An exploratory study on how an accelerator program influences

entrepreneurial learning: Case of the Sri Lankan government accelerator

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Abbreviations

BSc   Bachelor of Science

CPA   Certified Public Accountant

ICT   Information & Communication Technology

ICTA   Information & Communication Technology Agency

MBA   Master of Business Administration

MSc   Masters of Science

PhD   Doctor of Philosophy

SME   Small and Medium Enterprises

Spiralation   The one and only government accelerator program of Sri Lanka

Abstract

Entrepreneurs navigate through various phases of their new venture, starting with an idea, leading towards exploiting an opportunity and finally, for some managing the growth of the new venture or for others exiting the venture through harvest or closure. For first time entrepreneurs in particular, it is important to learn the multi-disciplinary skills of entrepreneurship during this process. While a body of literature on entrepreneurial learning exists, learning the implications and applications of these discrete learning constructs has not been explored in the context of the entrepreneur's learning journey. However, the entrepreneurial journey and the resulting entrepreneurial learning during the journey must be seen as a continuum not as a series of isolated entrepreneurial learning constructs.

This research examines how entrepreneurial learning is influenced in the context of a government accelerator program. This entrepreneurship program is vital, in the context of Sri Lanka, where the government is placing priority on the Information and Communication Technology (ICT) sector as the nation recovers economically from a 30 year civil war and the tragic effects of a tsunami. ICT is already among the top (five) 5 foreign exchange earners in Sri Lanka and the government actively focuses on supporting ICT entrepreneurs.

The research methodology adopts an exploratory research design, using the case of the "one and only" government ICT entrepreneur accelerator in Sri Lanka. The primary means of data collection in this study was through semi-structured and open-ended interviews with stakeholders and texts from an on-going learning journal maintained by the participants in the accelerator program. Data was then analysed through concept mapping and thematic analysis following a perspective on theory building.

Entrepreneurial learning is relatively recent research area, in which publications on empirical and conceptual approaches began to appear from around the late 1990's. While there is a body of knowledge available on entrepreneurial learning, researchers have called for further qualitative research in order to better understand the entrepreneurial learning process empirically. The study is the first of its kind to analyse and document the influence of a government accelerator on entrepreneurial learning. Firstly, the study findings reveal how the entrepreneurs perceive entrepreneurial learning in the given context. Secondly, the findings discuss how the entrepreneurial learning constructs are intervened during the temporal entrepreneurial process. Lastly, the thesis establishes the evidence that the government accelerator influences to strengthen the entrepreneurial mindset of entrepreneurs, supports building learning networks for entrepreneurs and facilitates the creation of a learning culture in their respective infant organisations. Based on these findings, the thesis identifies seven (7) propositions embedded in the government accelerator program when researching to seek the answers for the two research questions.

The study contributes towards the theory of entrepreneurial learning on how government accelerators shape and influence entrepreneurial learning, particularly in the developing world. The study also integrates entrepreneurial learning theories by developing a conceptual model of how the facets of entrepreneurial learning are inter-related. This study makes recommendations on how future researchers could replicate, extend, and modify the findings. It also makes specific recommendations to governments and policy makers wishing to establish entrepreneurial accelerator programs.

Declaration

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Dedication

This work is dedicated to my loving wife, Mano and

my two children Savin and Saheli.

Chapter 1: Introduction

"The illiterate of the 21st century will not be those who cannot read and write,

but those who cannot learn, unlearn, and relearn"

— Alvin Toffler

Introduction

In most cases, inspired by an idea, entrepreneurs navigate through various phases of a journey to when it comes to a new entrepreneurial venture. New entrepreneurial ventures often reported to end up in failure or result in limited growth, primarily as the result of insufficient resources for survival and lack of trust from investors, customers, employees and stakeholders at large (Gavetti & Rivkin, 2007; Henderson, 1999; Levinthal, 1997; Siggelkow, 2001). In order to improve the chances of success, programs for entrepreneurs that involve various types of learning including, but not limited to, formal, informal or non-formal learning are developed (Davidson & Honig, 2003; Deakins & Freel, 1998; Rae & Carswell, 2000). A body of related literature has emerged over the past decade. While some scholars have explored this still emerging body of literature in the field of entrepreneurial learning (Harrison & Leitch, 2005; Tell, 2008; Leitch & Harrison, 2008; Man 2007; Erdélyi, 2010), it remains in its relatively early stages of development and application (Leitch & Harrison, 2008; Wang & Chugh, 2014). Accelerators select a small group of entrepreneurs for a program, which provide mentoring, resources, networking opportunities and in some cases, funding. Accelerators have been recognised over the last decade as popular around the world, primarily in the high technology space. The first accelerator was found in 2005 and today more than 300 accelerators exist around the world (Hallen, Bingham & Cohen, 2014). Governments who are attempting to promote entrepreneurship are also attempting to establish these accelerators particularly outside the USA (Mason & Brown, 2014 – p21).

Some argue that having more new ventures will not be of any help where government interests are concerned, primarily a blanket policy to support entrepreneurs should not be considered (Shane, 2009). However, if an accelerator can guide participants' new ventures towards becoming high growth potential companies, these ventures could well be of interest to governments. Inherently, through the competitive application process, companies that are selected by an accelerator are presumably more likely to succeed. However, this does not negate the additional need for entrepreneurs to learn through the experience, and yet very little is known about precisely how accelerators influence entrepreneurial learning. This study addresses this gap by providing an in-depth exploration of the influence of a specific accelerator program on entrepreneurial learning.

Research overview

Research background

Entrepreneurs are the central figures of new ventures. The primary role of the entrepreneur (McMullen & Shepherd, 2006) is to act on an identified opportunity that is perceived to be worth pursuing is. While the majority of entrepreneurs pursue opportunities in well-defined markets, entrepreneurs can also take on the role of defining new markets and market segments, or discover markets based on their experience and relationships (Sarasvathy *et. al.*, 2003).

Opportunity identification (both discovery and creation) and exploitation by entrepreneurs and entrepreneurial teams are acts of navigating through uncertainty in the identified market context. However, learning generates knowledge, which serves to reduce uncertainty (Starkey, 1996). In order to be effective in the entrepreneurial role, those wishing to become entrepreneurs must be exceptional learners (Smilor, 1987). Entrepreneurs learn from

everything – customers, suppliers, competitors, other entrepreneurs, from experience, by doing, from what works and more importantly from what does not work. The act of learning helps them to discover new knowledge and to acquire new competencies that together, become the formula for success of the new venture. Over the past decade, learning in the context of entrepreneurship and in relation to small and medium size enterprises (SMEs) has been a greater focus for exploration. Areas for deeper exploration have included learning processes (Minniti & Bygrave, 2001), learning in new ventures (Lichtenstein *et. al.*, 2007; Erikson 2003), SME growth and development (Cope & Watts, 2000; Wyer *et. al.*, 2000), innovation (Ravasi and Turati, 2005), new technology based firm formation (Fontes & Coombs, 1996), venture capital (Busenitz *et. al.*, 2014), enterprise training and learning capability (Rae 2000, 2004; Rae & Carswell 2000, 2001; Taylor and Thorpe, 2004), and the application of learning organisation constructs in relation to SMEs (Leitch *et. al.*, 2005). However, research on learning processes in entrepreneurial ventures is still at its infancy and remains one of the most overlooked areas in entrepreneurial research (Ravasi & Turati, 2005; Harrison & Leitch, 2008).

As a result, scholars have called for further research in the areas of learning at individual and collective levels within organisations, inter-organisational learning in entrepreneurial networks, learning as problem solving and experimentation, cross cultural dimensions of entrepreneurial learning, the process of unlearning and the role of organisational memory (Harrison & Leitch, 2008).

In practical terms, entrepreneurial learning may have a vital role to play in positioning new ventures for future growth. March (1991) argued that business growth, business performance and increased competitive advantage depend on the entrepreneur's or entrepreneurial team's

ability to learn. Mintzberg (1990) also highlighted business performance as an indicator of the effectiveness of the learning process.

From a research perspective, this study examines the influence of entrepreneurial learning as experienced by participants during an accelerator program in order to refine and consolidate an understanding of what constitutes more effective entrepreneurial learning and its outcomes.

Research aims

Governments around the world have accepted entrepreneurship as an important constituent of economic growth and scholars have subsequently examined many facets of entrepreneurship, including entrepreneurial learning, incubators, and the strategic growth of entrepreneurial ventures. Furthermore, the recent emergence of entrepreneurial accelerators around the world, including governments, has gained popularity among industry practitioners and policy makers. However, the academic literature on accelerators is still in its infancy. Even though scholars have distinguished accelerators from incubators, entrepreneurship education and management training, the learning that takes place within an accelerator cannot be ignored. Therefore, this exploratory study aims to discover how an accelerator influences entrepreneurial learning.

Research questions

Even though governments have acknowledged that entrepreneurs have a crucial role in determining the future prosperity of their respective nations, scholars have not examined the phenomenon of accelerators and their influence on entrepreneurial learning. This phenomenon is very specific from one region to another and from one country to another, as research shows that what works in one place will not work in another place (Foster *et. al.*, 2013).

The overarching research question for this thesis is: how is entrepreneurial learning influenced over the duration and context of an accelerator program? To research this specifically, two key questions are defined as follows:

- What does entrepreneurial learning mean?

- How does a government accelerator influence the entrepreneurial learning of the individual entrepreneur, the entrepreneurial team and their infant new venture?

This research takes as a case study, a government accelerator in Sri Lanka, selected principally for its focus on the learning experience of the participants. The selected case study is both purposeful and convenient. Purposeful as the case exhibits a structured program with defined boundaries. It has multiple cohorts that provide sufficient variation among the data, is newly developed to heighten the interest in the learning experience, and is not profit motivated, which strengthens the focus on the individuals, the teams and the development of the venture without compromising the fundamental steps of venture development for the race to profit. Although the objective of the accelerator is to produce viable and sustainable ventures, the particular feature of this government-supported accelerator also sees the firms as exemplars of cultural change. These sets circumstances make the selected accelerator program a purposeful sample primed with learning experience motives, equally prioritised with new venture survival and profits.

The case study selection is also convenient as it is a program in which the researcher, a Sri Lankan expatriate, has had first hand involvement during its development. It has a strong and close relationship with the government department, providing for a program and an accelerator operating in a field of knowledge and expertise known to the researcher. Some countries are promoting technology specific entrepreneurship and this proposition is equally observable in

South Asia. Sri Lanka, as one of the top five emerging markets, is focusing on building high technology entrepreneurs to accelerate the development efforts of the country. As such, this research is an exploratory study to answer the overarching question of how an accelerator influence entrepreneurial learning.

Research significance

The entrepreneurial learning literature demonstrates that learning concepts on entrepreneurship are embedded in a variety of ways. For example, there is learning in the opportunity recognition and exploitation processes, the role of experience and experiential learning, the distinction between learning as a process and knowledge as the outcome of that process are revealed to be important. The dynamics of learning processes and outcomes within and between organisations are also highly relevant, and to some extent the relationships between learning and organisational growth and performance, which may underpin entrepreneurial success. However, yet to be explored in detail is the nature of learning for individuals and groups within an entrepreneurial organisation, the nature of learning between organisations within entrepreneurial networks, learning as problem solving and experimentation, cross cultural learning dimensions of born global organisations and the process of unlearning and organisational memory. This study contributes to a greater understanding of these areas of entrepreneurial learning.

The level of significance of the research is twofold. First, the study provides needed academic insight into how entrepreneurial learning is experienced by individuals and teams and how this learning interacts with an infant organisation. Second, there are few studies on learning within the accelerator context and even fewer examples that have conducted research on government accelerators. This indicates that there is little comprehensive understanding of entrepreneurship

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accelerator programs and how they impact on the entrepreneurial learning of participants within a government accelerator program.

There is a high level of practical significance associated with this area of study as well. The findings contribute to improving accelerator services and to supporting better outcomes for new entrepreneurial ventures. In this instance, the nature of the findings allows a number of stakeholder groups that are involved with accelerators to potentially achieve more effective results.

Positioning with the literature

The research focuses on understanding the influence of the Sri Lankan government accelerator, known as the "Spiralation" program, on the entrepreneurial learning of the accelerator participants. Governments around the world are focusing on developing entrepreneurs and this phenomenon is gaining attention. It is evident that the desired long-term results can be achieved through government related programs that are developed in line with the needs of the given learning scenarios (Wiklund, Patzelt & Shepherd, 2009). The support from the government side for these kinds of programs could be particularly useful due to its capacity to positively influence the entrepreneurs.

Entrepreneurs are often fast learners (Rae, 2005) yet first time entrepreneurs particularly have to learn many aspects of this multi-disciplinary subject. As a result, new venture accelerators are growing in number due to the apparent learning benefits that they offer. One of the main purported benefits is that learning is accelerated by observing the mistakes of others that may then be related back to a participant's entrepreneurial venture. This is assisted by a second aspect whereby specific partners can be identified with the highest level of knowledge about

the various aspects of a new venture (Starkey, 1996). Rae (2017) argues that cross boundary learning interventions beyond the centre periphery among these partners enhance the entrepreneurial learning experience. An appropriate approach that helps steer new ventures towards positive results is one of the main aspects that eventually contributes to achieving beneficial results through new venture accelerators.

In an era following a 30 year long civil war and a devastating tsunami, Sri Lanka is focusing on the development of the country and the development of entrepreneurs is among the priorities. Sri Lanka shows great potential to leverage entrepreneurship to position Sri Lanka in the global context. There are already companies that have invested in Sri Lanka with a view to benefit from this positioning, particularly in the ICT sector. Sri Lanka in general, has an education system that is capable of supporting the development of the appropriate knowledge base for professionals in given roles. The government has therefore started such initiatives as the Spiralation program to provide the technical skills, the managerial and entrepreneurial skills necessary to foster entrepreneurial ventures.

The role of the ICT industry in this context is also highly important considering the potential and the fit for the country. There are a number of entrepreneurial ICT companies in Sri Lanka that have made great progress in the global landscape and have been able to contribute to achieving positive results for the country. A focus on entrepreneurial development will allow new potential companies to achieve further beneficial results and to build appropriate long-term relationships with clients. On the other hand, the entrepreneurs will be motivated to make future efforts to develop their own firms and to grow. This has been the case of the ICT industry in Sri Lanka to date and it is likely that the entrepreneurs involved will be able to continue to achieve significant results through such growth in the future.

While the ICT industry is fertile ground for the development of entrepreneurs, it is also important to note that the role of entrepreneurship is not always optimised in many instances. This is because new companies struggle to clearly identify market opportunities, to find partners, to raise capital or to manage the transition from idea to sustainable business. However, given that entrepreneurs face different levels of difficulties, targeted support from the government side is able to assist new companies to perform in line with their particular projected scenarios, filling specific skill gaps where needed.

The Sri Lankan government has thus developed the Spiralation program with a specific focus on improving entrepreneur related skills in the ICT sector. This will ensure that the entrepreneurs will be able to achieve positive results in the context of the development of competencies and knowledge. Thus, the program is designed to provide the participants with better results in the future and consequently will attract further entrepreneurs. In this context, this research explores the specific influence of entrepreneurial learning as experienced by participants during the Sri Lankan government's accelerator program.

The literature review in chapter two evaluates the theoretical constructs and concepts associated with the area of study and how they link with the research in order to discover the possible influence of the government accelerator on entrepreneurial learning. The development of the entrepreneurs undoubtedly links with a learning process. Thus the development of the entrepreneurs should support them to carry out their business as well as to facilitate their learning through the process. The role of the state supporting program is to ensure these aspects successfully support to lead to greater success.

The literature review highlights the varied discussion on various learning methods associated with entrepreneurial learning. Many of the studies indicate that there are diverse approaches towards this area of learning as entrepreneurs seek to achieve results. This highlights the fact that entrepreneurs are highly motivated by the need to achieve (Baron & Ensley 2006) in different ways. The literature on entrepreneurial learning cuts across both experiential learning and organisational learning. Previous entrepreneurial experience provides beneficial results for start-up entrepreneurs (Morris, Kurtako & Schindehutte, 2012). The market in which entrepreneurs operate is also another aspect that facilitate leaning (Luger & Koo, 2005). Markets may also change, offering experiential lessons from which the entrepreneurial learners may benefit. With the right market focus, the entrepreneurs will be able to better identify the needs of consumers and how these needs be catered for. This will allow the entrepreneurs to attain desired results through their entrepreneurial venture, by providing the consumers with clear benefits. It is also evident that entrepreneurs will be able to achieve better results through improved and appropriately focused activities. Targeted organisational learning processes are clearly important components in entrepreneurial learning (Molina and Callahan, 2009). The identification of specific learning approaches for individual entrepreneurs will maximise the potential of sustaining any competitive advantage that is associated with the identified opportunity (Alvarez and Barney, 2007). Based on the literature review, the author has derived a conceptual framework, referred to as the entrepreneurial learning nexus, based on three contrasting learning theories that scholars have identified as needing further research.

Entrepreneurs, by definition, engage with the activities of starting a venture and this means that they will learn through their active participation in the process. An accelerator is a specific context where the notion of learning is deliberately enabled. Adopting a well-targeted learning approach should assist entrepreneurs to better identify the steps that they have to take. This

leads them to better decisions and making sure that their business aligns with the needs and expectations of their markets (Knockaert *et. al.,* 2011). Development of the right action will allow entrepreneurs to learn and share the learning with the other co-founders of the company. As such, the literature review discusses in detail the entrepreneurial learning from related learning contexts in the literature.

This naturally leads to the justification for the government-supported accelerator. The provision of government support contributes to the mitigation of the costs of entrepreneurship. This enhances the ability of the entrepreneurs and their teams to gain insights to new competencies and new knowledge (Smilor, 1987). However, it is also vital to note that these outcomes could prove to be highly useful in terms of learning as well. This is due to the fact that there are many new entrepreneurs who could be working together. Relationships are formulated in the context of the emerging body of knowledge with accelerators.

It is evident that this learning does not take place in a direct and a straightforward manner. This is due to the fact that learning is a complex and multidimensional process. In addition, it is also evident that there are many different learning approaches taking place at each stage of the development of a venture. Thus, the learning process needs to identify in this light in order for the benefits of the learning to endure in the long term (Harrison & Leitch, 2008). The studies identify the fact that most entrepreneurs tend to be intuitive leaners in conceiving their ventures, while they also continue to contribute to learning through later stages of the venture's development. While at the early stages, learning may be an individual exercise, collective learning takes place as the venture develops. Thus appreciating the overall entrepreneurial learning process associated with entrepreneurs will contribute to achieving better development processes and results for the new organisation. As such, the multi-faceted entrepreneurial

learning experience, as discussed in the literature review, is taken into account when answering the research questions of the study.

Research methods used

The research strategy for the study was developed to further explore the influence of an accelerator on entrepreneurial learning, which in turn confronts many of the difficulties in using inductive and deductive principles.

Ontologically, the focus of the study is located on the subjective end of the realist-subjectivist spectrum. Entrepreneurial learning is a conceptual, individual and social construction and the experience of entrepreneurial learning has little directly observable manifestation outside of the participant learner. Knowledge of the entrepreneurial learning experience resides with the individual learners and this places the study of the phenomenon in the interpretive field as the participant interprets their experience and the researcher interprets the participant provided data recorded from that experience. Therefore, the methods adopted for this research are qualitative in nature and the research techniques borrowed from the narrative (Hjorth & Steyaert 2004; Polkinghorne 1988) and phenomenology (Giogi, 2010; Creswell, 2003) research domains.

By contrast, from an epistemological standpoint, alternative approaches were used to interrogate the data from both a realist and subjectivist perspective (Braun & Clarke, 2012). Given the context of Sri Lankan government accelerator Spiralation, this becomes a purposive sample and a useful case for this research. Using the Spiralation program as a case, interview data was collected from three cohorts of program participants, complemented by data collected regularly from participants, through an on-going learning journal. The data was also extended with participant mentor and organiser interviews. In sum, 67 interviews were collected along

with data from the learning journals. The data was then analysed using a multi-paradigmatic lens (Gioia & Pitre, 1990) approaching the data with both realist and subjectivist stances. A realist stance was adopted by analysing the data through the lens of a theory driven conceptual framework (the entrepreneurial learning nexus) as developed through the literature. In essence, this viewpoint uses thematic analysis and directed coding which searches objectively for evidence among the data that resonates with the theory. To provide a counterpoint to this method a subjectivist view of the data used thematic analysis and non-directed or conventional coding to develop a conceptual framework of ideas constructed from data. To complete the analysis, a third technique was used drawn from narrative methods to gain an understanding of what the participants themselves understood entrepreneurial learning to mean (Morgan & Smircich, 1980).

A multi-paradigm approach offered the possibility of creating insights taking different epistemological facets (Gioia & Pitre, 1990). For this purpose, the realist view as well as the subjectivist view of the data were juxtaposed to synthesise contrasting views in a hybrid approach. The interpretivist paradigm is based on the proposal that people construct their own realities, socially and symbolically (Morgan & Smircich, 1980), which is more inductive in nature. The realist paradigm seeks to examine the regularities and relationships that lead to generalisations and universal principles, which is more deductive in nature. When the findings from contrasting methods are synthesised, new insights and new knowledge contribute to theory building, based on the philosophy discussed above.

