on the core research questions that we are trying to answer through our study and analysis. As explained before, during the introduction of the thesis we found a research question that we are trying to answer through our case research. To be able to effectively answer the research question we have divided the question into sub questions that capture all the essence of the main question and makes it easier to look at the different aspects of the questions and attend to them individually and therefore cover all the areas of questioning. Below we will reiterate the main research question and the sub questions respectively. They are as follows.

"How do organizations organize and strategize and leverage the multitude of factors involved to achieve success in their sustainable business goals?"

Now this research question or research question that drives our thesis is further divided into sub questions to make the discovery process that the thesis will undergo a little bit easier by making the structure and clear. The sub questions are as follows.

- ***How do organizations structure their corporate ventures in a consortium?***
- ***What are the factors that play a crucial role in the interactions between the venture participants?***
- ***What will be prioritization ranking of these said factors in business decision making processes?***

Through these questions our purpose in this research will be to identify potential factors and gain insights through our research participants what factors are the most important based on their experiences that play major role in the success of venture activities.

3.2. Techniques

The technique is to use a qualitative analytical method that will be used to arrive at a mathematically sound result to answer the objective question of identification of the crucial factors that play major role in the success of venture activities. Therefore, we first visit literature on ventures, alliances or partnerships that corporates involve themselves in to identify, create or expand currently available opportunities in the market and exploit them to further their business goals in the industry. Whenever corporations participate in such venture activities, there is a lot of commitment in terms of the venture being a contributing factor to their business goals for the future of the company and also their financial commitments to generate funds for the venture and also to sustain it until the venture becomes self sustaining. These ventures can be an internal or an external project where the organization partners with another organization. Through our literature review, we have been able to identify a list of factors that have been in the list of influencing factors across multiple peer reviewed research. These factors have been composed together through intensive research on this domain in various sectors of the market and different organizations that operate in them.

In this process of identifying key factors influencing the success of corporate venturing activities of the consortium of companies, it is crucial to start with a framework that contains as many relevant factors as possible for corporate venturing success. The framework developed by Van de Kaa et al. (Van De Kaa et al., 2017)(Van de Kaa et al., 2011) is capable of identifying the most crucial factors influencing the venturing activities of organizations working closely together in a consortium. In this methodology we will be first conducting a wide array of literature study and research to identify what factors are being studied in terms of corporate venturing. This study is important to identify all the possible factors that can influence these relationships for success. These key factors will be identified through severe literature study and review and then will be portrayed as critical factors that have significant effects on the performance of the ventures thus determining its success in the long term. Given the importance of such ventures in building the future of the organization and its long term goals, this field has always been a domain of discussion and study to gather as much information as possible. These studies help the organizations to streamline and find point of inefficiencies in the system and also find new insights to bring in broader change in their activities to improve the chances of the venture to be a success. Therefore, we are going to build our design around the following characteristics so that the yielded results bring some insights into the functioning of the ventures (Sinclair, 1975).

1. Neutrality: Whenever a study is set up, it is fair to assume that during the data collection phased you can expect some form of bias from the sources. Thus, be careful to identify and eliminate those biases so that the result of the research stays neutral and unbiased.
2. Reliability: With studies conducted more and more in this domain if the researchers find similar results every time. This is only possible if your research design is reliable.

3. Validity: There are various kinds of data gathering methods. However, the best method will be, that is able to gather the required data according to the purpose of the research.
4. Generalization: This means that the results of the research should be applicable to a broad range of the population and not just a small restricted sample size. A generalized research implies that the same study can be organized on part of the same population to yield results with similar accuracy.

3.3. Data collection methods

Before we ask ourselves what is data collection we should ask what is 'data'. A very simple answer to this would be, data is a different forms of information formatted and structured in a organized manner. As recognized in the information technology industry data points without a formal structure or organized system to view them through are useless, therefore it is crucial to organize them in a meaningful manner. Now we move onto data collection which is a very basic part of research. It can be defined as a simple process of gathering and analysis of precise and accurate data from a multiplicity of sources to find solutions or answers to the said research problem in front of the researcher. The research problem itself can be of any type, for e.g., market analysis, probabilities and possibilities, trends etc. Therefore, accurate data collection is essential with respect to making informed decisions on quality assurance, market analysis or business decisions.

There are two forms of data collection methods-

1. Primary data collection

   Primary data collection includes the gathering of data points from the original source like in our case the respondents (Sinclair, 1975). This allows the researchers to gather and consolidate firsthand data from sources through direct interaction with the respondents which are purposely designed to their research objectives and problems. There are various methods for primary data collection which are:

   - Surveys and Questionnaires – This method allows researchers to extract data by designing structured and tailor-made questions to selected respondents which can be individuals or groups. They can be conducted through face to face, mail and phone call interactions.
   - Interviews – This method allows for direct contact between the researcher and the respondent. These can be conducted in person or through any other medium of communication. This method can be structured (definitive questions), semi-structured (flexible questions) and unstructured (Questions in conversational flow).
   - Observations – This method allows researchers to record and tabulate data through actions, behaviors, or events in a natural setting. This kind of method is best suited for gathering data on human behavior and their interactions with the surrounding, or some natural phenomenon occurring in nature.
   - Experiments – This method allows researchers to identify a phenomenon and its deviation from its natural state through manipulations or changes in its variables to observe the impact by the said action on the outcome.
   - Focus groups – This method allows researchers to gather data points from a group of individuals who are asked to share their views and discuss their knowledge on a specific topic or subject selected by the researcher in a moderated setting. This method in best to understand perceptions, viewpoints, experiences, and opinions of the people of the group and how they interact in the setting.

2. Secondary data collection

Secondary data collection includes the gathering of data points from an already existing data sources collected by someone else where the researcher is using the data for a different purpose from the original intent (Sinclair, 1975). This data is interpreted and analyzed by the researcher to extract relevant insights that may help in his current research. There are various methods for secondary data collection which are:

- Published sources – This method allows researchers to study and review existing academic material like books, journals, magazines, newspapers and government and think tank reports; which might contain relevant data for the research.
- Online databases – These sources are created and maintained by various research organizations providing access to a wide array of secondary data like research articles, statistical information, surveys of the populace and economic data to the world.
- Government and institutional records – These are sources where research data is gathered and organized for public projects through public and private fundings for research related to public good and public interest advancement.
- Publicly available data – These are sources where information is gathered by individual parties, communities and organizations that are accessible on public platforms, social media pages and websites dedicated to certain projects or research.
- Past research studies – These sources are often the most crucial secondary resources as they serve as valuable data sources for current research which use these sources as foundations and build further on these studies to generate new insights into the subject.

3.4. Questionnaires

For this particular research we will be using questionnaires as our primary method of collection of data. Questionnaires are the best form of data collection for our case study as they enable us to get sophisticated and accurate data without having to deal with subjectivity of the answers that the participants might provide. It is designed with pointed and clear questions to extract data with precision about the study that is conducted (Sinclair, 1975). Questionnaires are very easy to construct, as long as the researcher has done his due diligence in understanding the aim of the research and has collected enough literature resources on the subject to formulate pointed objective questions to the participants. The most common methodology used for collection of data are questionnaires. They are used by lot of marketing and research agencies to discern and collect data to form statistics for various purposes. Both direct and indirect questions can be posed depending on the requirement of the research. The questionnaires are a form of structured form of questioning where the questions are designed by the researcher and the purview of the answers as well for e.g. yes/no, agree/disagree etc (Sinclair, 1975). The researcher has already provided a spectrum of possible answers to the participants based on his research out of which the relevant answers are selected by the participant. In some cases this method is also deemed to be boring and monotonous in some cases by the participants which is mainly depends on the extent of work done by the researcher and his ability to structure and construct a simple questionnaire. Given the fact that all the answers to the said questions are researched well in advance the element of discovering something new is greatly reduced. In this method its not possible to identify or quantify the reasoning behind certain answers also it is impossible to know if the respondents would have answered differently if they were given different options. Sometimes the formal structure of such questionnaires with very definitive questions may feel very intrusive therefore may be unacceptable

to certain individuals if that's the case. The respondents in most scenarios are also worried if the answers that they are providing with conform with the usually accepted answers or are they different and go against the grain of the socially accepted answers.

Now we will discuss some of the reasons why questionnaires were chosen as the best data collection method for our research (Sinclair, 1975).

1. Minimum cost of time and money – This is one of the main reasons why questionnaires are popularly used in research. A hundred questionnaires can be sent in the time frame to gather dat through two semi-structured interviews. The cost of sending these questionnaires is miniscule compared to the cost of setting up interviews with respondents which might include travelling costs and the time that you have to spent to set up these interviews. Telephone interviewing or video conferencing interviews which are the most common ones which take far more time to set up and conduct compared to sending some questionnaires. The main factor is the time saved in the data collection process.
2. Ease of data collection from multiple sources – If the research into finding suitable respondents is conducted efficiently and is organized well, responses from large number of respondents can be gathered within a week. Whereas in the same time frame the it will be difficult to manage more than three interviews dues to availability and issues related to their willingness to participate in an interview.
3. Ease of response to the questionnaire – The questionnaire can be responded upon by the suitable respondents at their own convenient time. Whereas, in interviews the interviewer will have to find a mutually suitable timeframe to conduct interviews with the respondents.
4. No pressure for immediate responses – In an interview a respondent has the pressure to answer to his best knowledge the question within the time frame of the interview which might affect the quality of data collected. Whereas in case of questionnaires the respondent can take some time to respond to the said question therefore improving the data collected in this case.
5. Respondent anonymity – In certain cases the respondents might feel more open and free to give their true response in a questionnaire where the anonymity of the individual can be maintained. Whereas in an interview the respondent might not completely feel open to give his or her true response therefore making the quality of data collected in question.
6. Lack of interviewer bias – There is peer research evidence to suggest that different interviewers can get different answers from a respondent. Differences of race, sex, social class, qualifications, age and perceived race and ideological differences can affect the answers that the respondents give to the questions asked. This can be greatly minimized when a questionnaire is used instead of an interview as the data collection method.
7. Standardization of questions – In an interview it is difficult to standardize these questions as in a conversational format the words used to ask the same question can differ, the way they are framed from interview to interview might greatly differ therefore leading to degradation of quality of data collection. Whereas in case of a questionnaire everyone receives the same question, framed the same exact way therefore greatly reducing the chances of any sort of bias or error. Although how the respondents understand the question is entirely another matter.