According to the adopted research philosophy, primary data collection was carried out using semi-structured interviews through a participating learning journal. In addition, Spiralation provided a secondary data set to describe the participants and their backgrounds for part of the

data analysis. In order to answer the first research question, the narrations of participants were codified using concept maps. To respond to the second research question, a directed coding strategy was employed for deductive analysis and a conventional coding strategy was employed for inductive analysis. Both were carried out using thematic analysis methods to answer the second research question.

Unstructured interviews were used in the collection of primary data. Using unstructured interviews ensures that the collected data is in line with the needs and the expectations of the study and that the objectives of the study could be achieved. Unstructured data assists in identifying the learning experience and in clarifying how the entrepreneurs have applied the experience that they have gained through the learning process, in the context of building of the company. Allowing the participants to discuss their experiences in detail made it possible for the study to capture specific participants' approaches towards learning and to identify how these approaches contributed to the overall benefits associated with the process.

The NVivo and UCINET software platforms were used for analysis of the qualitative data. These data and analysis management software tools were chosen due to the fact that qualitative information is generally messy and disaggregated in comparison with quantitative data. Qualitative data collection takes place in line with the needs and the expectations of the participants and is recorded in ways that scatter relevant data fragments throughout the data set. Software tools do not replace the interpretive responsibility of the researcher but assist immensely in organising and managing the data, while also providing a convenient means to portray the findings.

Analysis and findings of the study

Primary and secondary data were analysed using concept maps and thematic analysis to obtain the study findings. These findings indicate that the different areas of the learning outcomes have been behaving in different contexts; in other words, this highlights the fact that learning has been taking place in a different and a complex manner for all participants.

The participants used concept maps for assessing the nature of the definition of entrepreneurial learning. Various interpretations of the concept maps have been identified and overall entrepreneurial learning from the participants' perspective seemed to be best represented by the concepts of 'learning through practice', 'contrasting roles', 'learning from the past and modelling the future', 'exploiting and learning from market', and 'learning from individuals and the firm'. Concept mapping the participants' views reveals that entrepreneurial learning is largely considered contextual and broadly involves sequential learning from the market initially and subsequently moving to learning that lead the market. This view contributes to and extends the single loop, double loop and triple loop-learning construct from organisational learning theory into the entrepreneurship context as new ventures are forming. While this analysis assists in generally describing the contexts for learning, it does not expose or detail the entrepreneurial learning experience and hence led to the next step of a closer analysis of the data through directed and conventional coding.

Through the directed coding, evidence of the learning nexus conceptual model was found to support the case for participant learning to occur across the exploratory-exploitative, individual-collective, and intuitive-sensing continua. The coding reveals greater detail on what and how the participants experience the learning constructs, but importantly, the directed coding analysis finds that learning is a process that involves many aspects and opportunities

for the participant and each of these learning approaches should be integrated and interconnected. Thus, entrepreneurial learning involves the interconnectedness of learning approaches as indicated by the entrepreneurial learning nexus.

Conventional coding engages the data differently in order to construct themes that the data suggests. Through this approach, three major themes become apparent. First, the participants seem to experience a significant cognitive shift as a result of the learning experience. Perhaps more importantly, this analysis also reveals that entrepreneurial learning is supported by learning support groups, as exposed by the second theme; finally, a learning culture reflects the third major theme. Chapter four details the development of these themes with further clarity, with the overall analysis from the chapter presenting seven propositions that arise through the conceptual and thematic analysis that are expanded and discussed in the concluding chapter.

Discussion and conclusion

The concluding chapter discusses the seven (7) identified propositions in detail, synthesising relevant theoretical models which extend and derive the existing theoretical constructs for entrepreneurial learning. These are (1) a high degree of interconnectedness exists in the entrepreneurial learning constructs, (2) collective activities among the founding team members influence a shift from individual learning to collective entrepreneurial learning that leads towards strategic intent at the level of the firm, (3) exploratory learning and exploitative learning takes place within the new venture in a recursive manner when navigating from one context to another, or in parallel across different contexts, (4) unless and until stakeholder trust is established, intuitive learning practices dominate the sensing learning practices, (5) government accelerators have the effect of influencing participants towards a positive cognitive

shift towards entrepreneurial learning, (6) government accelerator partnerships with industry, universities, chambers and related bodies and the ability to extend these services to the learning participants, significantly increases the influence of the government accelerator on entrepreneurial learning, (7) teams in an accelerator program when engaged in experiential action learning, influences towards building a learning organisation culture.

The findings suggest that entrepreneurial learning when considered in the accelerator context, is not only contextual to the program but more specifically, contextual to exploring and exploiting a market opportunity. However, the contextual definition of entrepreneurial learning belies the complexity of the learning experience and fails to recognise more specifically how that learning experience is supported.

Chapter five illustrates in figure 44 and discusses a conceptual model for entrepreneurial learning. The figure attempts to convey the complexity of the entrepreneurial learning experience as an interplay between learning modes. The participants spiral through the entrepreneurial learning experience moving from one extreme of the explorative-exploitative and individual-collective learning continuums to the other, while periodically developing sufficient trust in the learning context to 'let go' of the intuitive reinforcing learning to challenge and test ideas through sensing learning patterns. Figure 46 then portrays the entrepreneurial learning framework that contains the temporal learning dimension and scope dimension extending the traditional exploratory and exploitative learning constructs, when answering to RQ1. Development of the venture through exploratory market learning (learning from the market) pivots to a phase of exploitative market learning (learn to lead the market) based on the research findings.

Thus, the above discussion of the learning aspects indicates the importance of learning and the eventual results that the participants may reach through these activities. Within the entrepreneurial learning conceptual model and framework, it is evident how the different entrepreneurial learning methods interact during the entrepreneurial learning journey. Entrepreneurial learning therefore is not a distinct type of learning but rather a description of a container of learning. The experience of entrepreneurial learning for participants represents a complex interaction of learning modes and the accelerator context provides prescriptive learning elements that support the development of both individuals and an infant organisation. Consequently, entrepreneurial learning within an accelerator context is not simply an individual construct; it also represents the learning of an infant organisation to shape a culture and a learning environment that can serve the organisation well beyond the early survival of a firm through to more advanced levels of maturity.

Finally, the conclusion chapter discusses the implications of the findings of this research to policy makers, practitioners as well as educators.

Contributions

Rae's body of work on entrepreneurial learning (Rae, 2005, 2010, 2012, 2013, 2015, 2017; Rae & Carswell, 2000) provides the foundation for approaching the neglected areas of entrepreneurial learning. In the triadic model for entrepreneurial learning, Rae (2007) identifies three themes of entrepreneurial learning, as discussed in the literature review: building the entrepreneurial identity personally and socially, contextual learning and negotiated enterprise, depicting the process of negotiating relationships with customers, investors and other stakeholders including partners and employees, to build the identity of the enterprise. The thesis also considers the researchers' "call outs" for further research on this phenomenon (see Wang and Chugh, 2014 for a complete discussion). These highlight the need to further investigate areas in entrepreneurial learning found to be inadequately examined in the past. The thesis contributes to an understanding of the nuances of entrepreneurial learning at an individual, team and at an infant new venture level, so extending and building on the existing entrepreneurial learning literature.

This thesis also contributes by demonstrating how individual learning, collective learning, exploratory learning, exploitative learning, intuitive learning and sensing learning are intertwined in a recursive manner depicted in the conceptual framework using a temporal view as depicted in figure 44 of chapter 5. The progression through the spiral represents the contextual competency growth, starting at an individual level and progressing via collective learning to infant organisational strategic intent. Contextual competencies are the specific competencies required for new venturing to achieve a competitive advantage for a given venture, which should be context specific. For any given reason, if the venturing process pivots, the spiral learning framework would be re-initialised, as explained in the discussion chapter. This is new knowledge added to the traditional entrepreneurial learning literature, that has been

in the past treated as a kind of 'black-box'. As such, the thesis contributes to the literature by providing the nuances of entrepreneurial learning as demonstrated in the framework, extending the existing traditional high level entrepreneurial learning frameworks (Rae, 2005; Pittaway and Thorpe, 2012).

Secondly, in contrast to the traditional organisational learning literature, which is encompassed in the entrepreneurial learning of single loop, double loop and triple loop learning, the thesis contributes by describing the learning phenomena as learning from the market first and leading the market next, when it comes to entrepreneurial learning.

Thirdly, extending the contextual learning theory of entrepreneurial learning, the thesis contributes to the literature by conceptualising government accelerator settings which influence a positive mindset among the participants engaged in entrepreneurial learning, with the learning network contributing to the development of a learning culture. This learning culture is the result of the 'aha boom' phenomenon, theorised in the thesis as starting at an individual level, growing into collective learning and potentially resulting in an organisational learning culture.

As such, the thesis integrates the theories of entrepreneurial learning in developing a conceptual framework and also adds a critical piece of theory drawn from the learner's perspective, so effectively taking the individual, team and the infant organisation into account.

Key limitations

The research has many limitations inherent in a theory building research design. It is evident that new insights will have to be further tested through formulated studies that confirm the

extent to which the findings can be generalised. Addressing the limitations of this study will require examining the learning experience of many different forms of accelerators in many different places. This study examined only one accelerator that was government backed and therefore less driven by a profit motive and more by   a learning and culture change motive. How the context of accelerators change the learning experience is still work to be undertaken.

One of the main weaknesses associated with this study is the self-reported nature of the data. As such the respondents may not provide a genuine and accurate account of their experience for fear that negative observations could have implications for their position in the accelerator program. Thus, although reassurances were in place and efforts were made to build trust, the respondents may have been reluctant to provide information about various areas and issues associated with the discussion. Studies that are able to ensure anonymity may observe greater variations in the results than those acquired through this study.

Another limitation could be found in the data analysis methods using interpretive coding by one coder. Using different qualitative analysis software such as Leximancer or different interpretations made by others and/or multiple coders may result in variations of the findings. While this is a limitation, it is also the very essence of theory building research that aims to provide different views and accounts of theory that may explain the phenomenon under investigation. The use of multiple techniques within the study was designed to expose multiple views that to some extent counter the limitations noted here. Nevertheless, it remains that different approaches by different researchers may reveal insights that differ or oppose those found here.

The purposive and convenience sampling frame may raise concerns with limitations. The sampling method was limited to a government accelerator in a developing economy, Sri Lanka, in a particular industry sector, ICT. Clearly, studies that provide cross-referencing and comparative data from other contexts could improve the generalisability and potential transferability of the findings. However, again for the purposes of this study, the depth of the research was prioritised over breadth in order to achieve a deep but albeit delimited understanding of the entrepreneurial learning experience in an accelerator context.

While the above limitations are valid, the intention of this study has been upheld and it is for future studies to test and explore a variety of contexts and methods to build further on the theory development of entrepreneurial learning, particularly as it relates to an accelerator program.

Chapter 2: Literature Review

> "Those who don't know history are doomed to repeat it."
>
> — Edmund Burke

Introduction

Entrepreneurship, or facets of entrepreneurship, can be learned (Drucker, 1985). Entrepreneurial learning has a significant and positive impact on entrepreneurial success, as is well evidenced through literature (Man, 2007; Minniti & Bygrave, 2001; Rae & Carswell, 2000; Sullivan, 2000; Young & Sexton, 2007; Rae, 2017, Secundo *et. al.*, 2017). Entrepreneurs learn through formal, informal and non-formal learning activities such as early life, education, career experience, social life and through role models (Erikson, 2003; Lans *et. al.*, 2008; Politis and Gabrielsson, 2002; Rae & Carswell, 2000). Entrepreneurial experience is a process through which a critical analysis of the experiences of entrepreneurs themselves, as well as other entrepreneurs, will help to derive conceptual models. This should be viewed beyond merely repeating what is successful and avoiding the repetition of mistakes. Entrepreneurship learning is multidimensional and a body of related literature is available. However, the influence of different contexts for entrepreneurial learning has not been sufficiently explored (Isenberg , 2010; Cope, 2011).

In order to lay a solid foundation for this research, this chapter examines what encompasses entrepreneurial learning, including entrepreneurship, the entrepreneurial process, entrepreneurial competencies, entrepreneurial behaviours and entrepreneurial opportunity. The role of government accelerators differentiates them from traditional incubators and related models are also discussed. In order to explore the influence of the government accelerator on entrepreneurial learning, this chapter presents a comprehensive literature review of relevant

entrepreneurial learning, highlighting the overlaps between entrepreneurial learning and organisational learning.

Entrepreneurship

The entrepreneur is the central figure of entrepreneurship. Acting on an identified opportunity that is worth pursing is the primary role of the entrepreneur (McMullen & Shepherd, 2006). As Minniti and Bygrave (2001, p7) assert, "entrepreneurship is a process of learning, and a theory of entrepreneurship requires a theory of learning". Many scholars have given attention to the entrepreneurial process and defined it to include opportunity creation, opportunity discovery and opportunity recognition. At times, the same concepts have been used in different processes and at other times, the same processes have been characterised by different concepts, all of which may lead to confusion (Baron, 2008). Alvarez & Barney (2007) defined a simplified process resulting from two main entrepreneurial sub processes: the discovery/creation process and the exploitation process of entrepreneurial opportunities.

The discovery process involves the entrepreneur identifying existing opportunities or gaps in the market, whereas the creation process involves the entrepreneur actively creating new opportunities. In other words, unlike the discovery process, in the creation process, the opportunity does not exist without the activity of an entrepreneur. This phase is referred to as the opportunity exploration. Alvarez & Barney (2007) argued that in order to carry out the entrepreneurial process, the entrepreneur will undertake such tasks as leadership, decision making, managing human resource practices, developing strategy, preparing the finances and marketing, all with a view to sustaining a competitive advantage. During the execution of these tasks during the opportunity exploitation, entrepreneurs interpret available information and give meaning to it in different ways (Barreto 2012), which gives rise to variations in outcomes.

Different terminology has been used by prior researchers when discussing the characteristics of entrepreneurs. Capability, competency, skills, expertise and acumen are all used interchangeably in the literature. Competent behaviour results from a combination of factors including an individual's personality traits, knowledge and skills and therefore it is not surprising that the boundaries of these terms are ill-defined. This study uses the term competency as a generalised term when referring to this construct.

A need for achievement, and an internal locus of control, cognition and human capital have been found to be the key competencies of an entrepreneur at a composite level (Di Zhang & Bruning 2011). There exists an interplay among human capital, cognition and learning that is generalisable to activities and actions central to the entrepreneurial process (Haynie, Shepherd & Patzelt 2012). During the entrepreneurial process the entrepreneur learns various entrepreneurial competencies. Both the ability of the entrepreneur to learn and to be able to access learning opportunities to support competencies, are important concepts in entrepreneurial development (Aouni & Surlemont, 2009).

Based on the literature, a) opportunity, b) risk propensity and c) human capital are the most widely researched competencies of an entrepreneur. With respect to opportunity, opportunity alertness, opportunity discovery, opportunity creation and opportunity exploitation have been identified as key capabilities that define an entrepreneur (Baron & Ensley 2006; De Carolis & Saparito 2006; MacKo & Tyszka 2009; Shepherd, Haynie & McMullen 2012; Tang, Kacmar & Busenitz 2012; Welpe *et. al.,* 2012; Wiklund & Shepherd 2011). The concept of opportunity has its roots in Austrian economics and the role of entrepreneurs in economic growth has historically been divided between arbitrageurs (Hayek 1945; Kirzner, 1973) and innovators

(Schumpeter 1934). One of the fundamental questions of entrepreneurship research, raised by Shane and Venkataraman (2000) is: why, when and how opportunities for the creation of goods and services come into existence; this draws much research attention to the attributes, forms, origins and life cycles of the entrepreneurial opportunity. As such, research is increasingly focused on the competencies at individual, team and organisational levels to identify, evaluate and exploit/explore entrepreneurial opportunities. The definitions of entrepreneurial opportunity are quite fragmented (Hansen, Shrader & Monllor, 2011) and lack consistency in the entrepreneurship literature. Hansen, Shrader & Monllor (2011) review 19 years of entrepreneurial opportunity, related research and lists six worthy composite conceptual definitions. An entrepreneurial opportunity is viewed as a subjective perception or an objective existence. This remains a controversial issue in the entrepreneurship literature.

In conclusion, the size, life cycle, profitability and growth potential of entrepreneurial opportunities can largely determine whether they are worth pursuing with any chance of success. These characteristics of entrepreneurial opportunities are not stable; instead they interact with the external environment and the entrepreneurs pursuing them, which makes opportunity-based research more complex. New ventures are "new," "active," and "independent" (Luger & Koo 2005). Both in research and in practice, it is shown that entrepreneurial firms, that is, new ventures and that consistently pursue opportunities for growth and development, are the engine of regional/national economic development. However, Davidsson (2015) asserts that opportunity is an illusive concept and suggests external enablers, new venture ideas and opportunity confidence as the re-conceptualised constructs for the prospective theory of entrepreneurial process.
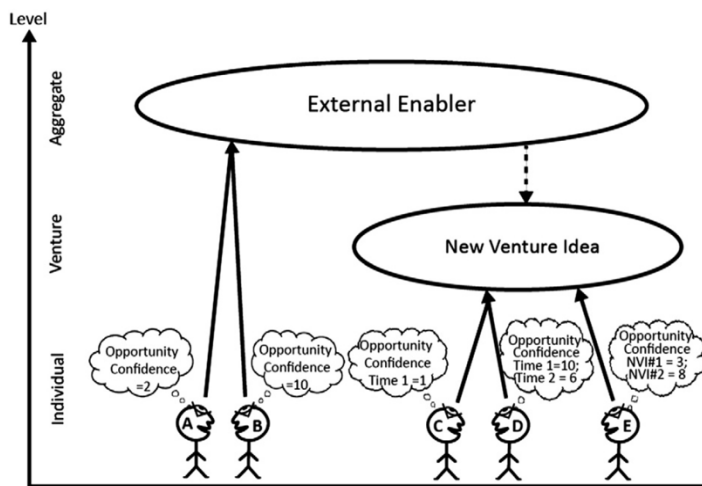
Fig. 1. External Enablers, New Venture Ideas, and Opportunity Confidence.

Figure 1 Re-conceptualised constructs for opportunity (Davidsson, 2015)

Risk propensity and perception are also shown to play an integral role in entrepreneurial success (Barbosa & Fayolle, 2010; Caliendo, Fossen & Kritikos, 2009; Palich & Ray Bagby, 1995). Research shows that risk management differentiates entrepreneurs from non-entrepreneurs (Caliendo *et. al.*, 2009).

The concept of human capital is perceived as taking multiple elements into account including entrepreneurial experience, education and social network (Baron & Markman 2003; De Carolis, Litzky & Eddleston 2009; De Carolis & Saparito 2006; Fischer & Reuber 2011; Knockaert *et. al.* 2011; Thornton, Ribeiro-Soriano & Urbano 2011; Wennberg, Wiklund & Wright 2011; Zheng 2012). The human capital dimensions play an integral role in opportunity identification as well as opportunity exploitation efforts.

Entrepreneurial competency is the capability to identify an entrepreneurial/business opportunity and to develop the resource base needed to pursue the opportunity. The concept of the entrepreneurial competencies has become increasingly important in the field of

entrepreneurship theory, strategic management theory, the resource-based view, organisational learning and network theory.

Consistent with the existing entrepreneurial opportunity based entrepreneurship research, we define entrepreneurial competency as the capability to identify, evaluate, exploit and/or explore entrepreneurial/business opportunities. The concept of entrepreneurial competencies can be applied to individuals, entrepreneurial teams as well as firms. Augier and Teece (2007) has identified the competencies required in the entrepreneurial process to exploit opportunities at the firm level.

A review of the literature also reveals that the concepts of entrepreneurial competency and dynamic capability overlap or are substitutable in the strategic management literature. Arthurs & Busenitz (2006) argue that while entrepreneurial competency refers to the capabilities to identify a new opportunity and to develop or acquire the resources needed to pursue the opportunity, dynamic capabilities on the other hand, can be viewed as the adjustment and reconfiguration of the resource base in conjunction with an extant opportunity. According to the statement of Arthurs & Busenitz (2006), entrepreneurial competency is opportunity oriented while dynamic capability is change oriented.

Some scholars view entrepreneurial competencies as needed to start a business and managerial competencies as needed to grow a business (Colombo and Grilli, 2005; Nuthall, 2006). However, Man *et. al.* (2002) argues that entrepreneurial competencies require skills in both areas. Man & Lau (2005) reasoned that entrepreneurial competencies are comprised of components that are deeply rooted in a person's background (traits, personality, attitudes, social role and self-image) as well as those that can be acquired at work or through training

and education (skills, knowledge and experience). They classify the capabilities into six (6) areas: opportunity competencies, relationship competencies, conceptual competencies, organising competencies, strategic competencies and commitment competencies.

Entrepreneurial behaviours are those behaviours that lead to the formation of a venture, that is, anew venture, which is one of the outcomes of an entrepreneurial process. This process includes the identification , evaluation , exploration , and exploitation of the previously discussed entrepreneurial opportunities. A new venture, has the potential to attain significant size and profitability. This study will use the term 'new venture'as a generalised term for this construct.

Stakeholders and how entrepreneurial learning contributes

Entrepreneurial learning is linked with the stakeholder benefits; if it is not, this indicates that they will not be able to achieve positive results in long term outcomes. There are many stakeholders involved specially in knowledge intensive industries such as the ICT industry and all these stakeholders will want to ensure that the benefits are achieved in the long term context (de Soto, 2006; Secundo, 2017). It is also vital that the benefits and outcomes are achieved through ensuring that each stakeholder group receives appropriate results in the future. ICT competencies alone will not benefit the stakeholders and yet most entrepreneurs will not have the exposure to exploit ICT opportunities. As such, entrepreneurial learning to gain competencies in exploiting the opportunities will have important stakeholder benefits.