3.5. Questionnaire Design

To be able to gather information and data effectively, efficiently, and accurately it is paramount that the researcher put careful consideration on how the questionnaire is designed and structured. It is in the best interest of the researcher and the respondent to gather and provide respectively; the best possible data in

the research for the best outcome. A clear and well designed questionnaire takes effort, time and thorough research which needs to be planned and developed in stages as shown below (Sinclair, 1975);

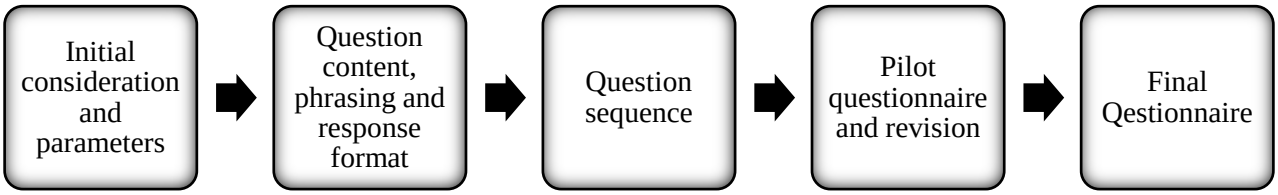

Figure 4 Questionnaire survey design steps

1. Initial consideration and parameters – This includes all the research activities like literature review and study where the researcher is involved with outlining the content of the research and data collection methodology. This enables the researcher to gain clarity on what kind of respondents should be in his sample and what kind of data can be collected.
2. Question content, phrasing and response format – This includes how to best frame the questions which will enable him to get the exact data he is looking for his research. The format of the responses are also important where the respondent can answer in a subjective manner or answer through multiple choice; i.e. which is the best response format for the research.
3. Question sequence – The questions should flow in a particular sequence where the flow makes sense to the respondents and helps him to understand the flow and pace of the research which will enable him to answer with his best capabilities.
4. Pilot Questionnaire and revisions – A pilot can be made with possible questions and can be circulated to see the response. Based on the assessment af the responses the researcher can make changes and improve the questionnaire
5. Final questionnaire – After the revision process the researcher arrives at the final questionnaire which is perfectly tailored for his research and to gather accurate and precise responses from the respondents.

Now, based on the literature study, we observed that researchers in different cases have identified certain factors that play a role in influencing the success rates of ventures based on their importance as the amount of influence they have on the process. These factors were termed differently in different cases by different researchers, but the fundamental definition of those terms and their explained effects remain the same. In other cases, there were some new factors identified by these researchers but were either clubbed with the more general terms (already defined and widely understood factors) due to their lack of individuality and the prominence of their effects on the process seemingly very small. Therefore, the selected factors in the research or literature study in our case have been selected based on the prominent factors that have repeatedly been identified in all the different cases that have been studied. These factors are going to be the main focus of these survey questionnaires where the respondents will be asked to give responses to the questions based on their judgements from experience, relevant knowledge from their fields and education.

Now the questions are designed using a Likert scale design where the respondents are asked to give a qualitative judgement based on their knowledge. The respondents are first asked to select one of the factors that they feel is the most important factor out of the available list of factors. After which they are required to rate the rest of the remaining factors on a scale from 1 to 7 in the following way; How much more important is the "most important criteria" compared to others on a scale of 1-7? (1 refers to equally important and 7 refers to absolutely more important). In which the respondents compare the most important

criteria to others. Similarly, they are required to select the least important factor out of the available list of factors. After which they are required to rate the rest of the remaining factors on a scale from 1 to 7 in the following way; How much more important are other criteria compared to the "least important criteria" on a scale of 1-7? (1 refers to equally important and 7 refers to absolutely more important).

The survey questionnaire used for the study will be available in appendix 1 showcasing the questions used and the explanation of the study to the respondents.

3.6. Ethical review of design

We have added certain ethical considerations into our research design by emphasizing on the anonymity of the respondent data, we have established truthfulness and accuracy of the data to the maximum as there is no reason for the respondent to get influenced or coerced by any pressure or any entity. This has enhanced the quality of responses. But, to ensure the quality of respondents their background and their experience in the field was taken into consideration. In our study we are conducting our analysis on a small case study involving a select number of professionals, organizations and industries. Therefore, our results will carry weight and importance for the specific case study and lack a generally applicable response or insight for the industry as a whole.

3.7. Best – Worst Methodology (BWM)

Let us assume we have a total of 'n' number of criteria that we need to conduct a pairwise comparison, these said criteria's will be compared on a scale of 1-9 whose implications on the comparison will be explained later. Therefore, this kind of a comparison will generate a matrix as follows;

$$A = \begin{pmatrix} a_{11} & a_{12} & \cdots & a_{1n} \\ a_{21} & a_{22} & \cdots & a_{2n} \\ \vdots & \vdots & \ddots & \vdots \\ a_{n1} & a_{n2} & \cdots & a_{nn} \end{pmatrix}$$

where a_{ij} shows the relative pairwise comparison between the criterion *i* to criterion *j*. In this comparison when $a_{ij} = 1$, it means that the criterion *i* and criterion *j* are of equal importance. In case $a_{ij} > 1$ it indicates that the criterion *i* is more important than criterion *j* and when $a_{ij} = 9$ it indicated that the criterion *i* is extremely in terms of comparative magnitude to criterion *j*. Similarly, the relative pairwise comparison of criterion *j* to criterion *i.* For the matrices to be reciprocal to each other it is imperative that $a_{ij} = 1 / a_{ji}$ and $a_{ii} = 1$, for all *i* and *j*.(Rezaei, 2015)

In all the pairwise comparisons we can distinguish the comparisons in to two categories as described below: the first is the (1) reference comparison and the second (2) is the secondary comparison.

1. Comparison a_{ij} is defined as a reference comparison if the criterion i is the best criterion of the study and / or the criterion j is the worst criterion.
2. Comparison a_{ij} is defined as a secondary comparison if criterion I and criteria j are neither the best or the worst criterions of the study and the value of $a_{ij} \geq 1$.

In this section we will go through the various steps of BWM which will be used to obtain the weights of the various criteria or as referred in our research as factors (van de Kaa et al., 2020).

Step 1. We identify a set of factors that according to our literature study form the basis for analysis through BWM. In the first step we consider all the factors as $\{c_1, c_2, c_3, \cdots, \cdots, c_n\}$ which will be used to arrive at a decision. For instance in case of buying a apartment, the decision factors can be {price (c_1), construction qulaity (c_2), *locality* (c_3), *safety and security systems* (c_4), *amenities* (c_5), *proximity* (c_6) }.(van de Kaa et al., 2020)

Step 2. We identify the best (the most desirable, the most important, etc.) factor and the worst (the least desirable, the least important, etc.) factor. Here the decision is taken by the said experts shortlisted in the case study who make an informed decision based on their knowledge of the industry and their experience in the field and select the best and the worst factor. There is no comparative relation established as of yet. For example, for a certain expert the best factor be price (c_1) and the worst factor be amenities (c_5).

Step 3. Now the expert defines his preference of the best factor, or the most important factor selected by him over all the factors involved in the study over a scale from 1 to 9. The scale 1 represents equal importance and 9 representing far more important. Therefore, the resulting vector will be;

$$A_B = (a_{B1}\,, a_{B2} \ldots a_{Bn}),$$

where, a_{Bj} denotes the preference of the best factor *B* over the factor *j*. Therefore, in this the value of $\mathrm{a_{BB}} = 1$.

Step 4. Now the expert defines his preference of all the factors over the worst factor, or the least important factor. All the preferences will be denoted on a scale from 1 to 9. Where the scale 1 represents equal importance, and 9 represents far more important. Therefore, the resulting vector will be;

$$A_W = (a_{1W}\,, a_{2W} \ldots a_{nW}),$$

where, a_{jW} denotes the preference of the factor *j* over the worst factor *W*. Therefore, in this the value of $\mathrm{a_{WW}} = 1$.