The entrepreneurs are the parties who have the business idea; generally, they have identified a niche in the market in which they can provide products or services. This will ensure that they work towards providing the required services and benefits in this regard (Gattringer, Hutterer

& Strehl, 2014). The products or services in this context could allow the companies to develop a competitive advantage and to achieve results in line with these expectations in the future. Thus the role of entrepreneurial learning for entrepreneurs is vital and as such, is the primary stakeholder.

However, not all entrepreneurs are equal. Entrepreneurial learning plays an important part in the work context of first time entrepreneurs due to the fact such learning will allow them to develop a deeper conceptual affiliation to the industry and current products and the services (Spitzeck & Hansen, 2010). This will allow them to contribute to improving the success of the unique products or services reaching the local or international market (Dedeoğlu & Demirer, 2015). As such, first time entrepreneurs can be highlighted as a special type of primary stakeholders of entrepreneurial learning.

As argued by Shane & Venkataraman (2000), opportunity recognition for new venture creation lies at the heart of the entrepreneurship research. Opportunity is a significant learning process for the entrepreneurial team as individuals, as well as collectively and at a broader level for the new venture, where know-how and the integration of information perception and interpretation skills come into play. Many authors have observed the concept of innovative opportunities (Gaglio, 1997; De Koning 1999; Singh *et. al.*, 1999; Ardichvili *et. al.*, 2003) that are dependent upon values, motivations, cognitive behaviours, knowledge and connections to the external environment. Based on these factors, opportunities may emerge from an idea as the result of sensing a need or possibility of a change, and progress into a conceptual vision through intermediate transformations. However, the process takes place over time and action is inherently uncertain. These entrepreneurial actions result in the creations of new products, new services or new ventures (McMullen & Shepherd, 2006).
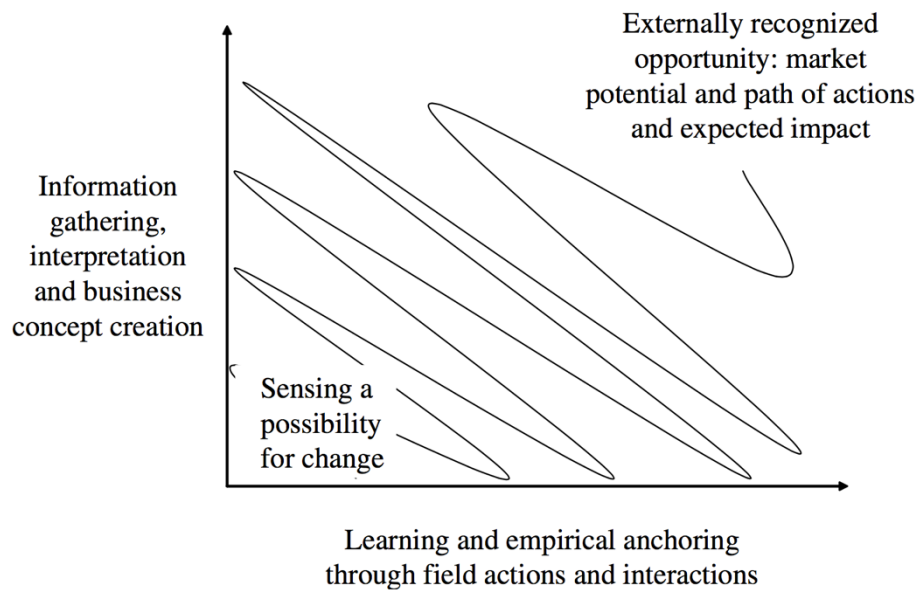
Figure 2 Opportunity recognition as a learning process (Blanco, 2007)

Exploratory and exploitative knowledge is encompassed in the opportunity recognition process (Levinthal & March, 1993). Exploitative knowledge seems to be more applicable in finding means to ends, whereas exploratory knowledge facilitates the discovery of available options, in other words, finding the options for possible ends. In either case, the knowledge discovery process is not linear or systematic. Field experimentation and face-to-face encounters seem to add value in the opportunity recognition process (Blanco, 2007). However, Daft & Weick (1984) argue that no basis for cause and effect exists in highly novel settings, but enactment and interpretation may result in opportunity discovery. Practitioners and researchers have identified information selection process from the massive amount of information that is available today, (Blanco, 2007) even though its significance has been acknowledged since Simon (1982).
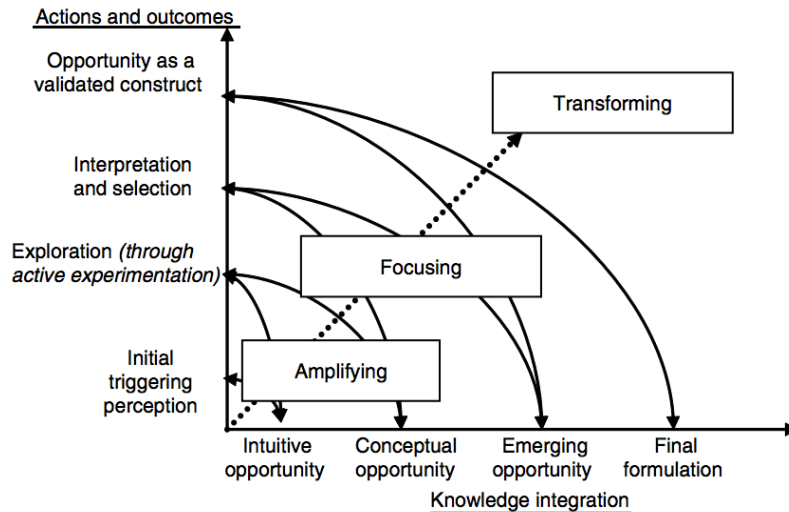
Figure 3 Structuring heuristic rules for opportunity recognition (Blanco, 2007)

Blanco (2007) elaborated a specific and dominant style practised by entrepreneurs during the opportunity process, highlighting that the process is based on cyclic interactive loops, mixing market pull and technology push approaches.

The entrepreneurial team is an important aspect in a new entrepreneurial venture. The nature of entrepreneurs is such that they will drive the key aspects of the new venture and they will make the decisions in line with the needs they have. This indicates that the subsequent steps will have to be taken to achieve the expected beneficial long term results beyond the lead entrepreneur (Hossain & Alam 2016). In addition to carrying out these required steps, the entrepreneurial team will also be able to contribute to the development of the new venture by providing the lead entrepreneur with insights and the specific benefits to consider. .

The entrepreneurial team will have to work with each other to ensure that appropriate results are achieved in different contexts (Kamal *et. al.*, 2015). Entrepreneurial learning processes will support them to develop their own ways of working creatively and ensuring that they contribute at a higher level to the development of the overall new venture in the future. This is another

area of significant benefit for the entrepreneurial team from entrepreneurial learning (Shams, 2015).

The clients naturally   expect to receive services from the new entrepreneurial venture. For example, ICT products or services. The clients require a high quality service in line with their needs (Spitzeck & Hansen, 2010). The clients will be able to benefit due to the creativity of the solutions that they could receive (de Soto, 2006). This will ensure that they are highly satisfied with the products or services and will be able to benefit from the outcomes (Shams, 2015). Such benefits are reached, providing that the new ventures have the required knowledge base and learning systems to meet the clients' expectation. Thus, the development of knowledge and the necessary systems in line with these expectations has the potential to be highly beneficial to all the parties in the future.

The community in which the entrepreneurial new venture will operate or have relationships with, will also benefit from many opportunities provided by new venture. These include creating new employment opportunities with the growth of the new venture, thus delivering back to the host community a wide range of financial, knowledge and skills based benefits. This will ensure that all the stakeholders will feel satisfied with the services that they receive and that they will achieve positive long term results (Spitzeck & Hansen, 2010).

With the appropriate entrepreneurial learning associated with the new venture, it is important to note that employees will be able to   gain the knowledge needed to serve the needs of the community as well. For instance, in the effectuation theory, Sarasvathy (2003) discussed the partners of the solution and in this case, how can the community become of a partner of the entrepreneurial service. At a broader level, this will create indirect economic growth through

spill over effects. Thus the community also will be able to benefit from the learning process and the larger community will be able to receive beneficial long term outcomes (Spitzeck & Hansen, 2010).

The role of the new venture is to make sure that it provides products or services that would meet the expectations of the new venture to achieve positive results. Thus, if entrepreneurial learning generates the knowledge and skills broadly referred in this thesis as competencies, the stakeholders will benefit through entrepreneurial learning. The role of the entrepreneurial team is to ensure that all these stakeholder groups will benefit form the outcomes and achieve positive results in the long term context (Gattringer, Hutterer & Strehl, 2014). Thus, the results of the learning process will benefit to all these main stakeholder groups.

Key learning models

A link is required between the actual needs of the trainees, in this case the entrepreneurs, and their ability to gain knowledge. There is a hierarchy in place that drives the motivational needs of humans, including those of the entrepreneurs. This hierarchy indicates that different approaches may exist towards their education as well. In other words, there could be entrepreneurs who are satisfied with simply gaining the basic level of knowledge while other entrepreneurs seek to apply the knowledge that they have gained in an actual practical sense, to gain practical experience of the potential outcomes and to experiment with this process (Brazelton, 2000). While the role of the teacher is to ensure development of the knowledge in full, it is evident that this second approach may also allow the parties to reach appropriate levels of understanding.

Applications associated with Bloom's taxonomy are linked with different levels of education and levels of knowledge gained. This model indicates that there are different aspects of learning and the education process for entrepreneurs should be able to accommodate both these areas. However, when the practical scenario is identified, it is evident that not all the entrepreneurs are likely to reach all these learning levels and the teacher will have to contribute to motivate each of them individually to reach the highest possible level in this context (Chickerur and Kumar, 2012). The following diagram indicates the Bloom's Taxonomy approach.
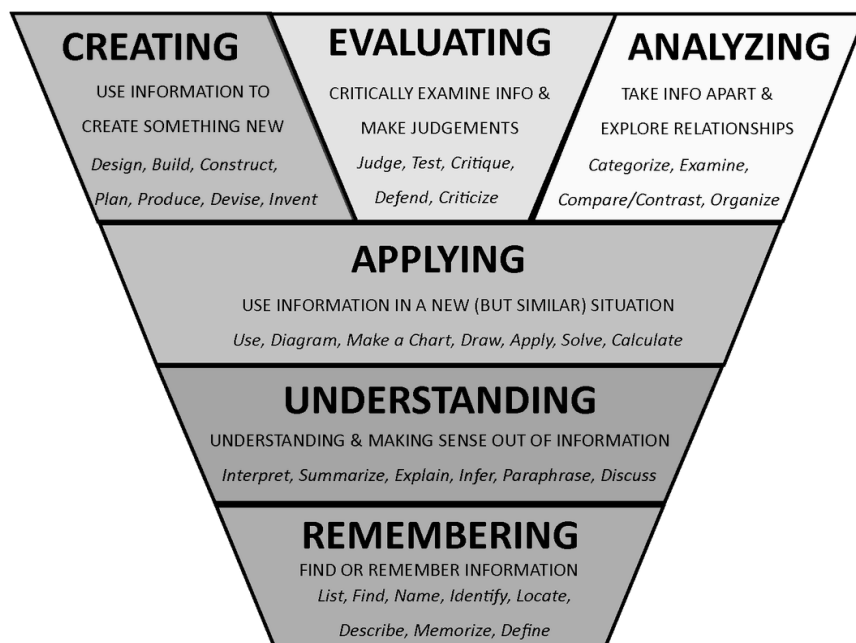
Figure 4 Bloom's taxonomy (Chickerur & Kumar, 2012)

The above diagram shows that when knowledge is provided to the entrepreneurs, the first stage required them to remember the key learning areas. They may not be able to remember all of the details associated with the knowledge gathered. However, it is evident that they will be able to gather knowledge about the key stages and how they will benefit form these stages (Burgess

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& Ice, 2011). Thus the participation will have to identify the opportunities associated with remembering the key information areas and gather knowledge on that basis

Once there is clarity on the key areas of learning, the entrepreneurs are likely to be able to link them with previous knowledge and to build mental models for them to understand these areas. This leads to integrating the knowledge   gathered through the process. This integrative approach is supported by further discussion, real life examples and linking of the knowledge that has been gathered with personal experiences (Chickerur & Kumar, 2012). This will lead to a deeper incorporation of the knowledge areas in the minds of the entrepreneurs wishing to learn by experience.

Once the knowledge is in place, the application of the knowledge is the net outcome. Entrepreneurs require opportunities to apply their knowledge and to solve the various problematic issues they may encounter. These opportunities will allow the entrepreneurs to determine how best they can use their acquired knowledge and in return benefit from the process appropriately. Appropriate levels for the necessary steps entrepreneurs will have to reach, are needed to ensure the successful application of knowledge and that the required results are achieved (Brazelton, 2000).

Evaluation is another key aspect of entrepreneurship learning that allows all stakeholders to understand whether they have received the information they require. Providing the stakeholders have received the required information, it is evident that that the level and quality of knowledge internalised can be assessed through various tests to identify how effective the education process was. This process enhances the ability of all parties involved to attain the intended

results, to learn lessons from the process, to identify areas for improvement and to benefit from the outcomes in the long term.

Analysis of the different scenarios based on a knowledge of entrepreneurship and reaching certain conclusions based on these aspects, also remains a critical part of the process. It is significant to note that the knowledge obtained can be used for categorising of the outcomes, exploring of the relationships between various areas and organising the knowledge of entrepreneurship within various aspects. The knowledge gained could also be the basis for the development of something totally new. This could be the application of the knowledge or the ability to use the knowledge to develop more areas of entrepreneurship knowledge.

It is evident that these areas may be in line with the motivation highlighted by Maslow in the above discussion. The facilitators may have to develop skills for entrepreneurs to meet particular expectations for the courses and relate them to   Maslow's motivation model (Huitt, 2004), which is discussed below as well as in combination with Bloom's Taxonomy.

Levels of understanding

Previous discussions indicate that there are various levels of the application of knowledge. With these various levels associated with the application of knowledge, the usage of the knowledge in practical scenarios can be maximised. However, it is also evident that there are various levels associated with the understanding process as well (Burgess & Ice, 2011). It is important for the facilitators to know the level of understanding they expect their respective entrepreneurs to have and then develop appropriate approaches to maximise the level of understanding in line with the needs in place. In this context, Solo Taxonomy can be used to evaluate the levels of understating.
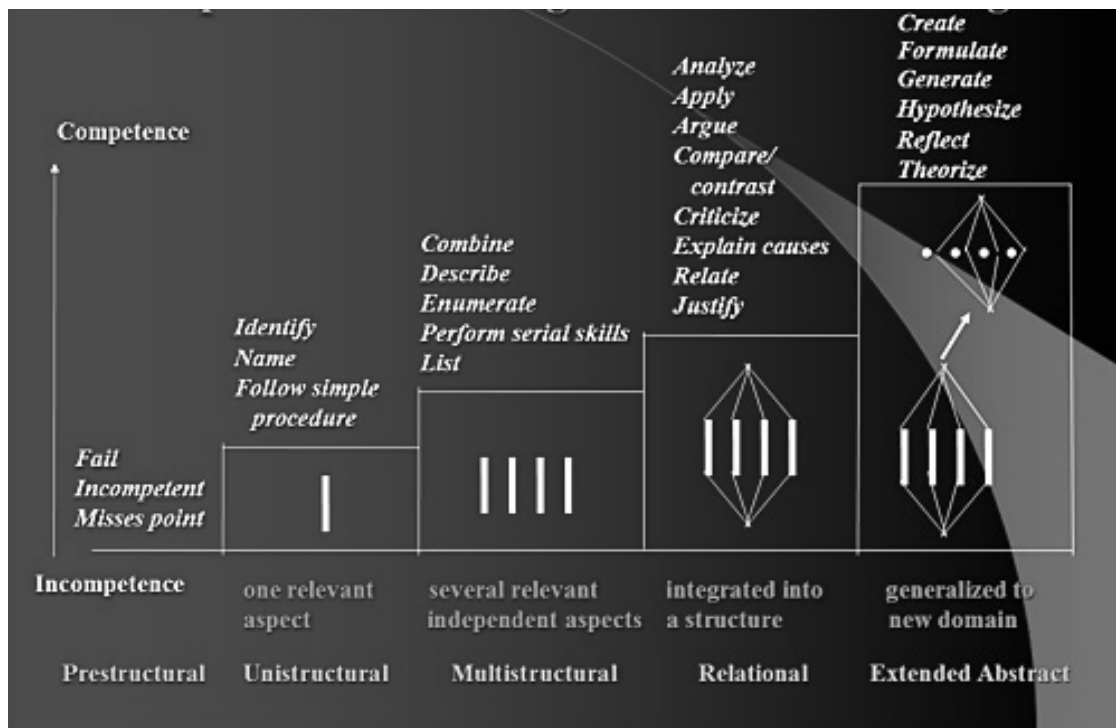
Figure 5 Solo Taxanomy (DuBravac,2012)

The above diagram shows that at the first level of understanding, the trainee (the entrepreneur in this case) has completely missed the point. This indicates that the entrepreneur has not been able to understand the issue at all. This indicates the teaching process has not been successful due to the fact that the process has completely failed to transfer the knowledge and the skills to the trainees in this case entrepreneurs.

During the second stage, the entrepreneurs have grasped the basic concepts associated with the area; this allows the entrepreneurs to identify a single area of consideration and to follow the given area in a simple manner. There are the lowest levels of complication involved at this stage due to the fact that only the basic issue is taken into consideration, as the understanding of the subject is plain (Sutton and Hazeri, 2012). There are no in-depth discussions to be carried out as there is only a surface level understanding formed on the topic.

At the third level, there is a complex understanding formulated between the parties, the facilitators and entrepreneurs. There are more issues being discussed and the understanding that is developed in this context would ensure that appropriate insights are gained to the areas under consideration. The relationship between various areas of the subject can be carried out in this case as well. Thus the above aspects show that understanding is more than basic and there is in depth evaluation of certain aspects when the results are reached in line with the needs in consideration.

The fourth level is more complex; the person who gained the knowledge and understood the subject matter can now work with the intention of appropriately analysing the insights and reaching beneficial outcomes. The understanding allows analysis as well as a critical evaluation of the knowledge in the given area. This is primarily important to reach the next stage of creating new knowledge through the current understating in place. At the fifth stage, the knowledge is used to reflect and develop new insights that are more related to the areas and to ensure that new theories are developed.

Cognitive learning

In order to ensure maximum effectiveness of the learning process, the entrepreneurs should obtain knowledge and experience with it. This indicates that they will have to look to the theoretical as well as the practical implications attached to the knowledge areas. This is likely to maximise their capability to reach appropriate outcomes (Wood, Lu and Andrew, 2015). The process of cognitive learning indicates that the parties will have to both gather knowledge and absorb the knowledge. Knowledge gathering and absorption is a mental process and there are

various aspects involved with the process. Thus, the cognitive learning process remains critical in reaching successful results in the future.

The cognitive learning process includes the gathering of the knowledge by the entrepreneurs through various means; this will include using the senses for gathering of the knowledge as well as gathering of the knowledge through thoughts and experiences. All these methods of gathering of knowledge would eventually result in gaining the required knowledge through the learning process (Sharpe, 2014). Cognitive learning is highly important at this stage and teaching remains a very important part of activating of this process effectively.

Short term memory is developed based on the knowledge gained and this eventually becomes long term memory with the experience and the application of the knowledge. The long term outcomes are likely to be beneficial in the future (Katz and Yablon, 2013). Thus appropriate steps will have to be taken by the parties to ensure all appropriate means of a cognitive approach are used with the intention of maximising of the beneficial results in terms of the learning process.

A social cognitive approach indicates that there are a number of factors included in the cognitive decision making process. The key aspects include: environmental factors, behavioural factors as well as internal aspects that are involved with the process (Walton & Hepworth, 2011). This ensures that learning is structured in line with these needs and expectations. Thus, in order to improve the effectiveness of the cognitive learning process, changes will have to be carried out to each of the areas within these variables. For instance, if the entrepreneurs have the need to learn as well as the resources available to them, they tend to carry out the program providing the environmental factors also facilitate the learning process.

Cognitive behavioural theory takes   a different approach; the theory suggests that people formulate their self image and this is likely to impact on the behaviours they display towards the others. Thus the self concept formation is the basis that people will display a certain level of behaviour. This indicates that first, the entrepreneur will create a self concept and, based on that self concept, certain behaviours would be developed in line with that self concept.

While the above theories underpin the research question of this thesis, they primarily provide the contextual setting to explore the key area of focus for the thesis which is discussed below in detail and has not been explored previously.

Entrepreneurial learning

Entrepreneurial learning is a relatively young area of research in which publications focusing on empirical and conceptual bases began to appear from around the late 1990's. Entrepreneurial learning has been defined in different ways including as venture learning (Berglund et. al., 2007), learning to recognise opportunities (Franco and Haase, 2009), how entrepreneurs update knowledge (Minniti and Bygrave, 2001), learning to work in entrepreneurial ways (Rae, 2000), learning experienced by entrepreneurs during the creation and development of a small enterprise (Cope, 2005), cognitive processes to acquire and use entrepreneurial knowledge (Young and Sexton, 2003), learning to recognize, act on opportunities to initiate, organize and manage ventures (Rae, 2005, 2012, 2015, 2017) and learning across all the phases of the entrepreneurial process through the knowledge-intensive nature of the enterprises (Passiante, 2016). Entrepreneurial learning for this thesis is defined as learning experienced by entrepreneurs across different phases of the enterprise's development. The transitioning phase of a nascent entrepreneur becoming an entrepreneur within a start-up venture introduces a

unique context for entrepreneurial learning. However, how entrepreneurial learning is exercised in this context has not been sufficiently studied in literature.