Step 5. Now we will calculate the optimal weights $(w_1^*, w_2^*, \ldots\,, w_n^*)$. The optimal weight of the factor is such that the pair of w_B/w_j and w_j/w_W, gives us $w_B/w_j = a_{Bj}$ and $w_j/w_W = a_{jW}$. Therefore, to fulfill these conditions for all *j* i.e. for all the involved factors we need to find a solution where the maximum absolute differences $\left|\frac{w_B}{w_j} - a_{Bj}\right|$ and $\left|\frac{w_j}{w_W} - a_{jW}\right|$ for all j or factors is minimized. While considering that the weights can not be negative (non-negativity) and the sum condition for the weights, the following is resulted;

$$\min\,[\max_j \quad \left\{\left|\frac{w_B}{w_j} - a_{Bj}\right|, \left|\frac{w_j}{w_W} - a_{jW}\right|\right\}]$$

s.t.

$$\sum_j w_j = 1\,, w_j \geq 0, for\ all\ j$$

The equation can be transferred to the following problem:

$\min \varepsilon$,

s.t.

$$\left|\frac{w_B}{w_j} - a_{Bj}\right| \leq \varepsilon\,, for\ all\ j$$

$$\left|\frac{w_j}{w_W} - a_{jW}\right| \leq \varepsilon \, , for\ all\ j$$

$$\sum_j w_j = 1$$

$$w_j \geq 0, for\ all\ j$$

Solving the above equation, the optimal weights $(w_1^*, w_2^*, w_3^*, \dots, w_n^*)$ and consistency ratio (ε^*) are obtained. These optimal weights determine the prioritization of the factors and the consistency ratio of the pairwise system. The consistency ratio always stays between 0 and 1, means that the closer the values are to a zero the more consistent our pairwise system is (Rezaei, 2015). The optimal weights are then aggregated along all the respondents who are part of the case study and therefore and aggregate weight of all the factors are derived which showcases the weights for individual factors pertaining to the case study (Rezaei, 2015). These factors with their aggregate weights can then be prioritized in the order of highest weight (highest priority) to lowest weight (lowest priority) and therefore a ranking or priority list can be created involving all the intermediate factors as well (Rezaei, 2015). The importance of the prioritization of the intermediate factors will play crucial role in the decision making process.

4. Case Study

This chapter aims to get an overview of our case study and gives a description of our particular case organization and its projects that is the reason for our study. Firstly, we give a brief introduction to the case organization and their goals in the future. Secondly, we discuss their partners involved in the consortium and the possible beneficiaries of this research. Thirdly, we discuss briefly the organizational structure and their operational procedures as a consortium.

In this research we are trying to identify important influencing factors within a consortium of organizations working together for mutually beneficial as well as their specific unique individual goals that secure them for success in the future. Therefore, it was important to identify a case where there are multiple organizations that are working in tandem to generate new ideas and radical innovations to support their organizations plans and goals for the future. In some cases, there are separate organizations that create this atmosphere of a consortium for interested organizations to come together for collaboration. Through our search we were able to identify the Port XL -Rotterdam as a prominent case for our research as it reflects our idea for the case. It is also important to note that this organization was birthed with an idea where their whole goal was to create an ambience and atmosphere where scientific innovation and engineering advancements can be given a spurt of growth through business acumen and marketing genius by providing solutions to problems of individuals, organizations, or big multi-national companies.

4.1. Port XL – Rotterdam

Port XL is the first organization in the world that acts as a "Maritime port accelerator", similar to incubation organizations by creating a network of big multi-national corporations who are world leaders and experts in their respective fields of industry (Port XL, n.d.). It was founded in the year 2015 in Rotterdam with a vision to nurture a spirit of innovation and revolution in the maritime industry with breakthrough science and technology. Port XL is created to be a nurturing environment and an ecosystem for small startups, scale ups or medium scale organizations to bring about a positive and radical change with the help of huge multi-national corporations and private mentors (Port XL, n.d.). Therefore, the ecosystem focuses on creative thinking and problem-solving skills to bring these radical changes to disrupt the existing status-quo of the maritime industry. Port XL is primarily a business-to-business accelerator focusing on creating business value for startups and scaleups. The primary focus of Port XL is within the maritime, logistics or supple chain, green energy, and process industry. Therefore, Port XL focuses its effort on development and acceleration of radical technologies capable of disruption, in respective industries across the world. By doing so, Port XL boosts and encourages entrepreneurship across all the involved parties in the program.

In its 6 years of operation, Port XL has been dedicated to giving entrepreneurs an opportunity to get access to the maritime business industry. Currently Port XL has started a new initiative called MATCH, in which the goal is to realize 100 innovative projects every year. This goal can be realized by connecting the large companies in the industry with entrepreneurs with innovative ideas. This cooperation between the two parties is important for the goal as one party cannot accomplish it without the other. This program selects 10 start-ups which are accelerated through a 100-day mentorship program with larger companies. Apart from this training the organization also provides a thriving ecosystem for entrepreneurs and their innovative ideas.

Currently the major challenges that Port XL is focusing on are given below:

1. Reach Net Zero Emissions

Van Oord a shipping company, plans to be carbon neutral by the year 2050. The milestones are to reduce the CO2 emissions of their fleet by 27.5% by 2030 towards the 2050 goal (Port XL, n.d.).

2. Sustainable Energy Transition

The city of Rotterdam where Port XL is based out of, is looking for start-ups that offer sustainable solutions to the energy chain, extraction, storage and distribution. Another focus of this challenge is to achieve a cleaner Rotterdam through recycling and upcycling of biobased materials (Port XL, n.d.).

3. Offshore Wind

As the noise regulations are getting stricter and cities expanding there is difficulty in setting up wind farms. The available methods and technologies to reduce noise pollution are tedious and expensive. Therefore, Van Oord is investing in offshore wind innovation (Port XL, n.d.).

4. Reducing Vessel Emissions

Royal IHC, a company focusing on maritime technology, is looking for innovation in reduction of emissions or fuel consumption by maritime vessels. These innovations could include new fuel types, energy storage systems, propulsion technology, automation, and engine modifications etc (Port XL, n.d.).

Other focus areas of this initiative include specialized robotics (Ampelmann), flexible height flood barrier (Van Oord), operations optimization, air quality improvements, automation technologies, smart IT, sustainable shipping, smart port, big data, etc.

4.2. Port XL – Rotterdam Partners

Port XL has a wide range of partners who are experts in their own respective fields. They have partners from maritime, logistics, automation, robotics, IT, municipality etc. Here below is a list of the most prominent partners that are involved with Port XL:

1. Port of Rotterdam
2. Shell
3. Vopak
4. City of Rotterdam
5. Van Oord
6. Boskalis
7. Mammoet
8. North Sea Port
9. Ampelmann
10. Oceanco
11. Innovation Quarter Zuid Holland
12. Erasmus Centre for Entrepreneurship
13. Deltares
14. Provincie Zuid Holland
15. And more…

As we can see Port XL collaborates with private as well as public entities to create a synergy between the two so that all the projects can create economic benefits for the private entities while also focusing on the social benefits of the society in general. Therefore, reducing any conflicts between the two on the ground of social issues. Another important advantage of including a public entity in these collaborations and including their interests, is that it creates a positive relationship between the private and public sector in Rotterdam, thus creating stronger partnerships in future projects (Boskalis, n.d.; Port XL, n.d.).

4.3. Port XL Organization Structure and Function

Port XL organizes itself into a supportive entity which connects the big players, i.e., the public and private entities into a collaborative structure with the smaller players which includes the start-ups and scale-ups (Boskalis, n.d.). We see that Port XL acts as a screening organization to filter out the best ideas of innovative technologies from the smaller entities and enables them to create a connection with its partners to realize the innovative goal (Port XL, n.d.). In the initial phase it also acts as a mentor along with the big private partners for the start-ups and helps them in every possible manner. It also helps them to connect them to the relevant interested big private partners who will invest in radical ideas to achieve their respective goals in a collaborative fashion. These support systems that the private entities provide the smaller start-ups include financial, leadership, knowledge, technology as well as support in the form of leveraging their connections to help the collaborative effort. These kinds of collaboration help the smaller start-ups to grow into big businesses and secure a sustainable future for themselves. On the other hand, it helps the bigger companies to gain access to the latest technologies, ideas and researchers and engineers who work in a more collaborative and creative fashion compared to their own research and development departments. Therefore, we can see that the Port XL acts as an intermediary enabler between these big and small entities to prosper collaborations and radical innovative technologies .

5. Results

This chapter discusses the data analysis stage of the study where we go through the survey results to further analyze them through the bwm methodology to gain a better understanding of the individual perceptions of the said factors and their cruciality and importance in the organization. Therefore, we arrive at a conclusion where all the data is compiled and we arrive at the most important factor and therefore, the whole priority scale of the factors of the study.

5.1. Respondent results

For this research we created a survey questionnaire which in detail encapsulates all the information required for our research. It explains in great detail what the purpose of the study is, and explains the different terminologies involved to describe the various factors selected for the study. The respondents were given detailed information about the study, its purpose, relevancy and its importance with respect to our case study. Given all this information our respondents were carefully able to provide their views along the lines of our research study. As per the research design, to get the best results possible we kept the information about our respondents anonymous as part of the survey. So, there is no deterring factor in terms of data collection for our respondents and all possible inhibitions during data collection can be avoided. So that we maintain the quality of our data collected we identified individuals who are highly educated in the field of inquiry of the research, which was recorded during the questionnaire itself.

The first section of the questionnaire gave a brief introduction to the study and recorded the proficiency of the respondents. The second section focuses on the explanation of the terminologies and collection of the ratings of the said factors. The third section focused on any form of query collection if the respondents had any.

Below we have created a concise graphical representation weight of factors based on different respondents respectively.

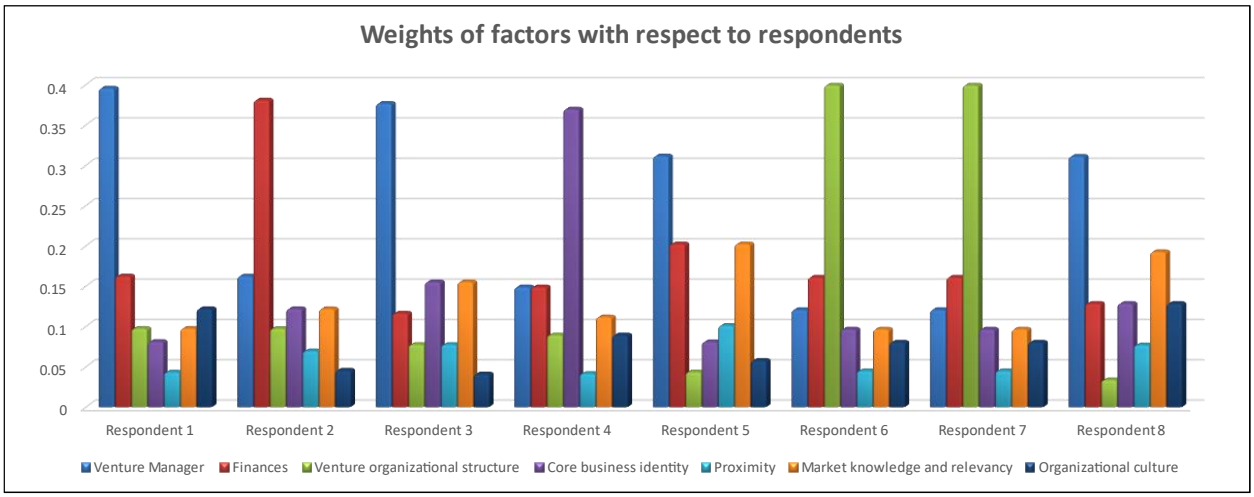

Figure 5 Graph showing weights for respective factors by all the respondents.

The data collected from the respondents was compiled in a tabular format and was run through the best-worst methodology. The data collected from the respondents has been shown below;

Criteria Number = 7	Criterion 1	Criterion 2	Criterion 3	Criterion 4	Criterion 5	Criterion 6	Criterion 7
Names of Criteria	Venture	Finances	Venture	Core	Proximity	Market	Organization

Select the Best	Venture

Select the Worst	Proximity

Best to Others	Venture	Finances	Venture	Core	Proximity	Market	Organizati
Venture Manager	1	3	5	6	7	5	4

Others to the Worst	Proximity
Venture Manager	7
Finances	5
Venture organizational	2
Core business identity	4
Proximity	1
Market knowledge and	4
Organizational culture	3

Weights	Venture	Finances	Venture	Core	Proximity	Market	Organization
	0.39566396	0.16260163	0.09756098	0.08130081	0.04336043	0.09756098	0.12195122

Input-Based CR	0.4047619
Associated Threshold	0.3144

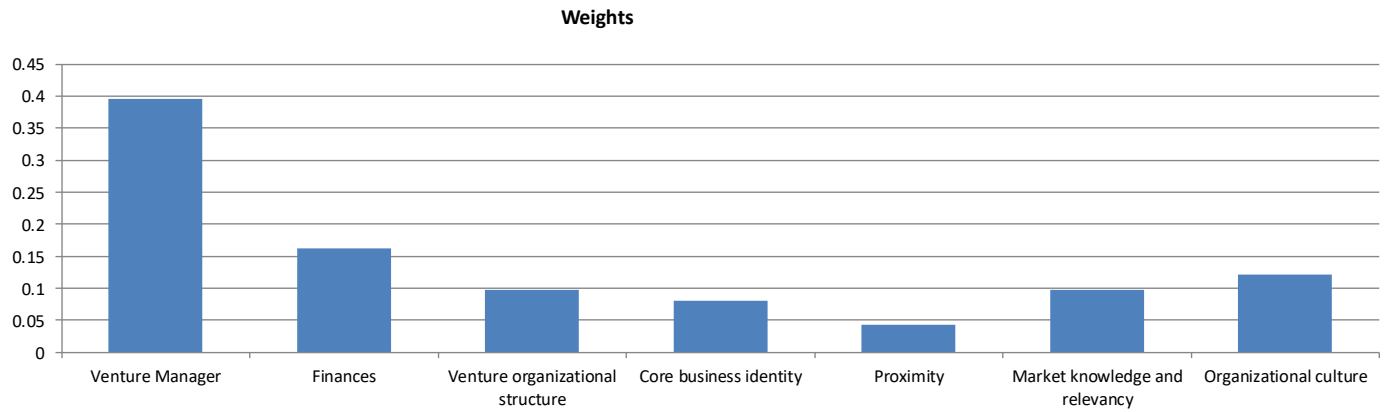

Figure 6 Survey results and weight calculation for respondent 1

Criteria Number = 7	Criterion 1	Criterion 2	Criterion 3	Criterion 4	Criterion 5	Criterion 6	Criterion 7
Names of Criteria	Venture	Finances	Venture	Core	Proximity	Market	Organization

Select the Best	Finances

Select the Worst	Organization

Best to Others	Venture	Finances	Venture	Core	Proximity	Market	Organizati
Finances	3	1	5	4	7	4	6

Others to the Worst	Organization
Venture Manager	4
Finances	7
Venture organizational	2
Core business identity	3
Proximity	3
Market knowledge and	5
Organizational culture	1

Weights	Venture	Finances	Venture	Core	Proximity	Market	Organization
	0.16250725	0.38087638	0.09750435	0.12188044	0.06964597	0.12188044	0.04570517

Input-Based CR	0.33333333
Associated Threshold	0.3144

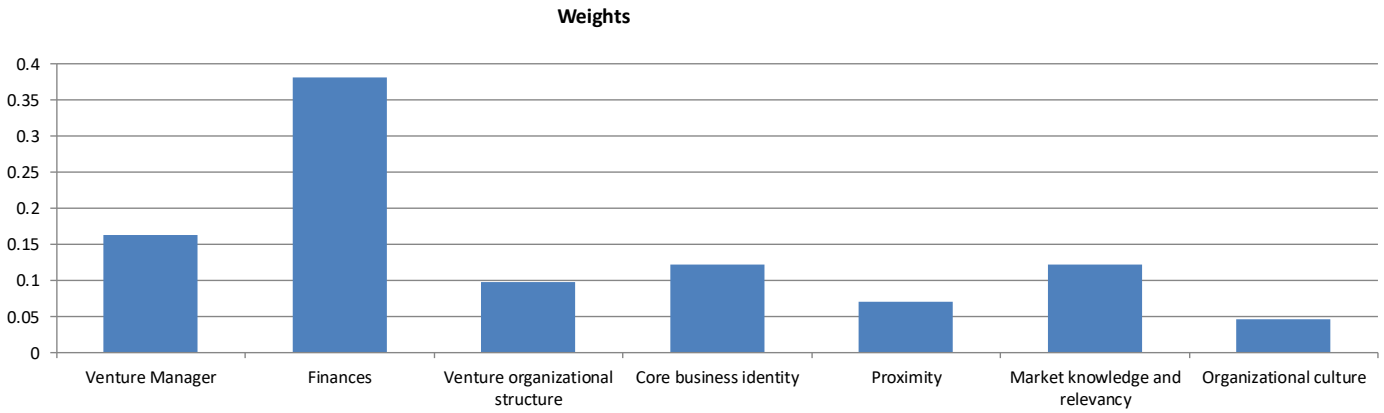

Figure 7 Survey results and weight calculation for respondent 2

Criteria Number = 7	Criterion 1	Criterion 2	Criterion 3	Criterion 4	Criterion 5	Criterion 6	Criterion 7
Names of Criteria	Venture	Finances	Venture	Core	Proximity	Market	Organization

Select the Best	Venture

Select the Worst	Organization

Best to Others	Venture	Finances	Venture	Core	Proximity	Market	Organizati
Venture Manager	1	4	6	3	6	3	7

Others to the Worst	Organization
Venture Manager	7
Finances	5
Venture organizational	3
Core business identity	5
Proximity	3
Market knowledge and	5
Organizational culture	1

Weights	Venture	Finances	Venture	Core	Proximity	Market	Organization
	0.37671233	0.11643836	0.07762557	0.15525114	0.07762557	0.15525114	0.04109589

Input-Based CR	0.30952381
Associated Threshold	0.3144

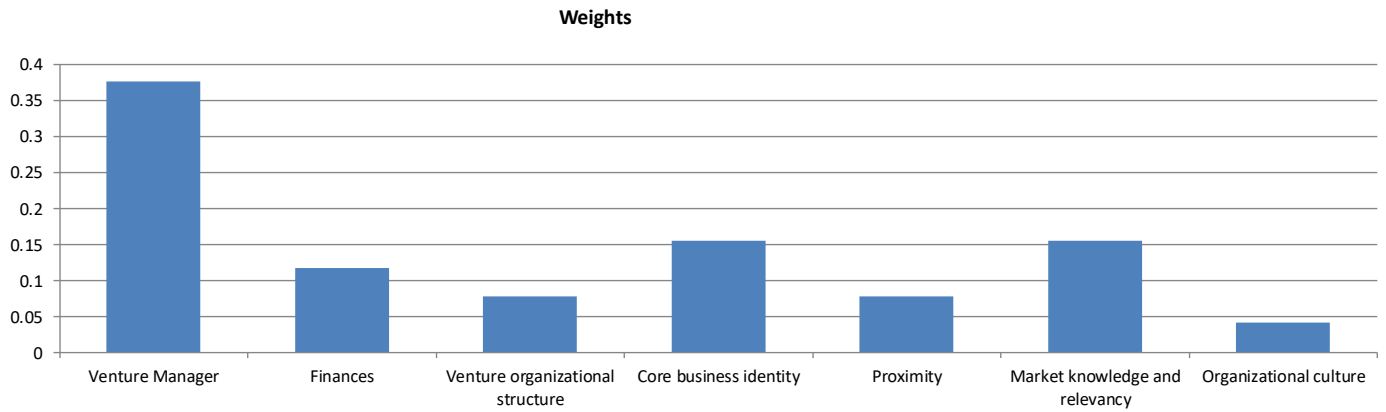

Figure 8 Survey results and weight calculation for respondent 3

Criteria Number = 7	Criterion 1	Criterion 2	Criterion 3	Criterion 4	Criterion 5	Criterion 6	Criterion 7
Names of Criteria	Venture	Finances	Venture	Core	Proximity	Market	Organization