In order to explore this context in depth, at first the thesis discusses what encompasses entrepreneurial learning based on the literature. A theoretical framework for entrepreneurial learning is presented below, which acts as the basis for this thesis. Lim (2010) conducted a study on the relationship between entrepreneurship and organisational learning and came to the conclusion that there was a considerable and positive relationship between the two areas of learning. A study by Sharifi & Eslmieh (2012) observed the relationship between how individuals are inclined towards entrepreneurship and the level of their tendency to learn new skills. The findings from the study established a considerable and direct link between the level of tendency towards learning of new skills and how an individual is inclined towards the learning of a new skill; it was shown in the study that this relationship could not be attributed to randomness. Additionally, the studies by Molina and Callahan (2009) which assessed the link between entrepreneurship, individual learning and organisational learning, displayed a positive link between the aspects, findings which were also obtained in a similar study conducted by Howard (2004). The interplay between entrepreneurship and organisational learning can be represented by the diagram below:
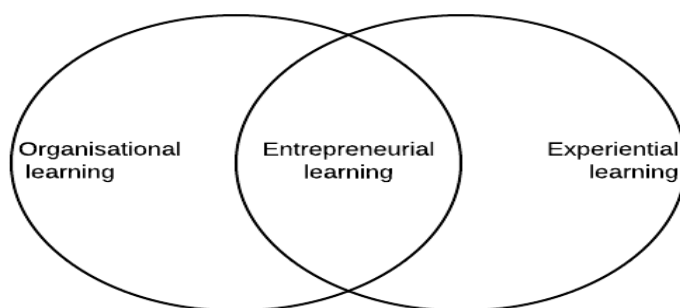
Figure 6 Relationship between organisational learning, experiential learning and entrepreneurial learning (Derived from Wang & Chugh, 2014)

Rae & Carswell (2005) suggest three relevant major themes of entrepreneurial learning:

1. Personal and social emergence: development of the entrepreneurial identity as a result of early life and family experiences, education, career formation and social relationships

2. Contextual learning :learning through participation of community, industry or other networks where individual experiences are related and compared while shared meaning is constructed

3. Negotiated enterprise: idea of learning is not dominated by only an individual but through negotiated relationships with others
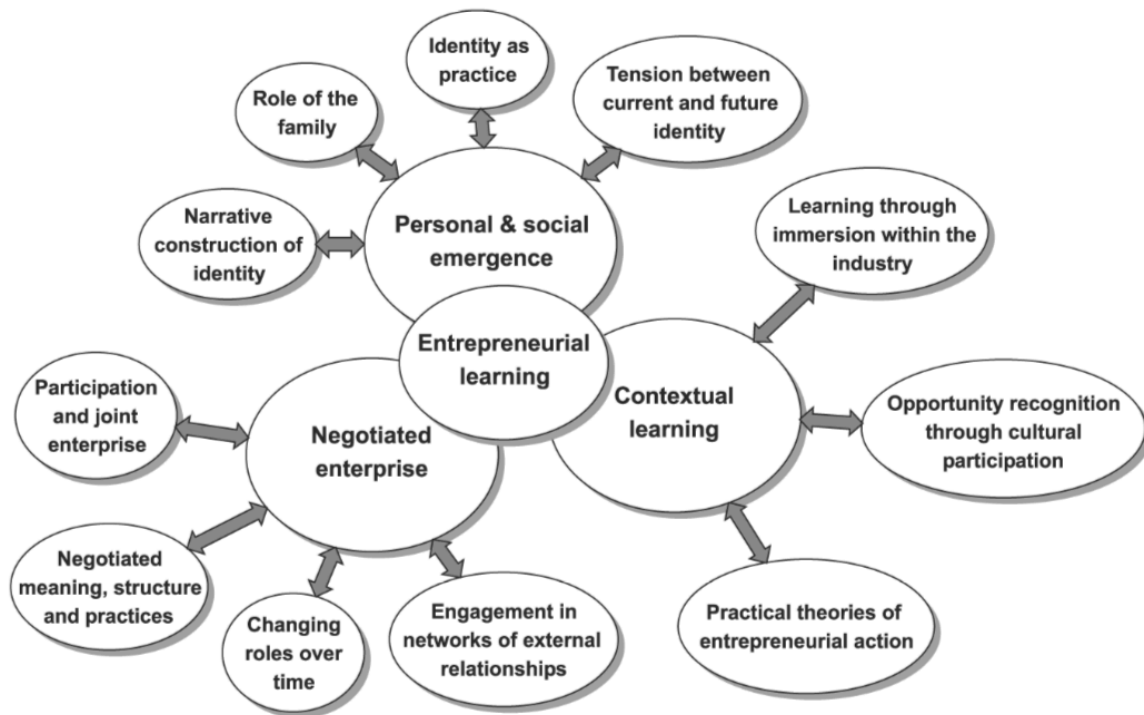
Figure 7 Triadic model for entrepreneurial learning (Rae & Carswell, 2005)

Furthermore, Pittaway & Thorpe (2012), in their framework, discussed temporal phases, inter-related processes, characteristics of learning and learning tasks. However, Down (2010)

described these frameworks as the 'opening of the symphony' where further research should be carried out to understand the nuances.

In a broader sense, learning is a process of co-constructing self and as Man (2006) argued, represents the change in behaviour as entrepreneurs, continuously learning from the different facets, resulting in generative or transformational learning by experiencing learning through action and doing.

However, researchers have called for further qualitative research in order to understand empirically the entrepreneurial learning process for different contexts (Honig, 2001; Huovinen & Tihula, 2008).

Scholars such as David Rae and Jason Cope in the recent past have formulated frameworks for entrepreneurial learning (Cope, 2005; Rae, 2010), so providing a basis on which to explore the phenomenon of entrepreneurial learning further. These are discussed in detail in this chapter.

Entrepreneurs learn in different ways, including but not limited to, learning by doing (Kolb, 1984; Balasubramaniam, 2012), learning from past business experience (Minniti and Bygrave, 2001), learning from general past experience (Rerup, 2005; Sardana & Scott-Kemmis, 2010) and learning from others (Levesque, 2009) and reflective learning (Boyd & Fales, 1983).

In addition, learning in general has also been theorised in different ways, including: exploratory and exploitative learning (March 1991), single loop/double loop learning (Argyris & Schon, 1978), absorptive capacity and external learning (Cohen & Levinthal, 1990), situated learning

and communities of practice (Lave & Wenger, 1991) and higher level and lower level learning (Fiol & Lyle, 1985).

Experiential learning		Organisational learning	
Experiential	Kolb, 1984	Absorptive capacity & external learning	Cohen & Levinthal 1990, Jones, 2006; Zahra & George 2002
Learning by doing	Balasubramanin, 2011; Cope, 2003	Learning organisation	Senge, 1990
Learning from past experience	Lamont, 1972; Rerup, 2005; Sardana & Scott-Kemmis, 2010	Exploratory & exploitative learning	March, 1991
Learning from +/- experiences	Minniti & Bygrave, 2001; Cope, 2005	Individual & collective learning	Capello, 1999; Dutta & Crossan, 2005
Vicarious learning	Levenseque *et. al.,* 2009	Sensing & intuitive learning	Jung, 1971; Myers *et. al.*, 1985
Conversational learning	Baker, Jensen & Kolb, 2002	Single loop, double loop learning	Argyris, 1976
		Higher level/lower level learning	Fiol & Lyles, 1985

Table 1Different learning approaches (author developed)

Experiential learning

Kolb (1984) discussed the topic of experiential learning in which it was held that experience is the source of learning and development. The idea behind experiential learning is tied to the earlier works by Piaget, Lewin & Dewey (Kolb, 1984). The idea is also to focus on the key

role that experience plays in the learning process. As such, experiential learning is distinguished from other forms of learning such as rationalist theories of learning which tend to place more focus on the acquisition and recall of abstract symbols. This is also in contrast to behavioural theories of learning which claim that subjective experience has no role in the learning process. As such, experiential learning is a holistic mode of learning which combines perception, experience, behaviour and cognition into the learning process. Kolb (1984) observed that the experiential learning process can be described through three models. The first model is the Lewinian Model of Action Research and Laboratory Training (Adelman, 1993), whereby learning and change is best enhanced through an integrated process which is initiated by a here-and-now experience that precedes data collection and observations regarding the experience. Learning is thus a cycle of four stages, starting with concrete experience, then observations and reflections, then formation of abstract concepts and generalisations, and finally the testing implications of concepts in new situations. The second model is Dewey's Model of Learning, which has many similarities to the Lewinian model, but the distinction is that Dewey explicitly emphasised that the developmental nature of learning as portrayed by the Lewinian model is more of a feedback mechanism (Miettinen, 2000). Dewey observed that learning changes the feelings, impulses and desires of concrete experience into purposeful actions of a higher-order. The third model is Piaget's model of learning and cognitive development, whereby Piaget in 1970 observed that the extents of concept and experience, action and reflection, constitute the basic continua for the development of thoughts in adulthood (Felder & Silverman, 1988; Baumol, 2013). As such, the development from childhood to adulthood shifts from a concrete phenomenal perspective of the world to an abstract constructionist perspective, from an active egocentric perspective to a reflective internalised process of learning.

From the three models discussed, experiential learning has certain characteristics as observed by Kolb (1984): learning is best understood as a process and not in terms of results; learning is a continuous process that is chiefly based on experience; a prerequisite to the learning process is the resolution of conflicts between dialectically contrasting approaches of adaptation to the world, of which learning is a holistic process; learning is the process of creating knowledge; and that learning involves transactions between an individual and the environment.

Learning by doing

Cope (2003) suggests that many entrepreneurs commit considerable personal investments into the creation and management of a business venture and in so doing, they expose themselves and other stakeholders in the business venture to significant financial, social and emotional risks that come with owning a business. As such, this provides a highly contrasting outlook on entrepreneurial learning, compared to the widely available literature, which portrays entrepreneurs as action oriented, but with a lot of their learning based on experience. Cope (2003) observes the emotional aspects of entrepreneurial learning, while previous studies have emphasised the behaviours, actions and experiential components only. As such, the 'learning by doing' that was discussed extensively by Cope (2003) encompasses various activities such as devising explicit solutions to problems, trial and error, discovery of new phenomena, responses to opportunities and also to problems.

Entrepreneurs usually have a capacity for continuous learning during the establishment and management phases of the business venture. Cope (2007) further noted that entrepreneurs can experience distinctive modes of learning, described as 'higher-level', in which they encounter, overcome and reflect on significant problems and opportunities during the process of entrepreneurship (Kshetri, 2011; Chan *et. al.*, 2012). Cope (2003) used two case studies to

illustrate the importance of the higher-level learning to the growth of the business and the entrepreneur as an individual. As such, Cope (2005, p. 381) observed that "the predominant contextual learning mode in this [small business] environment is that of . . . learning from peers; learning by doing; learning from feedback from customers and suppliers; learning by copying; learning by experiment; learning by problem solving and opportunity taking; and learning from making mistakes". Research by Balasubramanian (2011) focused on finding the link between learning and producer concentration, observing that in high-learning industries, the lower bound of concentration was higher, and this suggested that learning by doing had aspects of an endogenous sunk cost. Cope (2007), through his study on stimulating entrepreneurial learning, argues that challenges and complexities surrounding entrepreneurship that are difficult to convey with traditional pedagogic techniques such as lectures and seminars, can be successfully simulated in an entrepreneurial learning environment. While they agree that not all facets can be simulated, the study supports the premise that simulation, where students becoming practitioners, are more effective than students learning about the practice in theory.

Learning from past experience

Lamont (1972) also emphasised the importance of experience in the learning process. Experiential learning in this case refers to learning from past business experience (Lamont, 1972) and also learning from past experience, not necessarily tied to the business (Sardana and Scott-Kemmis, 2010; Rerup, 2005). Individual learning styles are composed of experiential learning as defined by Kolb (1984) and also as experiential learning in which the learning process is broad and encapsulates learning from past experience. In the case of learning from past experience, entrepreneurial learning is usually linked to the implementation of an opportunity leading to a spin-off from an existing organisation. From an analysis of 291

Swedish companies, Politis & Gabrielson (2002) observed that there are strong links between various past experiences and the development of entrepreneurial learning. Additionally, they found out that the entrepreneurs' predominant approach to the transmission of experience into entrepreneurial knowledge was very important in their choice of either exploiting pre-existing knowledge or exploring new possibilities. As such, Politis & Gabrielson (2002) sum up the observation by Lamont (1972) by showing empirical evidence that an entrepreneur's past experiences are very important for the successful establishment, growth and survival of new business ventures. Politis & Gabrielson (2002) made a distinction between the experience of the entrepreneurs and their experientially acquired knowledge. Through the distinction, it was possible for them to theorise and conduct empirical investigations on how the different types of past experiences by entrepreneurs can result in the development of several types of entrepreneurial knowledge. The contrasting experiences between entrepreneurs, in addition to the individual's preferred approach to transforming experiences, affect the development of entrepreneurial knowledge.

An established view is that entrepreneurs are action oriented and learning occurs through experience and discovery (Rae, 2000; Rae & Carswell, 2000; Mason & Arshed, 2013). Previous start-up experiences and cross-functional experiences appear to offer entrepreneurs knowledge that improves their capabilities to identify new business opportunities, whereas past managerial experience in small businesses offers an individual knowledge which increases his/her ability to handle the liabilities of inexperience in the creation process of a new venture (Politis & Gabrielsson, 2002; Kuratko, 2013).

Learning from positive and negative experience

Minniti & Bygrave (2001) modelled entrepreneurial learning as a calibrated algorithm consisting of a repeatedly performed choice decision whereby entrepreneurs learnt through an update of their subjective store of information and knowledge that has been acquired from past experiences. As such, learning occurred whereby entrepreneurs repeated only those choices which seemed most promising and discarded the choices which resulted in failure. In the model by Minniti & Bygrave (2001), failure was shown to be as informative to the entrepreneur as success, although not as desirable. As such, entrepreneurs continuously improved their performance through processing information that they possess, making mistakes, then making updates on the algorithms of their decisions. In the model, entrepreneurial learning was partly generated by a reinforcement of the belief in certain decisions as a result of their positive outcomes. In their words, Minniti & Bygrave, (2001), stated that positive actions exhibit increasing returns to adoption. However, Cope (2009) argued for deeper conceptualisation of the process and content dimensions of learning during venture failure. The nature of the network relationships and pressure points of venture management were highlighted as higher level learning outcomes of entrepreneurial learning, from failure.

Vicarious learning

Levesque *et. al.* (2009) observed that learning can take place vicariously. Vicarious learning stems from close contact with other people and also from observation and the imitation of behaviours of role models. As such, an entrepreneur's self-efficacy, business skills, managerial experience and levels of education are highly influenced by his socialisation, and as highly affected by the social groups to which the entrepreneur subscribes. As such, learning occurs through the participation of an entrepreneur in social groups and from the experience of others. This type of learning is somewhat indirect, as compared to the more direct types of learning

which include learning by trial-and-error and experimental learning. As such, entrepreneurs learn by observing the behaviours of other entrepreneurs, since it is strongly believed that people's behaviour is highly determined by their environments.

Conversational learning

Baker *et. al.* (2002) discussed conversational learning as an experiential approach to the creation of knowledge. In their framework, the learning process for the entrepreneur involves the entrepreneurs/ learners constructing meanings and transforming experiences into knowledge via the use of conversations. In the conversational learning framework, experience plays a key role in the learning process, as observed by Kolb (1984), "the process whereby knowledge is created through the transformation of experience", and according to the three models by Lewin, Piaget and Dewey as discussed earlier. As such, conversational learning can assume a dialectical approach, whereby conversation is a meaning-making process whereby understanding occurs through the interplay of contradictions and opposites. As Baker *et. al.* (2002, p.5) noted, "It involves stating a point of view and questioning it from other points of view, eventually seeking consensual agreement which in turn is ultimately questioned from still other perspectives." By assuming the most contradictory point of view, the potential learner raises the chances of encompassing the whole situation. As such, an inquiry concerning the conversation's dialectics is a means of uncovering the assumptions and limitations which reduce the information available regarding a phenomenon (Cope, 2003).

Organisational learning

Absorptive capacity and external learning

Cohen & Levinthal (1990) described absorptive capacity as "the ability of a new venture to recognise the value of new, external information, assimilate it, and apply it to commercial ends

is critical to its innovative capabilities". As such, absorptive capacity is a function of the organisation's prior knowledge. Prior knowledge gives an entrepreneur the ability to acquire new information, and an accumulation of prior knowledge raises the chances of memorising and recalling new knowledge (Cohen, 2013; Rerup, 2005). Additionally, prior knowledge allows for the entrepreneur to acquire the related problem-solving abilities (Zahra & George, 2002). As such, the greater the effort applied to learning, the more effective the the future retrieval of information (Zahra & George, 2002).

Thus, the absorptive capacity of an organisation is largely dependent on the capacities of the individuals in the organisation. Activities such as research and development not only generate new knowledge, but also offer significant contributions to the absorptive capacity of the organisation. The knowledge aspects are therefore high determinants for entrepreneurial learning since an increase in the complexity of learning results based on strengthened Research and Development creates positive adjustments to the absorptive capacity of the organisation, as observed by Cohen & Levinthal (1990). As such, if an organisation wishes to gain and utilise knowledge beyond   its current activities, the organisation must develop a healthy absorptive capacity (Cohen & Levinthal, 1990; Zahra & George, 2002).

Learning organisation

Matlay (2000) observed that a learning organisation, is one in which continuous transformation and improvement of an organisation is made possible through   the continuous learning of its employee The continuous transformation of   an organisation can only occur   through intentional processes of learning at the levels of the system, the group and the individual. The continuity as well as the quality of the learning by the group and the individual is thus vitally important to the development of a learning organisation. , The primary focus of a learning

organisation then is in the way in which it manages, values and leads to the enhancement of the individual development of the employees so as to make sure that there is a continuous transformation (Foss *et. al.*, 2013; Miettinen, 2000; Onetti *et. al.*, 2012). This also includes analytical aspects to the learning process which can unify corporate, team and individual values into strategies that are highly competitive, as also observed by Senge (1990).

Exploratory and exploitative learning

March (1991) observed that exploratory learning is the experimentation with new options and the acquisition of new knowledge, technologies and skills in the organisation, whereas exploitative learning refers to refining and extending the current knowledge, technologies and skills in the organisation.

When dealing with new product developments in an organisation, the team members can engage in exploitative and exploratory learning for the exchange and expansion of knowledge. This is based on the notion that exploitative and exploratory learning could widen, and lead to improvements, in the knowledge base possessed by of the team members in the organisation (March, 1991; Fairlie & Chatterji, 2013, The ability of team members to react quickly to market changes, to come up with solutions to problems and to improve the performance results is therefore greatly enhanced. Exploitative and exploratory learning between members in a team strengthens the likelihood for the new venture to be able to adapt to its environment and achieve effective operations within the team (Gupta *et. al.*, 2014).

Individual and collective learning

How an individual acquires and integrates data, information and knowledge is said to be individualised learning, whereas collective learning is a social process. In collective learning,

through a shared set of rules or procedures, individuals are allowed to co-ordinate their actions towards a solution (Capello, 1999). This phenomenon may take place at a team level or an organisational level (Nelson & Winter 1977), regional level (Capello, 1999) or any other social milieu (Easterby-Smith & Araujo, 1999). Collective learning is based on the social setting in which the learning takes place, effectively a combination of know-what, know-who and know-how.
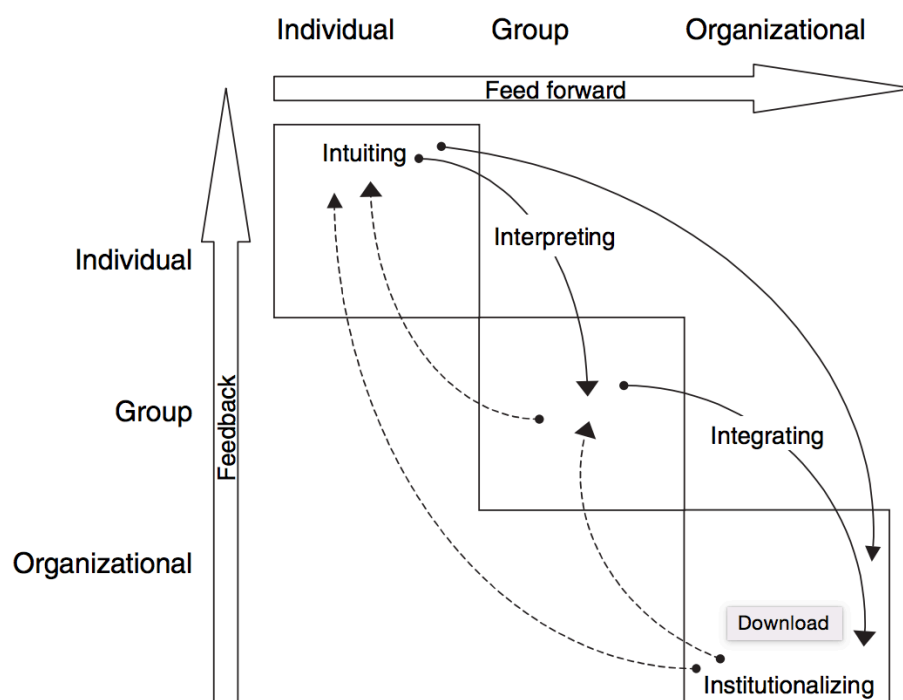
Figure 8 4I learning process (Dutta & Crossan, 2005)

Dutta & Crossan (2005) highlight two significant actions within collective learning: developing a shared understanding among the team and taking coordinated actions through mutual adjustment. The importance of developing systems to cultivate such a social setting has been emphasised (Jones & Macpherson 2006) together with the need to transform traditional settings into learning spaces within organisations to enable collective learning (Macpherson & Jones, 2008). The strength of the team collectively is said to be greater than the sum of the individual strengths. Having said that, 'a feel for the process' of collective learning is not always

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understood by individuals where the expectation is that the teams can capitalise on individual strengths and leverage others to address their weaknesses (Karatas-Ozkan, 2011). Research literature further discusses collective cognition where individual interests and motivations, as well as organisational strategies, are significantly aligned, so positively influencing the effectiveness of collective learning. Effective selection of team members or transforming teams from different backgrounds and experiences into a team geared towards achieving a common objective, is crucial to enable collective learning (West, 2007).

Intuitive and sensing learning

Jung (1971), in his study on psychological learning types, initially developed intuitive learning and sensing learning, which was operationalised by Myers & McCaulley (1985). Learning based on external contacts through sights, sounds and physical contact are covered in sensing leaning. In other words, learning arises from what you can sense through the different input senses of your body. Sensing learners are considered to be logical thinkers. When it comes to opportunity, they typically study the environment and analyse it in order to identify opportunities that exist in the market.

On the contrasting end, intuitive learners are abstract thinkers. They tend to create opportunities rather than wait for them, (as opposed to the opportunity discovery process of sensing learners) by discovering possibilities. Opportunities will be perceived by the entrepreneur according to their personal disposition (Schumpeterian view) as well as their day to day knowledge (Kirzenrian view). Akinci (2015) integrated different views of entrepreneurial cognition in the context of entrepreneurial opportunity based on the 4I aspects (intuiting, interpreting, integrating and institutionalising) framework, depicting entrepreneurial opportunity as a learning process.
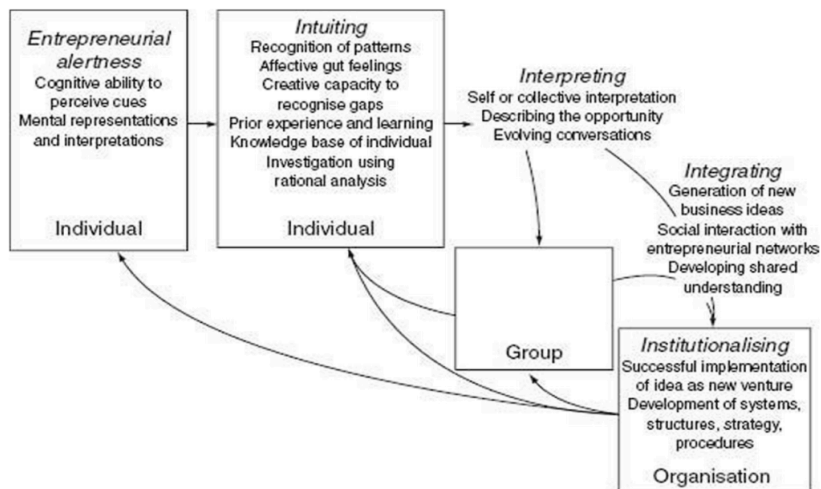
Figure 9 Framework of intuitive entrepreneurial decision making (Akinci, 2015)

Corbett (2002), extending this research, concluded that the more an individual's cognitive style is intuitive rather than analytical, the greater the opportunities the individual could identify. As a result, these learning types are an integral part of entrepreneurial opportunity on which the theme of entrepreneurship research is built. (Venkataraman, 1997; Eckhardt & Shane, 2003). Effective entrepreneurs will identify opportunities based on their expertise to recognise, create or discover opportunities (Sarasvathy *et. al.* 2003). This suggests that opportunity exploration is a combination of both intuitive learning and sensing learning, and that these may complement one another.

Cook *et. al.* (2009) argued that sensing and intuitive learning types are similar to the abstract learning element of Kolb (1984, 1985) whose experiential learning theory was discussed in detail earlier in the chapter. However, the experiential learning cycle has not been fully examined in the context of an entrepreneurial venture when it comes to different learning types coming together as the venture moves across these different learning types (Wang & Chugh, 2014). In sum, sensing and intuitive constructs are integral to opportunity, be it opportunity

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discovery, opportunity creation or effectual opportunity. While an association exists between, sensing and intuitive learning and experiential learning, many facets of entrepreneurial opportunity and these learning constructs are yet to be examined. For instance, where and how the creative and analytical learning constructs will come into play during the entrepreneurial journey? How do entrepreneurs and their ventures learn from these external factors during the learning process? What will the entrepreneurs learn from their experiences (successes as well as failures and from their competitors) when it comes to opportunity exploration and exploitation? Which factors play a role during the entrepreneurial learning journey? These questions are yet to be examined by scholars (Rae & Wang, 2015).

Single loop and double loop learning

Argyris & Schon (1978) devised the concept of single loop and double loop learning in organisations. This was based on their perception of the reactions of most people facing impeding organisational change, which is primarily negative. Workers do not usually see the point of organisational change and they usually are resistant to the changes when it calls for deviations from established habits Single and double loop learning are very useful for a proper understanding of the problems and solutions between the organisation and its workers. Single loop learning aims at finding solutions to the increased organisational changes which largely ignore the real causes of the underlying problem/s (Clow, 2012; Van Dooren, 2011), and the resultant problems to the organisation. In single loop learning, a mistake is corrected via the utilisation of a different strategy, which is expected to result in a different and successful outcome, whereas double loop learning tries to discover the real causes of the underlying problem/s and the feedback obtained is used for introspection. In double loop learning, a mistake is corrected through the rethinking of the initial goals, and one or more responsive actions follows the re-evaluated goals. As such, in an organisation, double loop learning can

be said to have occurred when the organisation detects mistakes and makes policy changes to the new venture's objectives prior to taking corrective actions (Argyris & Schon, 1978). However, these models assume that the paradoxical lens applied is correct and what is required is only the corrections for the same lens. The validity of this assumption is to be examined. Single Loop and Double Loop Learning can be portrayed by the image below:
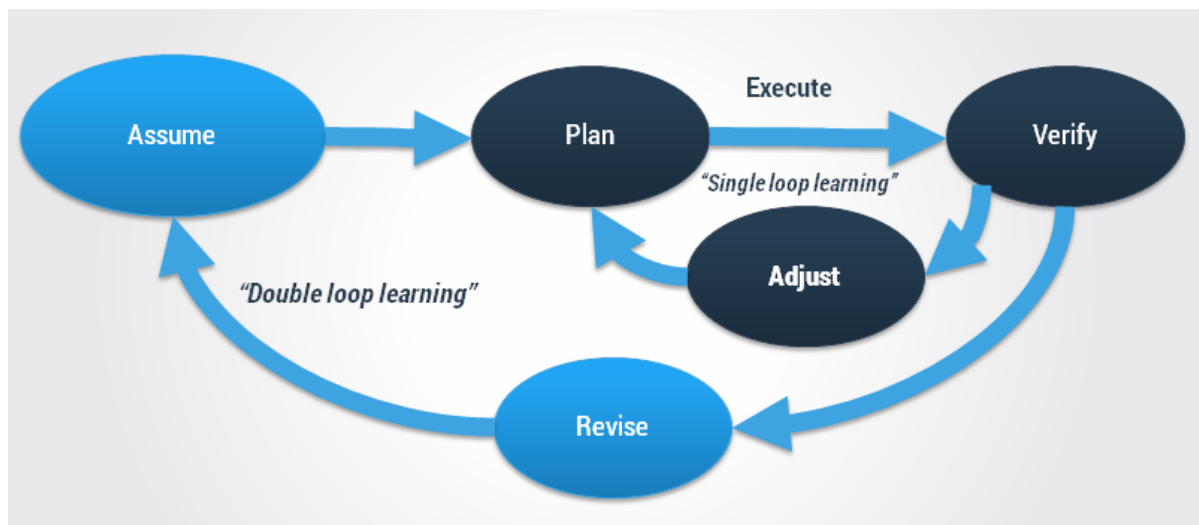
Figure 10 Single and double loop learning (Tools-Hero, 2015)

Higher level and lower level learning

Fiol & Lyles (1985) observed that organisational change does not necessarily imply organisational learning. As such, there are various levels of learning, with each having a different effect on the new venture. As Fiol & Lyles (1985, p. 807) noted, "within the category of cognition development it is possible to identify a hierarchy based on the level of insight and association building. Two general levels are referred to as lower-and higher-level learning".

Lower level learning occurs within a given structure of the organisation, and within a given set of rules. It usually results in the formation of some rudimentary linkages between outcomes

and behaviours, but they are commonly of a temporary duration and have only a minor impact on the concerns of the organisation. It usually arises due to repetition and routine, involving building of associations. As a result of the reliance on routine, lower-level learning usually happens in the contexts of an organisation which is well understood, and whereby the management team believes it can have control over situations. Higher-level learning attempts to adjust overall rules and norms instead of specific behaviours or activities. Linkages emerging from higher-level learning are usually of a long-lasting nature with significant impacts to the concerns of the organisation. Whereas lower-level learning can be seen to be resulting from repetition and routine, higher-level learning is usually a more cognitive process. Usually changes in higher-level learning are preceded by a crisis, such as a new leader in the organisation (Fiol & Lyles, 1985).

As this research argues, there seems to be a clear interplay between entrepreneurship and organisational learning. According to Robbins (2002), entrepreneurship is all about taking risks, pursuing opportunities and satisfying the desires and needs of stakeholders by innovating and starting businesses. Entrepreneurs are the individuals who play that role. Pena (2002) held that entrepreneurship is the process whereby an individual initiates a business through a reliance on existing personal financial resources. , They usually rely on characteristics such as risk-taking, creativity and practicality to lead to successful businesses. In this process, as this study argues, the organisational learning plays a key role to successful entrepreneurship. Hajipour & Nazarpour (2010) observed that in modern business paradigms, the best advantage that entrepreneurs have, is the ability to learn. The authors observed that the attainment of success in the modern day business environment is highly dependent on learning and one of the approaches that can be used to gain a highly competitive advantage over rivals, is to place an emphasis on ongoing learning of the entrepreneurs so as to gain the objectives of the

organisation with the optimum effectiveness. Hajipour & Nazarpour (2010) further noted that in today's world, it is not realistic for organisations to have the same management styles of the past, especially in light of the abilities, skills and technologies of the rival businesses. Nezhad *et. al.* (2006) observed that putting in place the groundwork for ongoing learning and more responsive and integrated teaching than competitors, can make a significant contribution to the success of one organisation over business rivals. As Nezhad *et. al.* (2006) noted, an inclination towards learning in an organisation is the foundation for improving and continuous survival of the performance of the organisation.

Udell (1990) observed that innovation and creativity, as some of the most important characteristics of entrepreneurship are strongly influenced by the availability of a culture of learning in the organisation and thus can be referred to as a learning organisation. Apart from the views of Udell, (1990), Tempelton (2002) held the belief that organisational learning refers to a set of organisational measures, including the acquisition of knowledge, the distribution of information, and the interpretation of information with a conscious or subconscious intention to use it to develop the organisation. More information to support this idea comes from Rodriguez *et. al.* (2003) who noted the significant role that learning plays in behavioural change, and referred to organisational learning as a collective process that is used to support behavioural change in the organisation.

Senge (1990) made the observation that organisational learning is a process that is dynamic and permits the organisation to quickly accommodate organisational changes. The process that has been referred to as dynamic entails the generation of new knowledge in the business, behaviours and skills and a highly effective path to creating knowledge and improving the efficiency of the organisation through personal mastery, shared vision, mental models, systems

thinking and team learning. Senge (1990) further made the important observation that in current modern-day organisations, one of the biggest problems is that the organisations are usually unable to quickly detect threats and the potential impacts of threats, or to speedily devise esolutions and alternatives. In short, this means that the organisations are not able to learn and apply what they have learned in a timely way. Senge (2007) had earlier made the observation that even big organisations are usually unable to actualise their abilities if they suffer from a deficiency in learning, although there may may be continuous organisational survival. Additionally, Erabi & Fakharian (2008) observed that organisational learning occurs in moments when the members of the organisation act as agents of learning and react to changes in the internal and external environments of the business, through the swift detection and correction of errors arising from models of the organisation or personal assumptions.

The role of entrepreneurs in the learning context

Entrepreneurial learning is an important concept associated with the learning of the organisation as a whole, with appropriate learning insights and corrective guidance provided to the organisation based on the above aspects of learning. This will allow entrepreneurs to lead these organisations in the right direction and to achieve the expected results in line with the needs and the expectations of the given scenarios. Thus the above learning areas remain vital in the context of reaching an appropriate understating of the interconnection of between learning s and achieving results. Entrepreneurs are always result oriented; they focus on the results the achievements deliver.

In order to learn, there must be a motivation for the entrepreneurs and through the learning process also, there must be appropriate learning related motivations. This will allow entrepreneurs to identify the areas where corrective action is needed and to take action

activities. It is however, evident that not all the individuals can be motivated based on the same approaches. This is the reason that a personalised approach is required when motivating the entrepreneurship students (Wiley, 1997). This is clearly highlighted by Maslow's Hierarchy of Needs; the model is a well accepted model that is used in different areas where motivation is discussed.

Figure 11 Maslow's model (Annamdevula and Bellamkonda, 2016)

Maslow's model identifies that people have different requirements. This indicates that they take action primarily to fulfil one or more of these requirements. It is generally likely that once one level of requirements is fulfilled, they will move on to the next level. For entrepreneurial learning it is the same (Harackiewicz *et. al.*, 2014). It is extremely important for each individual student that their identification and learning motivators are set to meet each of these levels.

Physiological needs

Organisations may periodically face certain economic issues leading to a sharp understanding that they will have to develop certain additional knowledge in order to ensure they do not go on to actually experience a lack of resources in meeting these basic needs in the future. This could be a key motivating factor for entrepreneurs to learn, so obtain the necessary remedial skills to lead them to greater stability of organisational performance in the future, with significantly better outcomes.

Safety needs

Learning leads to better earning potential for organisations and therefore greater protection for the investments of stakeholders. The higher the skills acquired, the better the chances are of strengthening the organisational knowledge base and achieving long term success. Organisational safety needs could thus also be a motivator for the students to learn and to apply the skills they acquire.

Belonging needs

Organisations provide the stakeholders with an appropriate 'belonging environment'. The need of people to be a part of the team and working as a part of the team is the main driver behind this area and this shows that the students may also have 'belonging' needs in place. This also could contribute to motivating them to study and achieve the results needed.

Self esteem

Certain individuals, when taking action involving others, will seek to be the leaders. They want to achieve the highest results. Even through the work and the participation involved, they are likely to be ahead of the others in the group. Their motivation is to achieve results in line with

the needs they have. With the knowledge development of such entrepreneurs, they will be able to ensure appropriate results are reached in this context. Thus, self esteem, and the need to succeed above others in an organisational or business context, can be a powerful motivator in the learning context.

Self actualisation

Certain individuals look to achieve results through their own talents and abilities. They want to reach the heights that others have failed to reach. Thus the role of self actualisation is an important motivator in the learning process, in order that such individuals are facilitated to work towards reaching the goals they have identified as appropriate for them in the long term.

Entrepreneurs often demonstrate self esteem and self actualisation needs. This indicates that the main motivation for them to learn is to achieve the results they desire. Thus for them, there is a clear relationship between the results they reach and the learning process. They may not be interested in learning if they are not convinced that this is likely to achieving of the results.

'The Moment' in entrepreneurial learning

Rae (2013) observed that a conceptualisation of 'the learning moment' in entrepreneurial activities makes a significant contribution to the awareness of the processes of creativity and learning in entrepreneurship. The author suggests that even though the importance of the 'aha' moment in the course of entrepreneurship is largely utilised, inadequate investigations have been conducted into the 'aha' moment relative to the acquisition of knowledge in not only entrepreneurial learning, but human learning in general. The author observes that 'the moment' is a point in time in which humans have a conscious mental awareness of the goings-on around

them; they are hyper aware and have the ability to draw meaning from the events, and to have a recollection of their thinking and how they responded to the events.

Previous studies by Lehrer (2009) and Shaw (2010) also discuss the significance of such a moment in entrepreneurial learning. The meaning of 'the moment' is tied to the experience of an entrepreneur in this context and how the entrepreneur generates meaning at a certain point in time. However, the moment in this case is not a static interval of time, as in the case of 'the blink' as identified by Gladwell (2005), but rather 'the moment' is a conscious span of attention that extends to a higher and more subjective duration of time. In this way, entrepreneurial learning is linked to a consistent flow of images, messages and information which stimulate consistent interactions with 'the moment'. Inadvertently, this makes the processes of decision-making and the momentary perception by humans, and more specifically by entrepreneurs, to be of higher value to learning.

Olick (1999) had earlier made observations that most 'moments' are incidental and usually pass without any significance, but what concerns the field of entrepreneurial learning are the momentous incidents that are an exception to the flow of existence. More particularly, Rae (2010) observed that a combination of at least two events may make the concept of the moment more relevant to entrepreneurial learning, whereby entrepreneurs experience and recall as 'memorable moments' select events that are thought of as being of high historical or personal significance. This is buoyed by continuously evolving technologies, such as ICT, which have speeded up and enlarged the expanse of opportunities available for entrepreneurs, whereby momentary responses are important, and have increased an understanding of the value of learning by the entrepreneur as a result entrepreneurial creativity, recognition of opportunity and decision-making in 'the moment' (Rae, 2013). The value of learning can be considered at

from two distinct philosophical views, one strict logical positivist view (Ayer, 1936) or an axiological view where value is admitted into the bounds of acceptability (Rescher, 1969). Although a number of tools exist (Savoleinen, 2000), Boisot's (1995) 6 step social learning cycle is useful when explaining the life cycle of knowledge.

Other authors have also discussed concepts related to 'the moment', such as Rae & Carswell (2000), who talked of 'learning episodes'; Shapero (1982) who discussed the 'entrepreneurial event' as important in the initial stages of entrepreneurship; Krueger and Brazeal (1994) who discussed the importance of a 'precipitating event' in entrepreneurship which is similar to 'the moment'; and the works of Kollmann & Kusckertz (2006) who observed the importance of the entrepreneurial event.

Entrepreneurial learning conceptualisation

As the initial literature review was carried out during the time of commencing the research, a systematic literature review (see Appendix A for details) was carried out towards the end of the research and the thesis was updated accordingly.

The review of the literature review, despite some regional differences in the conceptualisation of entrepreneurial learning, revealed a seemingly disconnected organisation among the entrepreneurial theories. In addition, while some areas have been studied in depth, other areas have not been explored the depth (Wang and Chugh, 2014). Secundo *et. al.* (2017) argue while entrepreneurial learning research has focused on applying existing theories in entrepreneurial contexts, more research is needed to understand how entrepreneurial learning can help to face key challenges in different contexts.

Rae (2013) listed common types of entrepreneurial moments as creativity, problem, innovation, encounter, opportunity, intuition, insight, resolution and judgment.

Finally, the phenomenon of collective learning plays an integral role in this context being at the intersection of organisational learning and individual learning. Scholars (Wang and Chugh, 2014; Hitt *et. al.*, 2011; Capello *et. al.* 2005; Secundo *et. al.*, 2017) have called for further research in the context of entrepreneurial learning to further understand this phenomenon.

Taking the above into account, the context of this thesis is to better understand the influence of government accelerator programs on entrepreneurial learning. This research, based on the above literature review, derives the following entrepreneurial learning nexus as a conceptual framework when seeking to explore the influence of the government accelerator on entrepreneurial learning. An entrepreneurial learning nexus is derived from contrasting entrepreneurial learning constructs that have not been sufficiently explored (Wang and Chugh, 2014).