Select the Best	Core

Select the Worst	Proximity

Best to Others	Venture	Finances	Venture	Core	Proximity	Market	Organizati
Core business identity	3	3	5	1	7	4	5

Others to the Worst	Proximity
Venture Manager	4
Finances	5
Venture organizational	3
Core business identity	7
Proximity	1
Market knowledge and	4
Organizational culture	4

Weights	Venture	Finances	Venture	Core	Proximity	Market	Organization
	0.1490313	0.1490313	0.08941878	0.36959762	0.04172876	0.11177347	0.08941878

Input-Based CR	0.30952381
Associated Threshold	0.3144

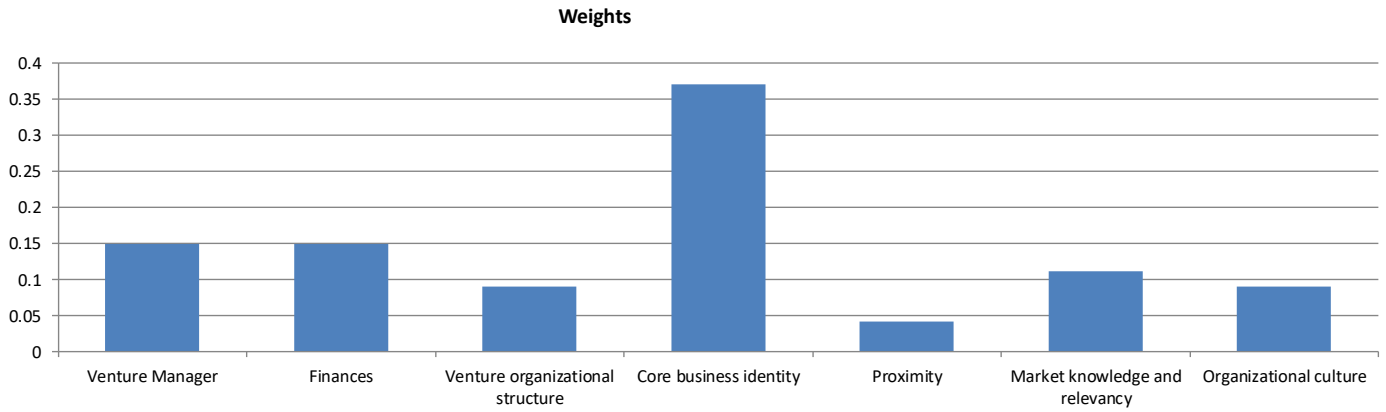

Figure 9 Survey results and weight calculation for respondent 4

Criteria Number = 7	Criterion 1	Criterion 2	Criterion 3	Criterion 4	Criterion 5	Criterion 6	Criterion 7
Names of Criteria	Venture	Finances	Venture	Core	Proximity	Market	Organization

Select the Best	Venture

Select the Worst	Venture

Best to Others	Venture	Finances	Venture	Core	Proximity	Market	Organizati
Venture Manager	1	2	5	5	4	2	7

Others to the Worst	Venture
Venture Manager	7
Finances	5
Venture organizational	1
Core business identity	4
Proximity	2
Market knowledge and	5
Organizational culture	3

Weights	Venture	Finances	Venture	Core	Proximity	Market	Organization
	0.31145717	0.20244716	0.043604	0.08097887	0.10122358	0.20244716	0.05784205

Input-Based CR	0.33333333
Associated Threshold	0.3144

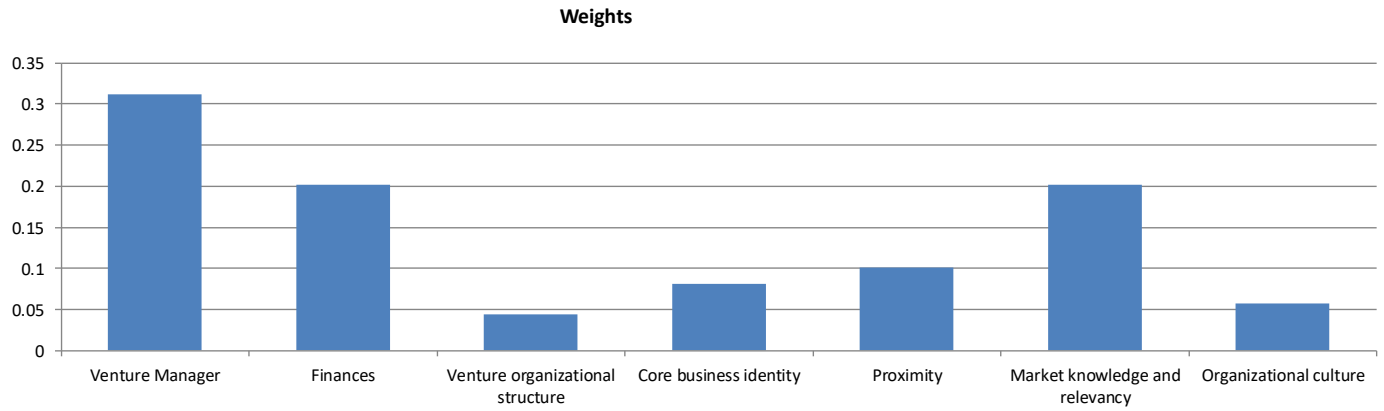

Figure 10 Survey results and weight calculation for respondent 5

Criteria Number = 7	Criterion 1	Criterion 2	Criterion 3	Criterion 4	Criterion 5	Criterion 6	Criterion 7
Names of Criteria	Venture	Finances	Venture	Core	Proximity	Market	Organization

Select the Best	Venture

Select the Worst	Proximity

Best to Others	Venture	Finances	Venture	Core	Proximity	Market	Organizati
Venture organizational	4	3	1	5	7	5	6

Others to the Worst	Proximity
Venture Manager	4
Finances	5
Venture organizational	7
Core business identity	3
Proximity	1
Market knowledge and	4
Organizational culture	3

Weights	Venture	Finances	Venture	Core	Proximity	Market	Organization
	0.12077295	0.1610306	0.39935588	0.09661836	0.04508857	0.09661836	0.0805153

Input-Based CR	0.30952381
Associated Threshold	0.3144

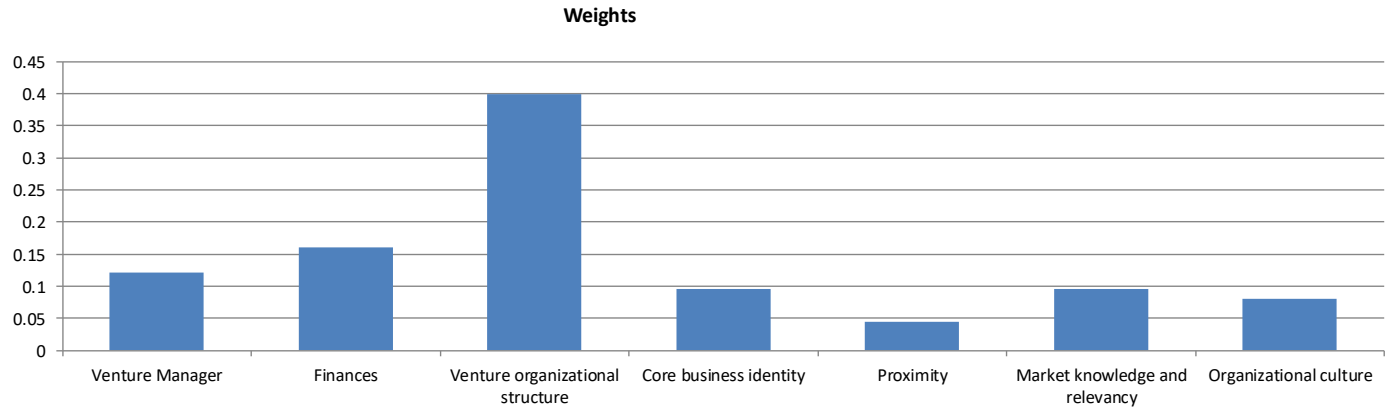

Figure 11 Survey results and weight calculation for respondent 6

Criteria Number = 7	Criterion 1	Criterion 2	Criterion 3	Criterion 4	Criterion 5	Criterion 6	Criterion 7
Names of Criteria	Venture	Finances	Venture	Core	Proximity	Market	Organization

Select the Best	Finances

Select the Worst	Proximity

Best to Others	Venture	Finances	Venture	Core	Proximity	Market	Organizati
Finances	5	1	4	3	7	3	5

Others to the Worst	Proximity
Venture Manager	4
Finances	7
Venture organizational	4
Core business identity	5
Proximity	1
Market knowledge and	5
Organizational culture	3

Weights	Venture	Finances	Venture	Core	Proximity	Market	Organization
	0.12077295	0.1610306	0.39935588	0.09661836	0.04508857	0.09661836	0.0805153