In order to understand the interdependencies during the learning experience: exploratory and exploitative learning; individual and collecting learning; sensing and intuitive learning are the primary learning constructs of the entrepreneurial learning nexus as conceptualised below.
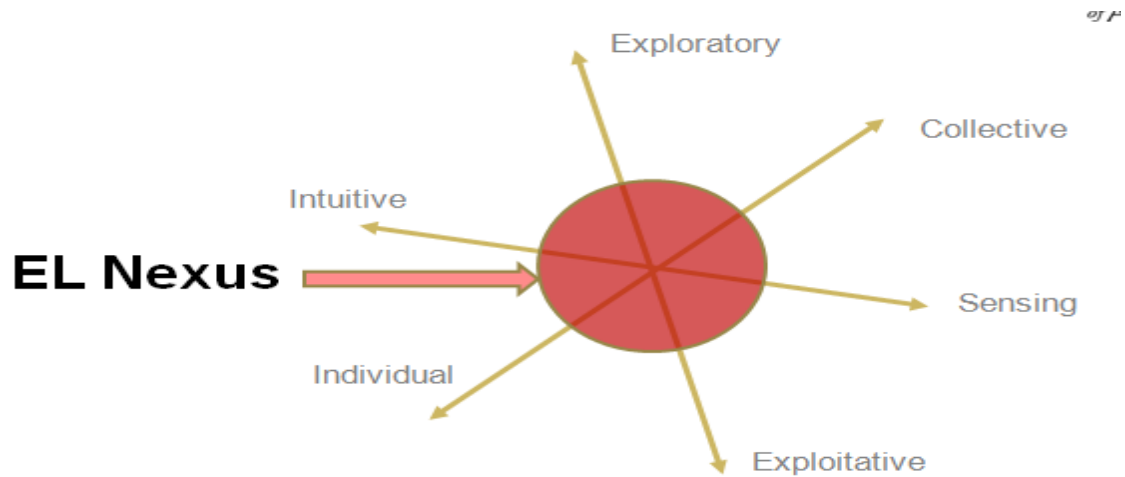
Figure 12 Entrepreneurial learning nexus conceptual model (author developed)

Entrepreneurial learning and competencies in knowledge intensive industries

It is vital that entrepreneurial ventures build the essential competencies required for them to operate that are generally different from the learning required in traditional management (Ravasi & Turati, 2005). For instance, traditional management learning involves the development of competencies to to perform a repetitive task in an increasingly efficient and effective way. Exploitation of a commercially successful new ideas require resources exploration, which is an entrepreneurial competency (Schumpeter, 1936; Kirzner, 1977). This requires a creative component that goes beyond repetition and incremental optimisation. This is primarily due to the fact that building competencies involves a number of processes, such as recruiting the appropriate personnel, ensuring that the required knowledge is available for the employees to access to build their levels of understanding of different working scenarios and putting in place relevant techniques for evaluation. All of these factors need to be in place for an entrepreneurial venture to operate. Based on the research findings of Sadler–Smith *et. al.* (2003), following diagram depicts the variations of these entrepreneurial venture compared to a non entrepreneurial venture.
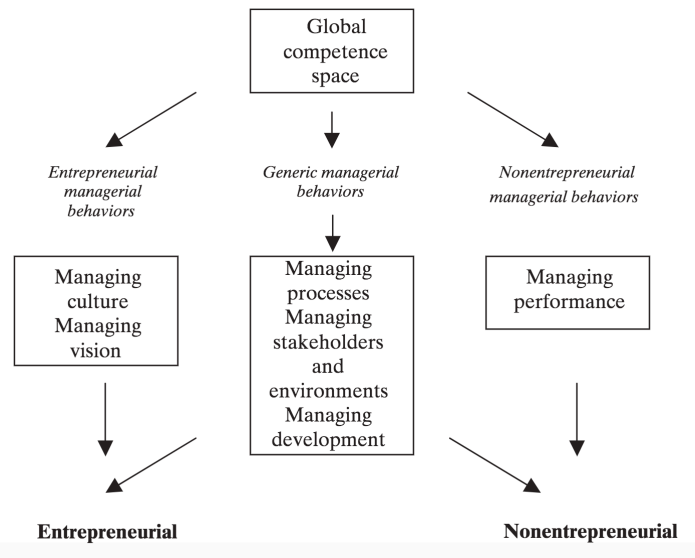
Figure 13 Competencies in entrepreneurial vs non entrepreneurial ventures (Sadler-Smith *et. al.*, 2003)

The competencies required by the knowledge intensive industries tend to be different to the competencies that would be built by the regular organisations (Secundo, *et. al.*, 2017). Many scholars see competencies as higher-level characteristics that enable the entrepreneur to carryout the intended job successfully (Man, 2007). In fact, the competency building approaches by these organisations are continuously developing and are aggressively pursued area by these companies in a competitive spirit. According to Gluhak & Adoue (2007), a few of the key competencies required in the software development arena, one of the key knowledge industries, would have adequate knowledge of the complete field to which the product is related. For instance, if a product is developed to provide solutions for stock markets, the developers should have adequate knowledge of that area. On the other hand, when the software developer needs to change over and work on a different system (healthcare), he/she would have to build a totally different knowledge base. Goel (2006) believes that while the ability to change is a competency which organisations need, access to systems which provide the tailored knowledge they need, is an important consideration.

Any field of employment expects employees to meet key competencies and other supportive competencies. Goel (2006) states that the key competencies, apart from the basic abilities to adapt to a different industry and to learn fast, would be the ability to understand the research, complex environmental factors, the requirements of the customers and the ability to create the product in line with these key requirements. Thus, it is clear that the competencies call for appropriate in depth knowledge in various areas to create a successful system for the customers. This is similar in most of the knowledge industries even though they would not be as demanding as the software development scenario. Thus, within organisations, software engineers with access to the required levels of knowledge would be essential.
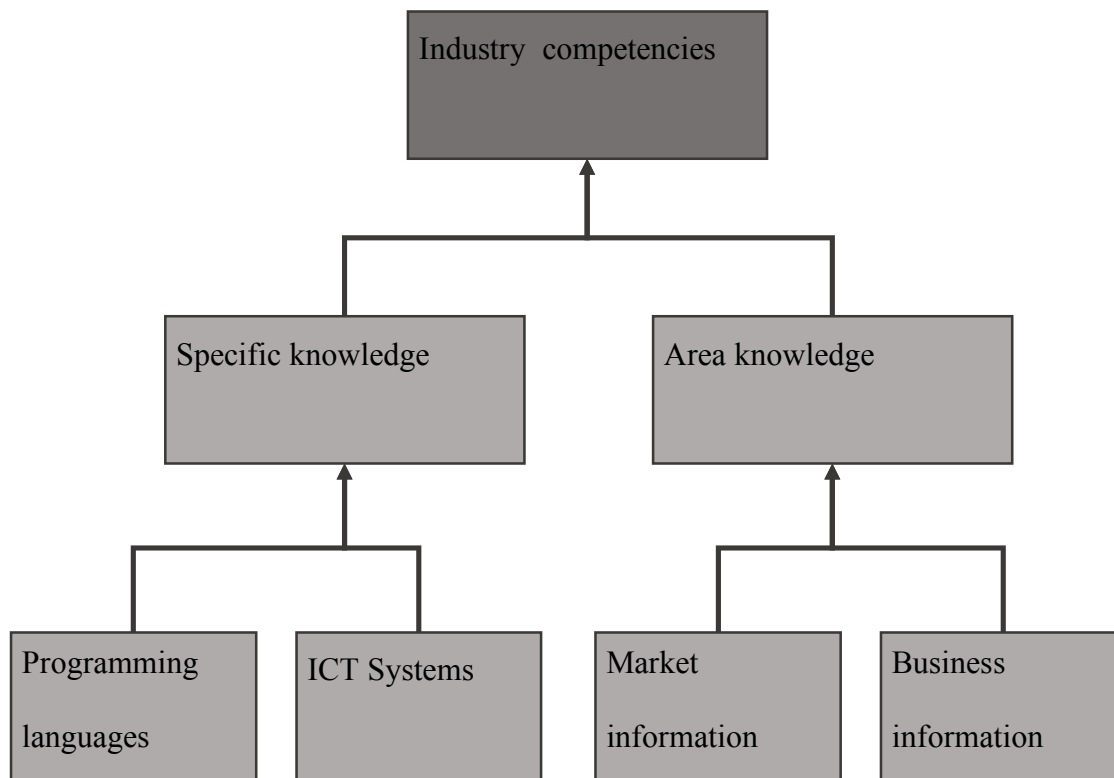
Figure 14 Competencies in technology development (author developed)

A key question for this thesis remains, however; is there a significant relationship between the knowledge, competencies and social networking required in a specific industry? Rae (2017) argued An answer to this question is required for the thesis to move forward. Galunic and

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Roden (1998) believe that there is a clear relationship between these two elements. They believe that if an organisation supports the acquiring of knowledge required by the employees to perform their tasks, this would result in better competency building in the employees, which would eventually result in increased organisational performance. Thus, it can be stated that there is a positive relationship between the competencies of the employees and the knowledge building approach of the organisation.

This is further clarified by the fact that the QAI Global Institute (2008) has given priority to measuring the knowledge acquired when they assess the competencies of an employee. The Institute also believes that knowledge plays a major role in building the competencies of an employee to the required level in order to perform his/her job according to organisational requirements.
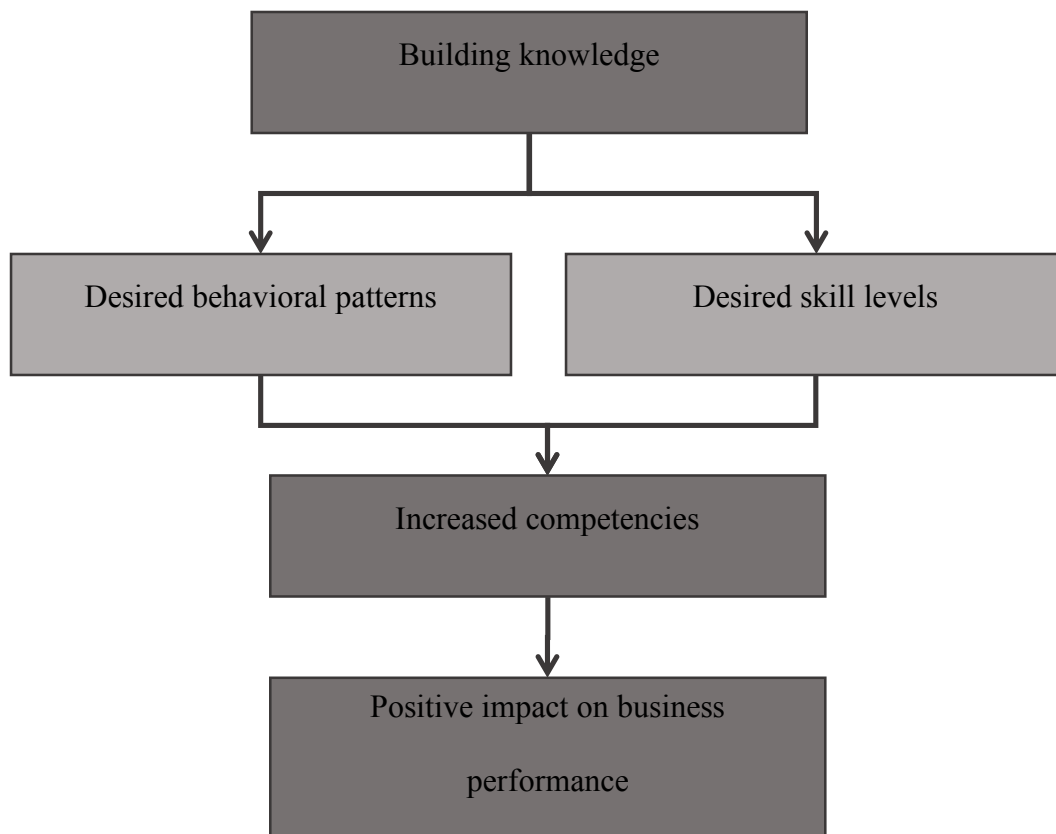
Figure 15 Relationship between the competencies and knowledge (Adopted from Galunic & Roden, 1998)

Competencies are the behaviours and the skills which the employees are expected to demonstrate in performing a task in line with the organisational needs and in accordance with Fermilab's (2006) description of the key competencies. Thus, it is clear that having the required knowledge would lead the employees to desired patterns of behaviour and with eventual performance of the tasks in line with the organisational requirements. For instance, in an environment of software development, it is clear that when an engineer has access to the sources in the areas that he is working on, his mistakes in developing the programs would be diminished. This would significantly contribute to reduced errors associated with the software programs, a clear priority of any company.
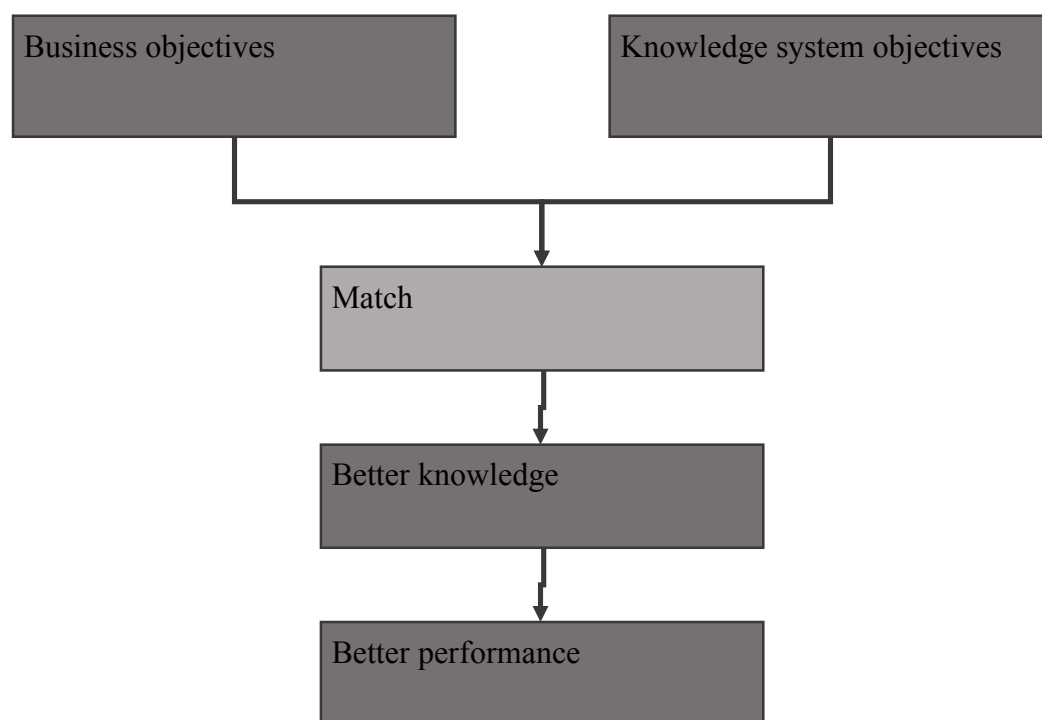
Figure 16 Matching of objectives (adapted from Griner, Bohmann & Krcnar, 2007)

However, Griner, Bohmann & Krcnar (2007) believe that if an organisation fails to relate the total business objectives with the knowledge management process, the total process is likely to

result in failure. Their view is that if the business strategy of the company is in conflict with the knowledge management needs, the organisation would not be able to build the required levels of competencies and eventually, the total process would fail to improve the organisational performance. Thus, it is important that all companies in the business of knowledge related areas should provide for this level of knowledge acquisition to support employee competencies under their business strategies. Robbins and Coulter (2005) believe that integrating core areas of this process into the business strategies would ensure that the organisation achieves its ultimate objectives.

Thus, it can be understood through the literature that knowledge is an important part of the total organisation and it is required that the knowledge is accessible to the employees within the organisation. In order for the knowledge to be accessible to the employees, these organisations are required to have appropriate systems in place and these systems are likely to build the ability of these organisations to capture the knowledge, store the knowledge and disseminate the knowledge as and when it would be required (Robbins, 2003). As foreseen by Drucker (1998), knowledge is becoming an important element of the total organisation, just as managing the other aspects are important to organisational profitability. Managing the knowledge well will also make a significant contribution to improving the performance and could result in better profitability.
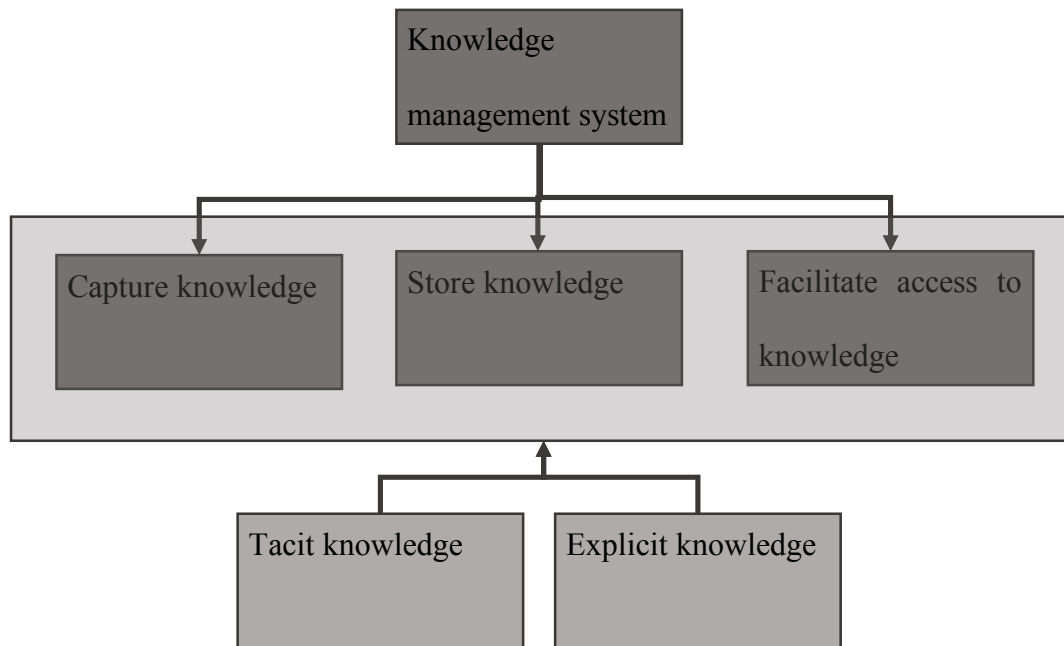
Figure 17 Key components of a knowledge management system (author developed)

Knowledge management systems, according to McKelvie *et. al.* (2007), represent "knowledge-level decision making based on the evaluation of new ideas for products, services, ways to communicate new knowledge and ways to distribute information throughout the organisation". Thus, knowledge management is in other ways managing the information on various organisational aspects and activities and disseminating these appropriately. While it is important that the required levels of knowledge are available to the employees, g unwanted information at the disposal of employees could lead to information overload and this would eventually result in the employee failing to identify what he could/should do with the information at his disposal (Stenmark, 2000).

Knowledge management systems in place would improve performance and this would eventually build the key competencies of the employees who work for knowledge related industries. This would also lead to the companies building competitive advantage due to increased knowledge, and could well result in the organisation being in the forefront of the

competition as it can provide higher quality services compared with the competition in the market (Zack, 1999).

Choo (2001) states that prior to an organisation implementing a knowledge management system, it is important that it establishes a clear relationship between the objectives of the organisation and the objectives that it plans to achieve through this knowledge management system once it is in place. Honeycutt (2000) observes that this is likely to support the organisation to maintain the key focus of the system to eventually achieve the organisational objectives through the knowledge management system. The design of an appropriate knowledge management system would include steps such as: understanding the knowledge requirements of each employee of the organisation; employee access to the knowledge; an understanding of how the employee access to the stored knowledge can impact performance of the employee and designing systems required for managing the knowledge requirements (Ray, 2008). Having an orderly knowledge management system in place would ensure that the employees are formally required to access the system in place when performing their duties, so standardising the levels of performance (Winter, 1987).

The knowledge should clearly be relevant for the requirements of the employees. If the system does not address the requirements exactly, it is likely that the employees would not use the knowledge management system in place and this is likely to create a disconnect between the employees and the system in place (Davenport & Prusak, 1998). Therefore, when the system for knowledge management is designed, it is important that all stakeholder groups participate the planning, developing and the implementation of the total program. Kogut and Zander (1992) state that it is a combination of factors which creates the successful dissemination of required knowledge within an organisation; Thus, it is vital for success that an organisational

design creates the knowledge and the appropriate systems to capture, store and access the knowledge. This would lead to the creation of a successful knowledge management system.

However, simply having a knowledge management system in place does not mean that the organisation is a knowledge oriented operation and ready to build competencies based on the knowledge (Reneker & Buntzen, 2000). It is important that the organisation builds a culture which creates a passion for knowledge amongst the employees. This would be the driving factor of a knowledge organisation. Krogh *et. al.* (2000) state that the individuals play a larger part in the success of knowledge management resulting in an effective competency building approach. The required changes to the organisational culture have to be implemented and this could ultimately result in the knowledge orientation of the organisation being completely integrated into the total organisational system (Robbins, 2003).

It is also important to understand that there is no set method of planning and implementation of knowledge management systems in a company. The changes need to be individualised to meet the needs of each organisation, and the system needs would depend on a number of company specific elements states McCambell *et. al.* (1999).

Thus, the knowledge management requirements would be specific to each of the organisations and they would be required to take action in line with their own requirements. It is unlikely to be successful if the system simply a system used by another organisation would be just implemented. Each knowledge management system needs to be organisationally specific and to be in line with the specific requirements of the organisation. Hibbard and Carillio (1998) note that however sophisticated a knowledge management system, it will only facilitate one

side of the equation if the organisation fails to justify the system with the existing organisational requirements.

 'Information pull culture', could create a situation where the organisation would thrive for knowledge while information push systems could create a scenario whereby the knowledge required by such organisations would be available to the people who need to use it. (McAdam and McCreedy, 2000). Thus, the pull and the push culture would encourage the organisations to create their own knowledge culture which would be specifically in line with the requirements of the company. It would therefore be important that these push and pull factors for knowledge within an organisation are apparent and would take into account prior to the building of a knowledge management system. O'dell & Grayson (1998) have pointed out that organisations can only be successful if they could deliver both the pull and the push factors associated with them.

As clarified earlier, it is imperative that organisations understand that the knowledge base needs to be a part of the organisation and to be part of its long term strategy (Robbins, 2003). The long term strategy of the organisation should build on a knowledge based pull and push culture in which the employees seek knowledge actively while the organisations have systems in place to address those knowledge requirements. Thus, building knowledge management is not simply a matter of implementing software systems in place but of organisations targeting knowledge (Senge 1990). Thus, it would be important to target the highly specific knowledge requirements of the organisations and implementing systems accordingly.

Competencies needed in ICT

As the ICT industry is one of the pioneer industries in the knowledge industries arena, building competencies in the industry is needed based on the knowledge front (Morey *et. al.*, 2002). Thus, building these required levels of competencies within the industries is a fundamental requirement if a country is to sustain growth in the industry. For this reason, it is important first to understand the competencies needed in the industry. Turley and Bieman (1995) have identified the key competencies which would upgrade a non-exceptional software engineer to exceptional levels. This list of competencies that they have compiled indicates the essential required competencies of ICT companies. They have identified these competency requirements in four key categories; task accomplishment competencies, personal attribute competencies, situational skills competencies and the interpersonal competencies. All these competency types are important in companies to ensure that they perform in line with the key set objectives (Hillbum, 1999).

Competencies as identified by Dessler (2005) represent the desired skills and the behaviour patterns that the organisations would like their employees to be equipped with. With these skills and the behaviour patterns, the employees are likely to behave in expected forms by the company and eventually such behaviour patterns would benefit the company by allowing them to achieve the key organisational objectives. McCambell (1999) believes that the organisations wishing to build employee competencies would align with the requirements, so ensuring that the competency levels of their employees are in line with, or exceeding the industry expectation levels.

It can therefore be seen that there is a clear relationship between the competencies of an organisation and its knowledge base. Thus, knowledge is the one of the key ingredients of

building the required levels of competencies within an organisation clearly (Krogh, 2002). The knowledge management systems used within ICT companies should therefore work Turley and Bieman (1995). Thus it is clear that the knowledge management systems would have to be carefully developed to serve the competency requirements of these organisations or the total purpose of these systems would be lost to the software developers in the country. The core competencies required in industry have been conceptualised by Turley and Bieman (1995) prior to understanding the effectiveness of the knowledge management systems in building these core competencies.

Learning approaches by different individuals may have to be identified in the context of the discussion; it is clear that the some learners are interested in the formulation of the relationships and these relationships could eventually lead to results in the future (Rae, 2010). Thus the kinds of learning approaches remain vital to the development of the process and the achieving of results.
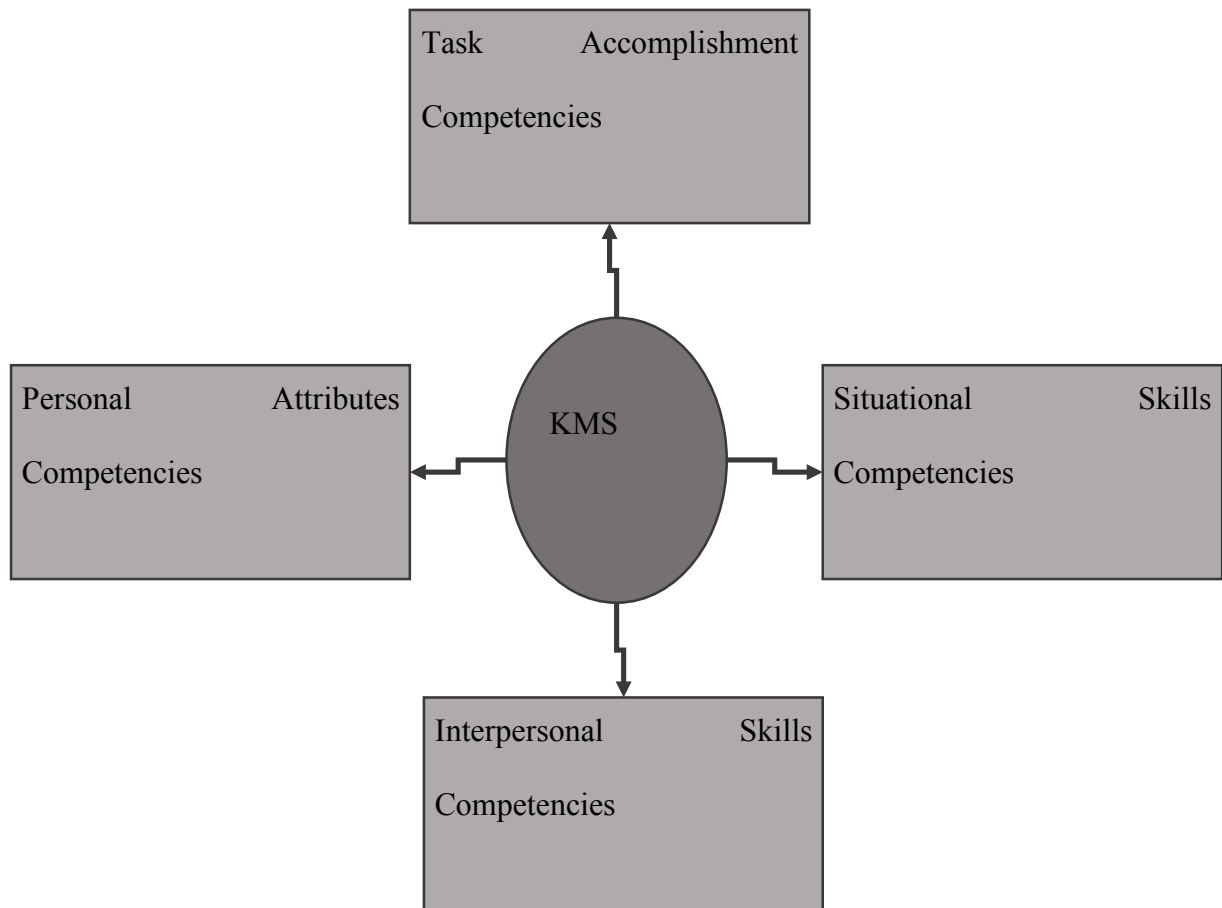
Figure 18 Categories of competencies (adapted from Turley and Bieman (1995))

For this reason, intuitive learning and the senses and learning remain areas that need attention as part of the entrepreneurial learning experiences. These aspects contribute towards the kind of learning required and meeting the needs and expectations that are in place.

Different learning and problem solving skills are needed by entrepreneurs. It is clear that there are many instances when relationships and the soft skills have become important for problem solving (Hajipour and Nazarpour, 2010). The entrepreneurs who have these skills are said to be more intuitive learners. This is due to the fact that they are learning through experience and the relationships they have may well assist in problem solving.

However, this approach alone will not be able to solve all of the problems they may face; for instance, the parties will have to identify the relevant issues in the context of the facts and the facts may have to be analysed in the resolution of certain problems. This more analytical approach is considered important to ensure that the solution is solid and addresses all aspects of the problem. Such an approach involved both the sensory or intuitive approach and the more rigorous learning approach and some entrepreneurs successfully draw on both approaches to resolve of the issues they face (Van de Ven, Polley, Garud & Venkataraman, 1999).

It is also important to note that entrepreneurs cannot be one-sided in the learning context. This is due to the fact that both of these aspects that have been used in the learning process remain vital and the entrepreneurs will have to use the right approaches to ensure that the required benefits are reached. Thus, the above learning aspects h are both important parts of the learning process sand the organisations will use these learning models in line with the various scenarios that they are faced with (Miller and Bound, 2011).

With new systems and the methods emerging continuously, the partners of the industry should be mindful of these new developments and potentially new outcomes and the resulting benefits that they can achieve. This creates an incentive in all parties to work towards achieving even better results (Heidt, 2014), Access to the latest knowledge and methods will allow the parties to be highly competitive in the industry. For instance, Siemens (2014) introduced a new learning theory called connetivism that discusses the new learning skills and tasks needed in the new digital era taking the modern learning tools and changes of the environment into account. This represents another strong reason for the the learning process to be fully integrated with industry.

There are many benefits associated with the learning process, notably this facilitates improvement in the employees' quality of work. Thus, the customers are more likely to be satisfied with the outcomes due to the learning process and the related benefits (Ramage, 2014). It is more likely that the employees and their organisation will be able to reach long term goals, with results in line with expectations. Thus the employees have an important role to play when the learning process is fully integrated and all the parties work together to achieve the expected results.

The learning process is not simple; it is evident that the parties will have to undertake learning with the intention of achieving of the long term goals that are in place (Hogue, Kapralos and Desjardins, 2011). The role of the entrepreneurs in the learning process is a vital one as well. This is due to the fact that in an entrepreneurial organisation, it is the entrepreneurs who will make decisions and lead their company in the required direction. Thus, they will have to make sure they take the company in the right direction to achieve the needed long term results.

Thus the role of the entrepreneurs and the entrepreneurship aspects indicate that the parties will be able to achieve long term and beneficial results in the future context. The companies which upgrade their knowledge base continuously will ensure that they build a competitive edge over the other parties due to the unique nature of the outcomes that they contribute into (Cheung et al, 2016). Thus, the results will provide the parties with positive long term outcomes and to achieve positive results in line with the needs and the expectations of the parties involved.

The above discussed approach towards learning base in commercial organisations indicates that the entrepreneurs will have to be very conscious of these learning approaches and mindful of how they will be able to develop approaches towards the relevant learning activities.

It is equally important to understand the interplay between knowledge and learning. The following diagram depicts the dichotomy separating knowledge that the organisation processes from the the process offering.

Figure 19 Mapping the new venture learning landscape including knowledge management (Easterby-Smith & Lyles, 2003)

When entrepreneurs are seeking to establish new value for their venture, entrepreneurial learning supersedes knowledge management. Dixon (1999) stated that "we have entered the knowledge age and the new currency is learning—it is learning, not knowledge itself which is critical".

Learning and competitive advantage

There are many different areas of learning that are vital for organisations if they are to be able to achieve positive results in terms of the development of learning related outcomes (Rae, 2012). It is important that the firms build competitive advantage due to the high competition in the industry. There is a very wide variety of firms and they have the ability to provide diverse products and services. Thus, it is vital to provide the kinds of products or services that will

benefit all the parties and ensure that the expected results are reached in the long term (Xian and Woodhams, 2008). This requires that the learning process is well established within the organisation.

A key aspect of such organisational learning is learning through theoretical developments. Today, there is much research carried out and there will be specific knowledge developed in the context of the firms acquiring this knowledge to achieve competitive advantage. Thus the parties will have to work together to ensure that they identify and gain the required knowledge in these areas to reach the appropriate results. (Wang, Lin Ma and Wang, 2015). This will allow the entrepreneurs as well as the stakeholders to learn from the insights gained from the research and knowledge generating aspects. They will then be able to apply the findings of relevant studies in line with the organisational vision of achieving long term benefits in a future context.

It is possible that the entrepreneurs would learn through the experience; when doing the work, they will be able to experience the outcomes and the results. This will allow them to perform their activities and eventually to benefit form the outcomes. Thus, the learning process through the activity itself remains another vital aspect that will provide beneficial results in the future (Thayaparan *et. al.*, 2015). Learning through experience remains vital in the context of ensuring that the businesses are directed in the appropriate manner and that they achieve long term results in line with the expectations.

Learning through the competition is another significant aspect of learning; firms will be able to learn from each other from their activities . The competitors will work with various targets in mind and use different strategies to reach the markets and the consumers (Chawla and Joshi, 2012). Thus, being able to learn from the competition's failures and successes, may contribute

to adjusting and refining an organisation's approaches, so expanding their chances of successfully achieving results in line with expectations and contributing to organisational growth in the future.

With the development of knowledge, it is vital that the parties will be able to work towards reaching specific beneficial results. This indicates that within the body of required knowledge, the companies will be able to develop superior services to meet the market expectations (Wu, 2013). The potential benefits are high and successful results will ensure that all will be able to reach the intended long term outcomes. The fact that the parties are involved with the learning process, indicates that they are likely to have higher levels of efficiency when compared with the others involved in the industry (Sense, 2005). This is another aspect that has to be taken into consideration.

Organisations working to develop a knowledge base in this way, are more likely to ensure that appropriate knowledge can be used in appropriate tasks to ensure that the required results are more likely to be achieved. This is vital for the success of the organisations The development of such systems in place to reach intended long term results makes a significant contribution to achieving positive outcomes for the the organisations (Scatliff and Meier, 2012). Thus, the above discussion indicates that organisations, through the learning process, will be able to develop an appropriate competitive advantage in the future.

The significance of learning to an entrepreneurial venture in order to gain competitive advantage was discussed above. Considering the growing demand for entrepreneurial ventures around the world, not only businesses but governments are seeking new ways through which they could support and benefit from this phenomenon.

Government accelerators

In the last decade, many governments have paid increasing attention to policies and programs on innovation in their countries to foster business growth and economic development (Minniti, 2008). Significant work has also established that activity in and around innovation and entrepreneurship has important social implications (Chell, 2007). As a result, policy discussions have centred on the idea that governments seeking to stimulate their economies should reduce constraints on innovation and entrepreneurship (Acs *et. al.*, 2004; Minniti, Bygrave & Autio, 2006). Government influence on businesses has mainly been researched as a macroeconomic policy level construct. However, direct support programs, supporting economic institutions and placing value on businesses and entrepreneurship within society, have also been identified as ways through which governments can positively influence businesses (Smallbone & Welter, 2001). Contradicting the notion of entrepreneurs embracing and thriving in uncertainty, Hall & William (2008) argue that government involvement in innovation is important as it underpins a number of activities within systems of innovation that act to reduce the levels of uncertainty felt by individual businesses within the private sector. Individual businesses also need the assistance of government programs as individual businesses may not have the necessary capability, resources, and legitimacy, particularly in a national or regional context (Van de Ven, Polley, Garud & Venkataraman, 1999). However, the role of government involvement needs to be better defined, as failures in innovation occur because of the inability or unwillingness of the government to facilitate and promote the business growth (Breznitz, 2006).

Miller & Bound (2011) and Radojevich (2012) observed that over recent years, a new method of incubating new technology ventures has arisen which has been hugely spurred on by

technology entrepreneurs who had achieved considerable success and also by investors. They referred to this method as 'the accelerator programme'. However, Bliemel *et. al.* (2013) observed that there has been little research ion accelerator programmes and a common definition does not exist. There are five main aspects of the accelerator programme which distinguish it from other programmes, and they are "an application process that is open to all, yet highly competitive; a focus on small teams not individual founders; cohorts or 'classes' of startups rather than individual companies; provision of pre-seed investment, usually in exchange for equity; and time-limited support comprising programmed events and intensive mentoring" (Miller & Bound, 2011, p. 23).

The accelerator programme was born in Silicon Valley in the United States in 2005, but it has now spread to many areas around the world (Stross, 2012). Accelerators allow for investors, entrepreneurs and startups to create connections amongst themselves and have emerged as a way of moulding startup ventures into businesses that are viable and scalable (Miller & Bound, 2011; Fairlie & Chatterji, 2013). Cohen (2013) noted that "accelerator programs are programs of limited duration—lasting about three months—that help cohorts of startups with the new venture process. They usually provide a small amount of seed capital, plus working space. They also offer a plethora of networking opportunities, with both peer ventures and mentors, who could be successful entrepreneurs, program graduates, venture capitalists, 'angel investors', or even corporate executives". The same was observed by Mason and Brown (2014).

Aerts *et. al.* (2007) noted that a reference to the 'incubator' in a business context was first made in the year 1959 and its main objective was to come up with an institutionalised environment which aided and permitted the growth of business ideas and start up companies. However,

Autio & Klofsten (1998) observed that the process of making developments in a new venture via the use of incubators can be quite lengthy, and it is not uncommon for the process to span a period of several years, as was also observed by Pena (2002). Through use of business incubators, the aim of the program is to place an emphasis on providing the necessities needed for a company's growth, such as office space, reduced rent, business contacts and expertise in the field (Grimaldi & Grandi, 2005). This is in addition to subsidising some administrative costs in the company.

Udell (1990), Rice (2002) and Smilor (1987) showed that over the years, companies that have previously been incubated, have experienced much more success than companies which have never been incubated before. Incubation is very suitable for a large selection of companies and businesses and the period that the businesses undergo incubation is heavily dependent on the company needs, as observed by Lewis *et. al.* (2011) and Aaboen (2006). Miller and Bound (2011) observed that in the periods preceding the dot com bubble of 2000. a number of the so-called networked incubators emerged with an emphasis on new ventures based on Information Technology (ICT). The incubators had high specialisations and utilised a significant portion of expenses quickly from the investors to the programme as noted by Blank (2005) and Cohen (2013). The incubation model was founded on huge investments on single projects, related to the practice of venture capitalists and which had been shown to achieve considerable success in previous years (Grimaldi & Grandi, 2005). Blank (2005) observes that despite the initial massive investments in the ICT companies, most were notable in generating revenue and were subsequently devalued in the stock exchange, making many investors lose their money without tangible gains from their investments. Miller and Bound (2011) noted that as such, the network incubator was referred to as an 'incinerator' to give an emphasis to the predicaments of using large investments in the form of funding without a demand on results that are measurable. This

idea was also noted by Quinones *et. al.* (2015). A recovery from the dot-com bubble put more things into perspective, leading to the emergence of several frameworks and ideas which emphasised shorter periods of incubation based on the notion that the development of products based on ICT is usually faster than the development of physical products (Miller and Bound, 2011). As such, the Y combinatory, the first ever accelerator was launched in 2005 in Silicon Valley (Stross, 2012).

Though there were some common aspects with the traditional incubator, such as the provision of seed funding, mentoring, educational assistance and technical assistance (Lalkaka, 2003), the distinctive features of the new model were that the development cycle of a single startup rarely exceeded 3 months, and the investments were much smaller than those of the traditional incubator. The Wall Street Journal (2014) estimated that the investments costs in the early stage startups of ICT based companies have dropped significantly to between USD 10,000 and USD 25,000 in comparison to the investment demands from incubation. Cohen (2013) observed that the key differences between the incubators and the accelerators are that whereas incubators span one to five years, accelerators span only 3 months. Incubators do not have cohorts whereas accelerators do (Bliemel *et. al.*, 2013); the business model for incubators is rent and non-profit whereas for accelerators it is mainly for investment, but can also be non-profit; incubators have a non-competitive selection criteria whereas accelerators face a very competitive selection (Welch, 2012); the venture stage for incubators can be either early or late, whereas for accelerators it can only be early; and the mentorship for incubators is minimal whereas the mentorship for accelerators is intense (Cohen, 2013). Van Huijgevoort (2012) observed that the shorter duration of accelerators, usually for three months, is the characteristic that mostly defines accelerator programs and distinguishes them from incubators. This was also noted by Desmarais (2012).

As such, the comparison and contrast between incubator and accelerator can be depicted by the figure below

The business framework advanced by the Y combinator is what has been referred to as the accelerator. Miller and Bound (2011) observed that the number of startup companies funded by accelerator programmes in the US was less than 20 in 2005, and rose to more than 180 by 2010. Currently, there are an estimated 2000 accelerator programs in existence (The Wall Street Journal, 2014)

However, little is known about the potential influence of government accelerators on entrepreneurs and new ventures and the research in this area has been relatively slow, as accelerators are a relatively new phenomenon. The available literature is primarily from the United States and Europe. To the best knowledge of the author, the research on accelerators in the context of developing countries is literally non existent.

Summary

Government accelerators are the modern day replacement of the incubators. Accelerators are a much more recent phenomenon, with their establishment in 2005, but the incubators have existed since the 1950s. However, there are striking differences between incubators and accelerators: whereas incubators were slow to be implemented, sometimes taking years, accelerators have usually taken a much shorter time span. Additionally, there has been an increase in the number of accelerators over the recent past, to currently over two hundred accelerator programs since the commencement of the program in 2005 in Silicon Valley. However, even though the accelerator program is a big boost for entrepreneurs, it is important to understand the under examined area of the influence of accelerators on entrepreneurial learning.

Specifically, the entrepreneurial learning is an area where a strong link between organisational learning and entrepreneurship is observed. Hence the value construct is introduced to determine the influence of the entrepreneurial learning during the entrepreneurial learning nexus. Some dimensions of the entrepreneurial learning nexus have greater influence, altering behaviours and attitudes, shared vision, and personal mastery due to the fact that the different employees of an organisation have different personal masteries which could impact on their new ventures.

Learning is an important aspect that contributes to the performance of businesses. It is vital to note that the learning aspects play a specific role in the context of ICT organisations. As the leadership role is played by the entrepreneurs of these companies, in the context of developing countries it is vital that they are given the opportunity to work to acquire the necessary knowledge for organisational success through entrepreneurial learning, that has been discussed in detail in this chapter.

Chapter 3: Methodology

"Do not go where the path may lead,

go instead where there is no path and leave a trail."

-Ralph Waldo Emerson

Introduction

This chapter specifies the methodology used to understand the influence of an accelerator on entrepreneurial learning. As discussed in chapter 2, entrepreneurial learning research is complex and augmented. There are many aspects covered under entrepreneurial learning. Scholars have called for further studies to understand how entrepreneurial learning takes place in different contexts. Taking this into account, this chapter covers the philosophical basis of the research to set out the expectations as to the nature of knowledge contribution of this research and the research methodology followed in the thesis.

This chapter is significant due to the fact that the accuracy of the research findings would depend on it in the discussion associated with the chapter. It is important to note that new insights and new knowledge gained through the discussion based on the findings of the study. Thus, the development of the appropriate methodology to answer the research questions will enhance the quality of the findings. This will lead to more credible and beneficial outcomes, and research recommendations with greater integrity that are more likely to produce useful new knowledge.