Input-Based CR	0.30952381
Associated Threshold	0.3144

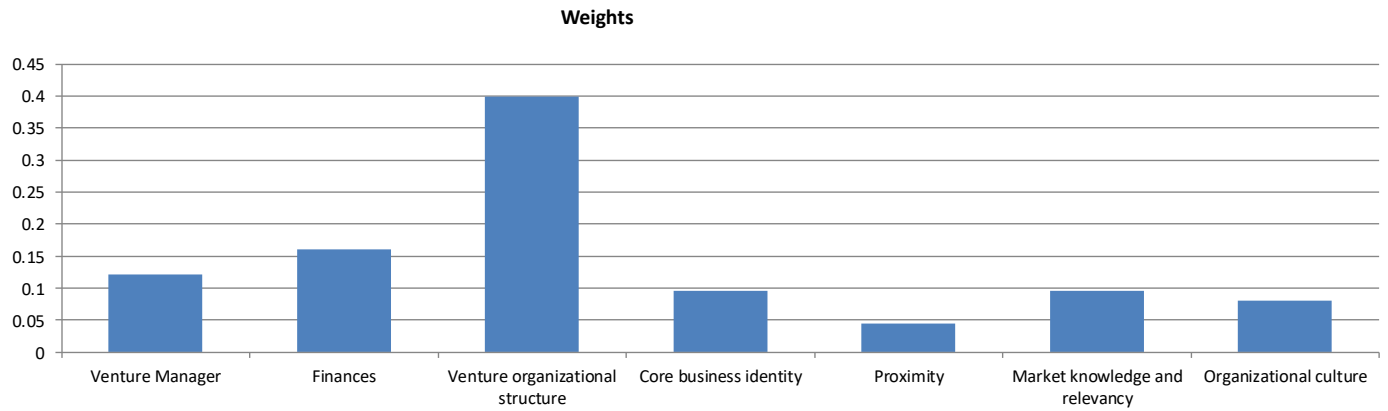

Figure 12 Survey results and weight calculation for respondent 7

Criteria Number = 7	Criterion 1	Criterion 2	Criterion 3	Criterion 4	Criterion 5	Criterion 6	Criterion 7
Names of Criteria	Venture	Finances	Venture	Core	Proximity	Market	Organization

Select the Best	Venture

Select the Worst	Venture

Best to Others	Venture	Finances	Venture	Core	Proximity	Market	Organizati
Venture Manager	1	3	7	3	5	2	3

Others to the Worst	Venture
Venture Manager	7
Finances	6
Venture organizational	1
Core business identity	5
Proximity	2
Market knowledge and	4
Organizational culture	5

Weights	Venture	Finances	Venture	Core	Proximity	Market	Organization
	0.31102096	0.12846518	0.03380663	0.12846518	0.07707911	0.19269777	0.12846518

Input-Based CR	0.26190476
Associated Threshold	0.3144

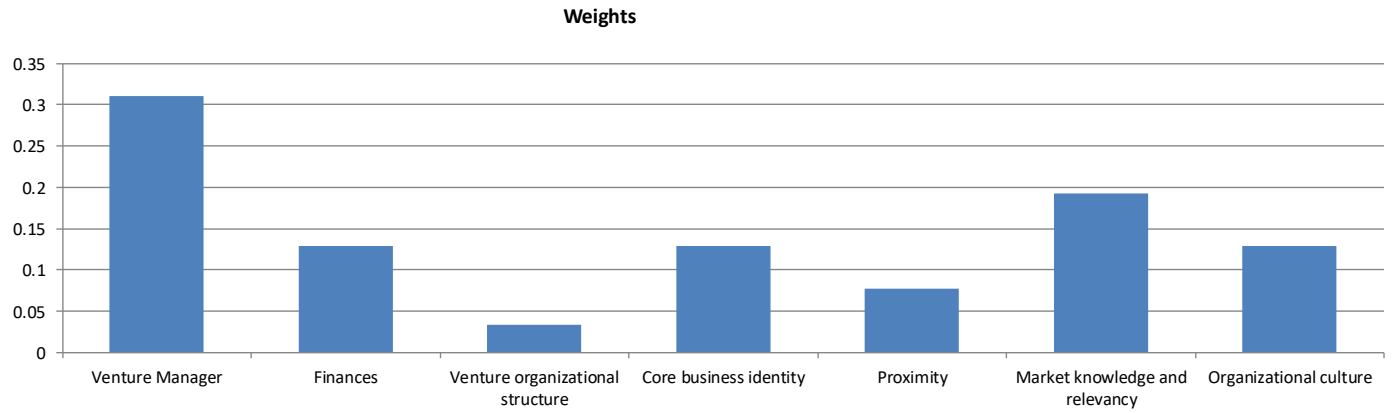

Figure 13 Survey results and weight calculation for respondent 8

5.2. Final prioritization results

Below we have tabulated the overall weights respective of each of the factors in the study. Based on these weights we have prioritized the most influential or crucial to the least influential or crucial factors with respect to our case study. The consistency ratio for the study has been established as 0.3214 which is within the margins of error, therefore establishing that our results our consistent which suggests that the respondent data has been consistent throughout the study making the results reliable and generalizable. Given the prioritization of the factors we conclude that the **venture manager**, his experience, his capability and his knowledge is the most crucial factor determining the success of a venture in the study. The least influential or crucial factor in determining the success of a venture is **proximity**, based on our results.

In terms of priority the **finances** of the venture seem to be at priority level 2, therefore making the fund availability and its management extremely important. The **venture organizational structure** seems to be the next most crucial factor therefore making it apparent how bureaucracies and complexity in structure can inhibit the success of an organization. The **core business identity** is the next important factor, therefore making it clear that the participating companies need to be aligned in their business interest, future financial and business goals. The **market knowledge and relevance** are the next important factor with **organizational culture** and **proximity** trailing behind respectively in importance.

Below we have shown a graphical representation of the prioritization of the factors for the success of a consortium or corporate venturing activity.

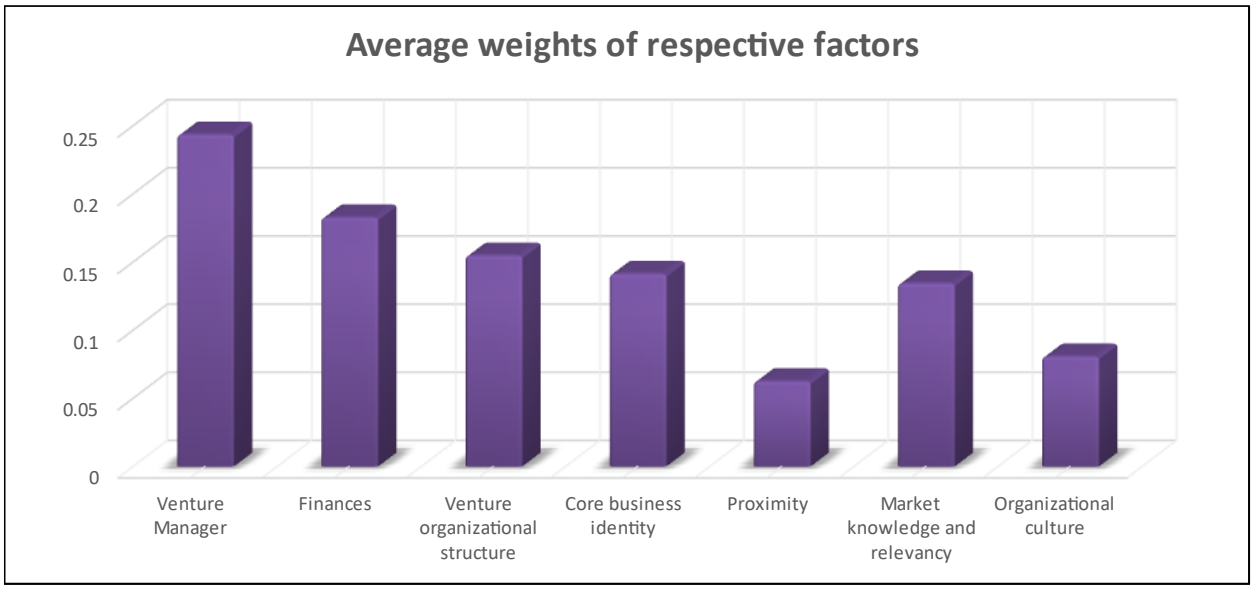

Figure 14 Graphical representation of the prioritization of the factors with their weights

Weights of factors respectively	Respondent 1	Respondent 2	Respondent 3	Respondent 4	Respondent 5	Respondent 6	Respondent 7	Respondent 8	Average weights of respective factors	Ranking based on priority
Venture Manager	0.395663957	0.162507255	0.376712329	0.149031297	0.311457175	0.120772947	0.120772947	0.31102096	0.243492358	1
Finances	0.162601626	0.380876378	0.116438356	0.149031297	0.202447164	0.161030596	0.161030596	0.128465179	0.182740149	2
Venture organizational structure	0.097560976	0.097504353	0.077625571	0.089418778	0.043604004	0.399355878	0.399355878	0.033806626	0.154779008	3
Core business identity	0.081300813	0.121880441	0.155251142	0.369597615	0.080978865	0.096618357	0.096618357	0.128465179	0.141338846	4
Proximity	0.043360434	0.069645966	0.077625571	0.041728763	0.101223582	0.045088567	0.045088567	0.077079108	0.06260507	7
Market knowledge and relevancy	0.097560976	0.121880441	0.155251142	0.111773472	0.202447164	0.096618357	0.096618357	0.192697769	0.13435596	5
Organizational culture	0.12195122	0.045705165	0.04109589	0.089418778	0.057842047	0.080515298	0.080515298	0.128465179	0.080688609	6
Input-Based CR	0.404761905	0.333333333	0.30952381	0.30952381	0.333333333	0.30952381	0.30952381	0.261904762	0.321428571	

Table 2 Illustration of weights of the factors and their prioritization for the study

In our research we see a trend where most of the respondents who come from the management field think the 'Venture manager' is the most important factor showcasing as evident by their field experience and knowledge, that the leader of the venture and his or her capabilities and knowledge seems to be the most important factor in determining success of the venture. This trend is not showcased by other respondents coming from a technical or research field where their views are more diverse attributing 'Finances', 'Venture organizational structure' and 'Core business identity' to be the most important factor according to them. It might be possible that the respondents coming from the management field hold 'Venture manager' to be most important due to a slight bias, but it can be argued that the consistency ratio for the study proves that the results of the study is consistent i.e. the pairwise comparative study conducted does not deviate too much from the overall assessment of all factors by all respondents and therefore holds high confidence.

6. Conclusion

This section is divided into three parts. Firstly, we discuss certain insights that we have from our research and the answer to our research question. Secondly, we discuss the limitations of the research and its possible shortcomings, in addition to new avenues of research where we have an opportunity to improve the research or reduce the shortcomings. Thirdly, we discuss future implications of the research where its possible application in the industry and its benefits are discussed.

6.1. Insights

Below we have reiterated our research question which is the basis for our study;

> ***"How do organizations organize and strategize and leverage the multitude of factors involved to achieve success in their sustainable business goals?"***

This question is answered through our research showing the importance and advantages of open innovation organizational structures that are evident in current times where organizations are leveraging on open research and development programs under consortiums like the Port XL where all the participating organizations benefit from shared research and development using the expertise of each other in the fields to find new market opportunities to further their sustainable business goals and also improve and reinvigorate current market opportunities to give better solutions and products to their customers, improving the competitive nature of the market further and therefore providing the customers with better services and products at lower costs. With the new form of organizational structure coming into existence it comes with its own challenges. Earlier the efficiency and productivity of elements and divisions within the organization was under reform, now due to the interlinking between organizations efficiency and productivity across organizations need to be reformed to get the best results from the venture. This is where the identification and understanding of the said factors comes into question. Researchers are pondering over new ways to reform but through a targeted approach for maximum results, these factors are studied in depth and based on their influence potential in the venture among two or more organizations, the organizations can focus their efforts to maximize chances of success by improving on the said factors. Through our study the organizations can prioritize their focus on the most important factors and work through the prioritization list to improve their chances of success, as the most influential factor is targeted first for the most benefit in the success rate of the venture.

Given such a complex network of inter connections in a venture none of the factors can be deemed as unrelated or inconsequential but can definitely be ordered in terms of the magnitude of their effect on the success rate for their venture. Therefore, giving the organizations the ability to charter a roadmap through which improvements and changes can be made to improve the processes and structure within the ventures. Looking at the literature, we also note that all the factors have their own role in making the venture a success, but some do have more influence on the outcome in comparison to others which stay true in our research findings as well.

6.2. Limitations, further research and managerial recommendations

This research is very important in terms of finding key areas of interest where an organization can make improvements to further its probability of success in its ventures. Where this research lacks are its generalizability for its impact across industries. Since this research focuses on the maritime industry, it is applicable in the maritime logistics, maritime technologies, maritime ports, etc. but its results cannot be

generalized for e.g. into the petroleum industry, automobile industry or the general store chains of a region. This is one of the areas where this research lacks is that the conclusions are very case specific and can be broadly generalized to its respective industry due to the relevance and knowledge of the respondents to different participants within the industry. This is therefore one of the key limitations of the research. Thus, the organizations across industries should prioritize these kinds of research activities and projects to further streamline and drastically improve their competence and proficiency to guarantee success. Once, organizations have pooled and spent resources to make their organization more efficient in other aspects like finance management, logistical efficiency, raw material sourcing, operational management, market research etc. this is the next frontier where they could focus their resources and attention. The unique advantage that this kind of research provides is that the research is highly replicable across industries without any methodological problems. This research is of high importance in certain tech industries due to their need for collaboration and urgency to be the first in the market and in innovation. So, since corporates are fueled by maximizing profits these research activities open the next frontier where organizations will start to look inward and incorporate changes within the system to maximize their probabilities of success given the need of the hour where open collaboration and ventures are the norm.

6.3. Managerial recommendations

Based on the results of our study, the organizations should prioritize vetting and finding a capable venture manager who will have the capability and knowledge to ensure the successful outcome of the venture. Where, through his capabilities as a manager the leader of the venture can carefully curate his team of individuals who will provide the necessary support and insights to the leader so he can make sound and educated decisions on business and technical problems that the venture might be facing. The secondary concern that the organization should focus on is to ensure financial security for the venture where funds act as nutrients for a growing venture in its initial years without which the venture has high likeliness to fail. The finances should be kept in check where the board of the organization and the venture manager play a role in managing the limited finances, they have in the most efficient manner by using research, market analysis and data to educate their judgements. Finally, the organizations should invest some time and resource to create a structure which reduces the bureaucracy and red tape among the organization board and its venture so that the processes are most efficient and there is minimum resistance in terms decision making and smooth operations within the venture.

6.4. Future implications

In a time where the problems of the world range from economic inequalities, food shortages, energy independence, supply chain security etc., the technology companies of the world rely highly on interplaying interactions of collaborations between multiple companies to maximize benefits to their individual projects and business goals for the future. In the last decade their has been a significant investment in technology companies looking at their capabilities to solve everyday problems of individuals and big businesses. These companies are investing more and more in smaller companies promoting corporate venturing activities across the world. In earlier times companies used to guard their research and technologies closely through patents and other means. These practices increase their investment in time and money by multiple times to find success in their projects. These companies have started to recognize the new trends and benefits of corporate venturing and investment practices to leverage outside knowledge and research to find opportunities in the market for their business goals. It drastically reduces your investment in terms of time, money and human resources spent on the projects. The next obstacle that these companies face in the current environment is how to manage these ventures and what should be the focus points of interest for the upper management to pool their efforts towards to maximize the success of these ventures. Therefore, the focal

point of this research has been to identify some of the crucial and influential factors through literature research and rank and prioritize them based on the analysis from the industry experts involved in the survey. Therefore, this research is of key importance as it's the need of the hour given the increase in venture capital investments in the recent decade and across different industries. Given the maritime industry is one of the major industry of The Netherlands this research is of key importance among the growing collaborations and ventures from technology, logistics, supply chain and the shipping companies in participation with local municipalities and port authorities.

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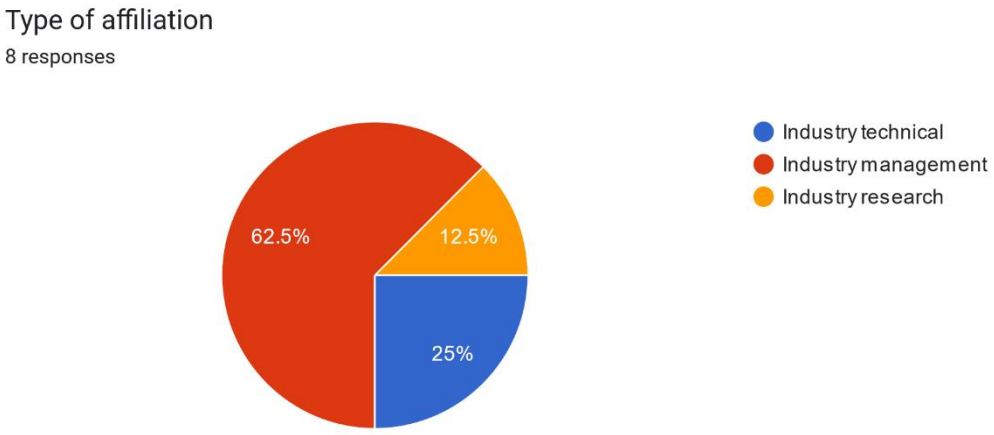
A. Appendices

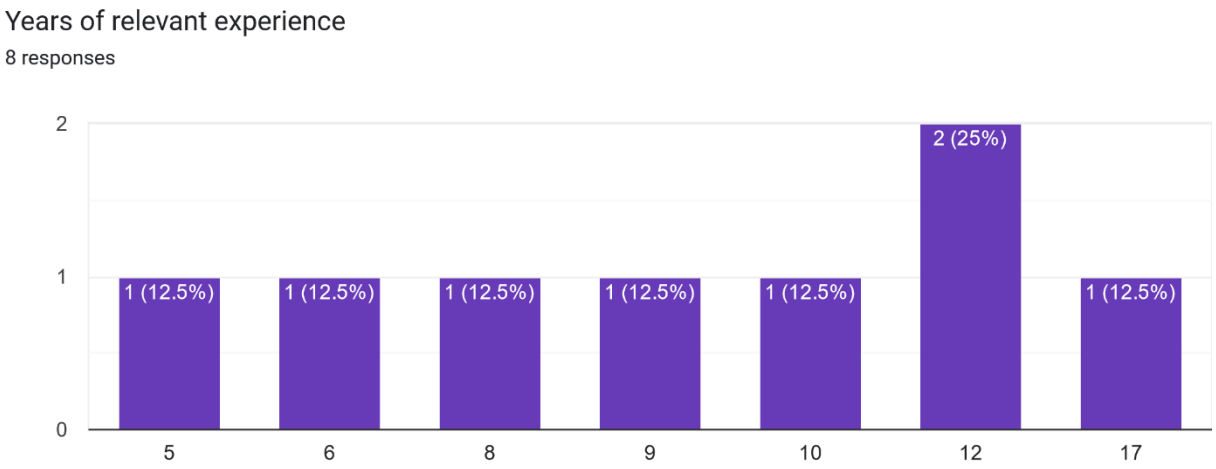
A.1 Survey questionnaire

Below we have shown the backgrounds of the respondents that have been part of the study.

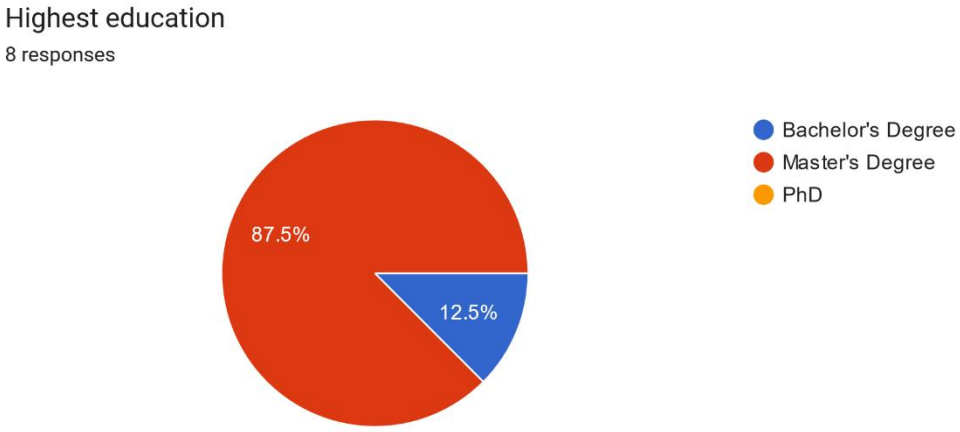
Affiliation of respondents



Years of relevant experience



Educational qualification



Survey Example

Section 1 of 3

Identification and prioritization of factors and their influence on corporate venturing success

The aim of this study is to identify influential factors through literature and prioritize them based on their impact on the success of the venture by participating companies. The survey is kept anonymous to mitigate any risks to reputation or any other emotional risks. The responses will solely be used for academic research. As with any online activity the risk of a breach is always possible. To the best of our ability your answers in this study will remain confidential. We will minimize any risks by storing the data with me under my responsibility and supervision.

My thesis mainly focuses on the following questions -

• How does an organization create and structure its corporate ventures?

• What are the factors that play crucial role in strategizing venture activity with select companies for success?

• How do these factors affect the decisions on the type of venture activity to be undertaken by the venture hand?

Your participation in this study is entirely voluntary and you can withdraw at any time. You have complete access to rectify the data at your discretion through the same link.

The study is conducted by Aditya Narayanan G., pursuing master's in Management of Delft University of Technology. Estimated time to complete the survey is between 10-12 minutes.

Please read the questions carefully before responding. Note that the survey design is slightly different from traditional survey designs (especially the importance of the rating part).

Type of affiliation *

- ○ Industry technical
- ○ Industry management
- ○ Industry research

Years of relevant experience *

Short answer text

Area of expertise / department *

Short answer text

Highest education *

- Bachelor's Degree
- Master's Degree
- PhD

After section 1 Continue to next section

Section 2 of 3

Defining the influential factors that affect success of ventures

(1) Venture manager - This factor talks of the capability and skills of the individual that is at the helm of the venture, responsible for planning, execution and business-related decision making both in terms of managerial and financial decisions. This factor is crucial in terms of the vision and skills of the respective individual and their capability to make sound and fruitful decisions for the direction of the venture.

(2) Finances - This factor is talks of the capability of venture to have a constant and guaranteed source of funding to ensure the growth and sustainability of the venture. These finances could be in form of liquid cash available or a prospective capability to raise cash or capital based on the current performance of the venture and its future prospects.

(3) Venture organizational structure - This factor talks about the structure of the venture program, where the engagement and transparency between the organizations plays a role in its efficiency. It is highest in an open innovation structure and is the least in alliances or partnership structure.

(4) Core business identity - This factor talks about the core business identity of the participating companies and the impact of the degree of differences in their vision and goal as a company. The goals may involve economic, social, or business goals that the organizations might want to pursue in the future.

(5) Proximity - This factor talks about the physical proximity between the operation centers of the participating organizations and its impact on the venture that it may present.

(6) Market knowledge and relevancy - This factor talks about depth of knowledge and experience that the participating companies have and the ability of the organizations to find a potential gap in the market for their product. Their ability to monitor the gap as it is evolving through time and adjust your potential solution, application, product or service accordingly.

(7) Organization culture - This factor talks about the differences in the core culture, practices and behaviors of the employees between the two or more different organizations participating in a venture activity. A small example could be the company culture practiced in Google vs culture practiced in an organization like NASA.

Which of the following criteria is the "most important" for the success of a venture? *

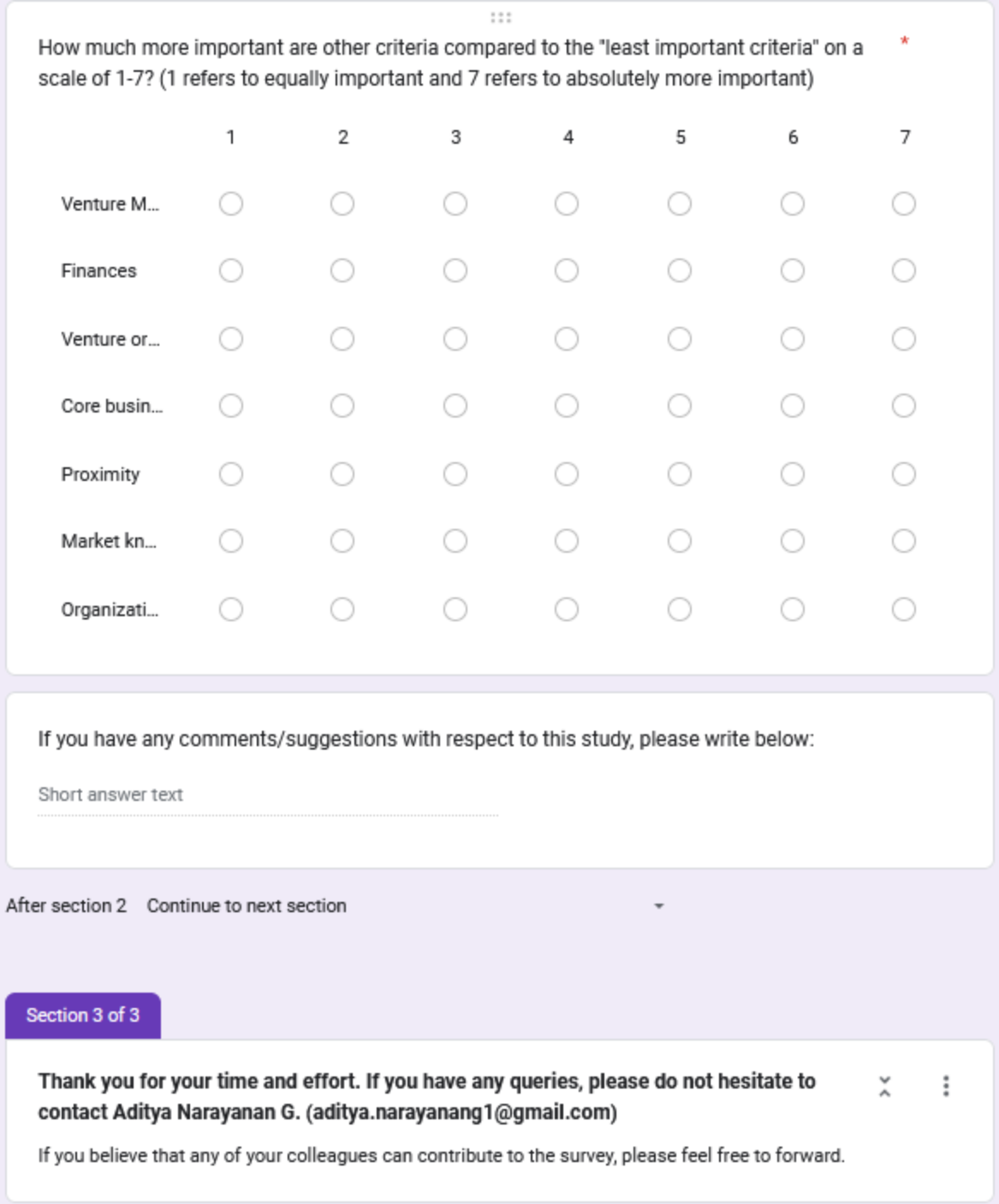
1. Venture manager
2. Finances
3. Venture organizational structure
4. Core business identity
5. Proximity
6. Market knowledge and relevancy
7. Organization culture

How much more important is the "most important criteria" compared to others on a scale of 1-7? (1 refers to equally important and 7 refers to absolutely more important) *

	1	2	3	4	5	6	7
Venture M...	○	○	○	○	○	○	○
Finances	○	○	○	○	○	○	○
Venture or...	○	○	○	○	○	○	○
Core busin...	○	○	○	○	○	○	○
Proximity	○	○	○	○	○	○	○
Market kn...	○	○	○	○	○	○	○
Organizati...	○	○	○	○	○	○	○

Which of the following criteria is the "least important" for the success of a venture? *

1. Venture manager
2. Finances
3. Venture organizational structure
4. Core business identity
5. Proximity
6. Market knowledge and relevancy
7. Organization culture



A.2 List of figures

A.3 List of tables