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A detailed insight into research context is also provided in this chapter. This includes a country overview of Sri Lanka and the context in which the selected government accelerator – Spiralation has been established along with its significance.

The chapter will cover the sample selection criteria and how the data collection and analysis are designed, including the methods adopted. The approaches taken to analyse the research data and to formulate new insights will be elaborated. These will indicate the benefits attached to the study and the approach taken.

Philosophical underpinnings

A selected research philosophy frequently indicates a particular view of the world. It includes the assumptions that form the basis of the research strategy as well as the methodology to be applied in the research. According to Johnson and Clark (2006), researchers should have the knowledge of the philosophical commitment they make via their selection of a research strategy, particularly because it has vital effects not simply on what they do, but also how they understand their investigation.

A philosophical approach is concerned with making sense of the way individuals understand their surroundings. The interpretivist paradigm is based on the phenomenon that people construct their own realities (Morgan & Smircich, 1980) socially and symbolically, which is more inductive in nature. The realist paradigm, which is more deductive in nature, seeks to examine the regularities and relationships that lead to generalisations and universal principles,. A multi-paradigm approach offers the possibility of creating insights by taking different epistemological and ontological facets (Gioia & Pitre, 1990).

Under pure and laboratory conditions, it is vital to note that these kinds of environments are simulated when the studies are carried out. However, in this context, the real conditions that are in existence must be used to ascertain the study related dynamics; it is evident that there are many factors that could affect the study area and these factors could impact the study outcomes (Thenmalar and Geetha, 2014). Thus the development of the appropriate methodology to reap the maximum benefits of the research resulting in generalisable new knowledge is possible. A multi-paradigm methodology is employed in this research in order to synthesise the deductive analysis with inductive analysis (Gioia & Pitre, 1990). As such, the study methodology in this context is developed to t and achieve the results that would provide suitable insights, with the minimum number of distortions. This is likely to ensure that the new insights are developed in the context of the study and that results are reached by following the research design outlined in this chapter (Kiren and Shoaib, 2016).

The development of knowledge regarding entrepreneurial learning and the nature of the knowledge forms the basis of this study, hence the philosophical underpinnings. As a result, the research methodology of the study employs concept mapping and thematic analysis techniques as the underpinning research methods for this exploratory study. With an exploratory approach, the research aims at establishing the boundaries of the entrepreneurial environment in which the issues of interest might be found. It also identifies the salient elements or variables that are likely to exist in that environment and have relevance to the study.

Research ontology and epistemology

It is evident that a study must be conducted with the beings that exist with the research. The existence of the beings and the nature of the interactions that they indicate are the main reasons

that social complexities are created (Petrov, 2010). It is evident that social constructs are developed in order to make sure that beneficial approaches are developed to identify the main aspects of the entities that are involved, with the space and the significance of the interaction of the elements. Focus needs to be maintained on these elements to identify the main parties who are likely to be impacted by this aspect in discussion (Ruwhiu and Cone, 2010).

The concept of epistemology is based on the knowledge gathering process; gaining t knowledge is the main purpose of conducting research and an appropriate step will have to be taken to ensure the desired knowledge is gathered in line with the needs and the expectations of the given scenarios (Hutton, 2010). When the required knowledge has been gathered, it should to be analysed in the context of the current expectations and the future outcomes that are associated with them. Thus epistemology and ontology provide the basis for the development of the knowledge and for ensuring that the desired kind of knowledge is gathered with the expected outcomes reached as a result of the research.

This research is developed based on the ontological premise that reality is socially constructed (Morgan & Smircich, 1980). When discussing the meanings of trees, Crotty (1998, p.43) states "We need to remind ourselves here that it is human beings who have constructed it as a tree, given it the name, and attributed to it the associations we make with trees". In other words, this research is located on the subjective end of the realist-subjectivist spectrum.

How knowledge is accumulated is defined in epistemology. This study is conducted from an epistemological perspective by taking into account the various meanings attributed to the accelerator by the participants, mentors and its organisers. According to Saunders *et. al.* (2009), epistemology focuses on what makes up acceptable knowledge in the area of study, which in

this case, is understanding the influence of a government accelerator on entrepreneurial learning.

As such, from an epistemological standpoint, alternative approaches were used to interrogate the data from both realist and subjectivist perspectives (Braun & Clarke, 2012). Basing the research philosophy on multi-paradigm phenomena, it is necessary to study and understand the details of the situation in order to clarify the reality or perhaps a reality that is working behind the scenes. This combination of the realist and subjectivist insists on exploring the subjective and objective implications that promote the actions of social actors so that the research can understand these actions. As a result, individual entrepreneurs will have a perception of varying situations, in different ways, as the result of their personal view of the world.

When combining subjectivism and realism with ontological thinking, it leads to the belief that the world and the social norms are a construct of the beings that are living in the world and when studies are conducted based on these aspects, it is vital that the boundaries of these constructs are defined and the appropriate perceptions are captured (Hutton, 2010). This will enhance the understanding of the social constructs and lead to a better gauge of the aspects involved and the benefits associated. Thus the combination of a realism and interpretivism based approach towards the understanding of the social issues will allow a knowledge of the perceptions of the respondents and, based on these perceptions, gathered appropriate insights are formulated (Weinberg, 2015). This is the premise on which this research has been carried out.

Because of the differences in interpretations, the actions of entrepreneurs and the nature of their interpersonal relations with their colleagues in the learning environment will be affected.

Therefore, the entrepreneurs being studied do not simply interact with their environment, but they also try to understand it through their interpretation of activities and the meanings that emerge from these events. Their resulting actions may be taken by others as meaningful in the setting of these socially created meanings and interpretations. In this study, this requires understanding the subjective reality of the entrepreneurs, their motives, intentions and actions, for learning to be understood in a meaningful manner. Thematic Analysis Methodology (Braun & Clarke, 2012) suggests that a constructivist approach allows the researcher to keep the holistic and meaningful features of real-life events, including organisational and managerial procedures, international relations, individual life cycles, and the maturation of industries.

The entrepreneurial learning aspects involved are influenced by many other dynamics, including social issues, economic and cultural issues. These internal and external aspects should be evaluated in an appropriate manner (Hutton, 2010). Thus, a multi-paradigm approach was used during the thematic analysis process. As such, the study would be able to provide useful insights into a given scenario, with minimum bias associated with the area of discussion.

Although distinctions exist between ontology, epistemology, a theoretical perspective, methodology and methods, there exists an overlap and an interconnectedness among these categories, from a realistic perspective. The following interpretations depict this interconnectedness and overlaps, which helps to position the research design that is employed in this study.

Ontology	Who and what are the results of our socio-cultural experiences? How is the conceptualisation carried out? Which is on the subjectivism spectrum where this research is concerned? Thesis examines how does entrepreneurial learning take place during the

	early stage of an entrepreneurial new venture and in particular how the entrepreneurial learning is influenced by a government accelerator.
Epistemology	We learn and gain knowledge from participating in social contexts. Although we actively construct knowledge, the way we do this is socially derived (Denzin & Lincoln, 2005). How do we derive knowledge from the social contexts in which we exist? How do we inform our knowledge constructions as being, many, varied, fragmented in nature and their boundaries blurred? Alternative approaches were interrogated in this research. In order to understand entrepreneurial learning and the influence of a government accelerator on entrepreneurial learning, an exploratory study was carried out in this research, taking the only government accelerator of Sri Lanka into account.
Theoretical perspective	The philosophical opinion of the researcher that forms the basis for the methodology. The researcher works in the nature of the natural scientist, while at the same time questioning whether objects exist on their own without a knowledge of their existence. Additionally, there is the understanding of differences between individuals as social actors and the roles that a researcher's values play in the chosen research objectives (Gibbs, 2007; Crotty, 2003). While a unique context that has not been sufficiently explored – "how entrepreneurial learning is exercised during the transition to a new venture" has been examined by this research, researcher also examined specific theoretical constructs that are related yet has not been sufficiently explored under entrepreneurial learning. As such, the research sits both on the subjectivist and realist sides of the spectrum.
Methodology	The underlying basis for choosing a method and the ways in which the method is applied. Owing to the exploratory nature of this research, collection of data through observations, interviews and learning journals, analysed using a multi-paradigm perspective and the process of progressive re-examination of data will be the determinants of research findings (Saunders *et. al.*, 2009).

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Methods	Thematic analysis methodology (Braun and Clarke, 2012), concept mapping () and synthesising the results were applied to the study to fully understand the influence of government acceleration approach during entrepreneurial learning. This provides the researcher with evidence, which is then followed up to obtain more definitive implications. This makes up the tools and techniques the researcher uses to collect and analyse information (Crotty, 1998; Saunders *et. al.*, 2009).

Table 2 Key theoretical aspects of research design (author developed)

This study examines how a government accelerator influences entrepreneurial learning.

Research design

A research design for this study has been used to provide a general plan of how the research questions are answered. This study has utilised a qualitative exploratory research design for which an ethics clearance was obtained before operationalising the research (see Appendix D for the human research ethics committee approval of University of Adelaide). It leverages interview data, learning journals and readily available data to carryout the research study. The exploratory research design used in this research provides a significant means of identifying precisely what is happening, to find new insights, to question the available information, as well as to evaluate phenomena from a new perspective (Robson, 2002). The appropriate research design for the studies should address a topic that has high levels of uncertainty, largely because very little previous research has been conducted in this area. As shown in this study, there exists a research gap in entrepreneurial learning, as minimal research resources have been applied to the subject matter. This approach is particularly significant if one seeks to clarify the understanding of the influence of a government accelerator on entrepreneurial learning.

According to Neck and Greene (2011), reflection is not simply an essential element of entrepreneurship as a phenomenon, but is also a way of practising entrepreneurship and entrepreneurial learning. With exploratory research, Adams and Schvaneveldt (2000) assert that the search becomes progressively narrower and clearer as the study progresses towards answering the set research questions, hence the high degree of flexibility. Therefore, a thematic analysis methodology is employed (Braun and Clarke, 2012) to holistically understand the influence of the government accelerator during entrepreneurial learning.

When the study is designed, it is vital to know the nature of the understating of the given issue and how best the needed information can be collected. In order to ensure that the new insights are gained, the appropriate information must be collected as well as appropriate research strategies developed. In this instance, a clear picture of the total scenario has to be developed with a view of the learning and how the learning is facilitated through the state accelerator approach (Dick, 2002). This will ensure that the key dynamics associated with the entrepreneurial organisations and the main benefits attached with these aspects, are identified appropriately.

Qualitative research in general would provide new insights associated with the total picture under study. When there is a need for in-depth understating the social constructs and the reasons behind them, this is the best approach use. On the other hand, a quantitative approach will provide information on the nature of relationships that exist in the given context. Quantitative studies in general, however, will not be able to provide an in-depth or holistic understanding of an issue under consideration (Zuber-Skerritt and Perry, 2002). Thus, the quantitative approach on its own, in this context may not be suitable due to the need for an

understanding of the issues in depth and the scenarios relating to these issues should be justified by comprehensive reasoning,

To arrive at the study objectives, that is, to seek to answer the research questions, it is important that careful analysis techniques are employed. In order to make sure that sound results are achieved, it is evident the research methodology should be designed in a suitable manner to reach new insights (Miller and Bound, 2011; Stross, 2012).

As an exploratory study, the answer to research question 1 should also be considered based on a clear understanding of the meaning of "entrepreneurial learning" from the participants' perspective. Learning has several stages and the findings should be able to indicate how learning and its stages are perceived by the participants of an accelerator program. Ensuring contextual understanding and participants' perspectives will enhance the benefits in terms of the results that they would achieve (Pena, 2002).

The literature review derived a conceptual model of the entrepreneurial learning nexus construct, based on the areas found in the literature that is not sufficiently explored in entrepreneurial learning. In order to understand these in an objective manner together with complementary, exploratory, subjective analysis, will provide the necessary insights for research question two (RQ2) "how the accelerator is influencing the entrepreneurial learning", as a result of this study.

The right approach and mindset towards learning is important for the entrepreneurs; without it, they will not be able to reach the intended long term learning benefits in the future (Wiley, 1997). The synthesising of findings is another approach utilised in order develop new

knowledge through multi paradigm perspectives (Gioia & Pitre, 1990; Grafton, Lillis and Mahama, 2011). This shows that there is a clear need in place to analyse the findings from multiple perspectives in the context of the study, to provide the needed insights as to how the program has contributed to entrepreneurial learning.

The analysis of data usually occurs after data collection methods have been applied and data has been collated, in order to understand the study's findings in relation to particular objectives. This analytical method is, in a way, unusual in that the data is collected using a qualitative design. Additionally, analysis of this data takes place in a manner concurrent to the data collection phase and not subsequent to it. According to Neuman (1997), the primary data analysis technique for case studies is identified as, Observe, Think, Test, and Revise (OTTR). This process of data analysis must be iterative, in which the initial observations are considered and then define subsequent data collection. OTTR was applied in this study during the analysis. Initial observations were made, which led to the formulation of tentative guidelines to achieve the set objectives. The researcher then had to consider the kind of additional information needed to eliminate optional explanations or to confirm initial objectives. Testing was also which involved deriving findings through two different and contrasting paradigms and synthesising them during the final stage.

The analysis of a qualitative research study is naturally argumentative, requiring the researcher to be fair in bringing out the arguments as well as considering other objectives and evidence that could possibly contradict other views within the area of study. Research is always a continuous process since there cannot be perfect research. It is, however, important to ensure thorough data collection and analysis for credibility and reliability. Maylor and Blackmon (2005) point out that case studies can make an analysis deeper and realistic by giving it a real

life perspective. Additionally, this approach can also illustrate the impact of policies, processes, or programs in terms of the human and social dimensions, and they can easily complement other research approaches. On the other hand, the events, circumstances and results in case studies are in most cases not generalisable to other issues. There is also the problem that data may not be statistically valid or reliable which could make controlling for bias a challenge. Therefore, on the negative side, case studies may be time consuming, especially in the need for comprehensive understanding of the research topic.

Qualitative vs. quantitative approaches

When the information that is required is in the form of width and comparing width with each of the areas, the best approach that can be taken is the quantitative approach. This is due to the fact that this approach allows comparison of the data points in a quantified manner and the parties will be able to test the given hypothesis for a given context. Thus, the quantitative outcomes remain vital for such circumstances and this is a very common research approach in usage.

Evaluation of the facts and the relationships using a quantitative approach is easier. This is due to the fact that the study would use statistical models for the purposes. Using a statistical models implies that the findings of the study will have direct relevance to the study. The studies can therefore use the statistical models, with this approach leading to appropriate results. Overall, quantitative analysis remains important in determining that the benefits will be reached in line with the expected results (Mcburney and White, 2010).

However, it is also important to note that in many instances, the depth of the information also matters. instance, the reasons behind a given scenario may need to be understood for a complete

understanding. In order to make sure that this is achieved, the relevant information should to be collected from the parties, ensuring the capture of any new insights. The role of qualitative studies remains important in this context (Creswell, 2007). When the approach is qualitative in nature, this highlights the fact that insights from the study remain highly useful for the discussions in presenting elements from multiple dimensions. This is due to the exploratory nature of the approach resulting in new insights.

Thus, the above findings indicate that the qualitative approach can be used to examine a scenario in depth. This in-depth understanding of the issues will allow the parties to identify the best approaches that will lead to beneficial results in the future. Thus, knowing these details will allow greater understanding of the issues relating to the discussion and how they contribute to developing new knowledge (Neck and Greene, 2011).

Thus, the study draws on the dimensional importance of qualitative analysis, rather than providing   pure quantification as experienced in the case of quantitative studies alone. At the same time, quantitative analysis remains another important lens, likely to provide useful insights into this study's discussion sections. Thus the use of the appropriate approaches in the context of the study and its related outcomes, will be evaluated, along with the predicted benefits in the long term context (Dick, 2002). It is essential that the research design is transparent, resulting in credible benefits from this study.

The above discussion shows that both the qualitative as well as quantitative information relating to the area of discussion should be examined and evaluated. This will eventually lead to formulation of the new insights about the area of discussion. However, as the depth of

consideration for an issue is prioritised, a qualitative approach is selected as the research ontology.

Applying qualitative research design

Qualitative research is described as a multi-method design that involves the application of an interpretive and naturalistic approach to the study topic. However, objective methods can also be used within a qualitative research approach (Cresswell, 2007). The implication is that researchers are able to to study phenomena in their natural setting as they seek to understand, or to interpret the phenomena for the meanings that people give to them (Newman and Benz, 1998). According to this approach, the researcher usually develops knowledge propositions, while basing the research primarily on the constructivist point of view (such as the meaning that is socially and historically developed or multiple meanings of the experiences of different people, with the aim of creating a pattern or theory) or participatory/representative views (such as issue-based, political-based, collaborative or change based) or to consider both. Creswell (2007) points out that this allows the collection of open-ended, emerging information with the basic aim of developing themes from the information.

For a researcher, it is quite a challenge to decide on whether to apply quantitative or qualitative research methods or whether to use both in a mixed-method approach. According to Hanson and Grimmer (2007), the variations between quantitative and qualitative methods are based on the perceptions and judgments of different researchers, because both methods may involve the use of different methods. According to Mcburney and White (2010), in the quantitative research method, the data collected principally consists of numbers and statistics. An important difference between this research method and the qualitative approach relates to the form of the data collected. Creswell (2007) suggests that qualitative research methods include forms of

data collected through the use of interviews, field notes, open-ended questions, observations and reflections. In quantitative research methods, data collected are based on data that have been collected with the use of specific data collection instruments that give accurate answers (Walliman, 2006).

In this study, the qualitative research design was employed with a defining characteristic in the type of data collected, which here, consists of words, objects or images. This research method is applicable to this exploratory study because it places emphasis on the experiences of the the participants, as well as the meanings they themselves attach to the experiences themselves, to others, and/or to their environment for entrepreneurial learning. This approach enhances the analysis of collected data undertaken through semi-structured interviews, learning journals and ICTA data. According to Eysenck (2004), there has been an increase in the use of qualitative research methods over the past three decades and this is attributed to the growing dissatisfaction with the dominating quantitative research. Therefore, the use of qualitative research here is timely and, as a more nuanced approach, may well enhance the success of the research

It is important to note that there are varying approaches and methods that can be used under qualitative research. It may include an evaluation of the perceptions of the respondents and this could provide a set of insights into the issues and the reasons for a given area of consideration. There is also the possibility of using observations (Dick, 2002), case study methodology (Yin, 1984) and discourse analysis (Laclau and Mouffe, 2001) for qualitative exploratory research of this nature. However, observations were ruled out as the primary methodology, as the subject being researched was a remote case with limited regular trips by the researcher to interview participants, with some interviews carried out virtually. The case study option was ruled out, as the objective was to gain a deeper understanding of the concerned research question relating

to "entrepreneurial learning" and the available content did not facilitate gaining a deeper understanding of this. Discourse analysis, while paying attention to dialects and the finer nuances of the language, was ruled out as the researcher had limited experience in this regard. Concept maps help the researcher to visualise research data (Eden & Ackermann, 2002; Huff & Junkinds, 2002). Thematic analysis allows the parties to identify the issues and to gather information about these issues, then to provide solutions in line with these needs. Thus, qualitative insights are likely to be based on the results of the observations of the researcher. Further, there is the ability to construct the themes based on these observations (Zuber-Skerritt and Perry, 2002). The need to explore issues in depth for discussion of solutions to any of the problems associated with the scenario, point to a qualitative study approach as the preferred approach to make the best use of of concept maps and the thematic analysis study approach.

General analysis approach

The study should collect data from primary as well as secondary sources. The secondary sources are those data sources that are already available. These data sources will allow the data to be collected in line with the needs of the study for appropriate outcomes. This approach will ensure that the resulting remains highly useful in nature and continues to serve the purpose of the research.

In relation to secondary sources of data, or already existing data, the current documentation that is relevant to the study area is likely to be highly useful in the context of a more complete discussion of the study and the related analysis to be carried out. Thus, the overall outcomes in the case of the secondary data remains vital and they will provide additional new insights about various aspects related to the discussion (Eysenck, 2004). Thus the secondary data sources could be used to identify the role of the program in the context of both supporting the

entrepreneurs and and examining the ways in which the entrepreneurs have used the program for learning purposes.

It is also important to note that there are many primary information areas that should be covered through the discussion as well. The kinds of primary information included will contribute to appropriate results and new insights in areas under discussion (Robson, 2002). This secondary information should also be analysed in line with the needs of the given scenario.

The primary areas for data collection and analysis in the study include the transcripts of the discussions with the entrepreneurs during the semi-structured interviews and the learning journals. These will highlight the principal information base of the study and the resulting insights in the for discussion. These new insights and new knowledge will be framed by the research design as discussed. Thus the literature on entrepreneurial learning will benefit in the future, where new knowledge is generated through answering a research question and reasoned research design (Hanson and Grimmer, 2011).

The primary and the secondary information areas, in alignment with the needs of the study, y are qualitative in nature and will provide highly focused qualitative insights. The overall outcomes of the study could therefore be evaluated based on the findings of these areas and the resulting insights into entrepreneurial learning. These overall outcomes and the benefits identified in this study will remain important future sources of information and insight based on a multi-paradigm perspective adopted for this purpose.

Taking the above into account, the following figure outlines the research design of this study.
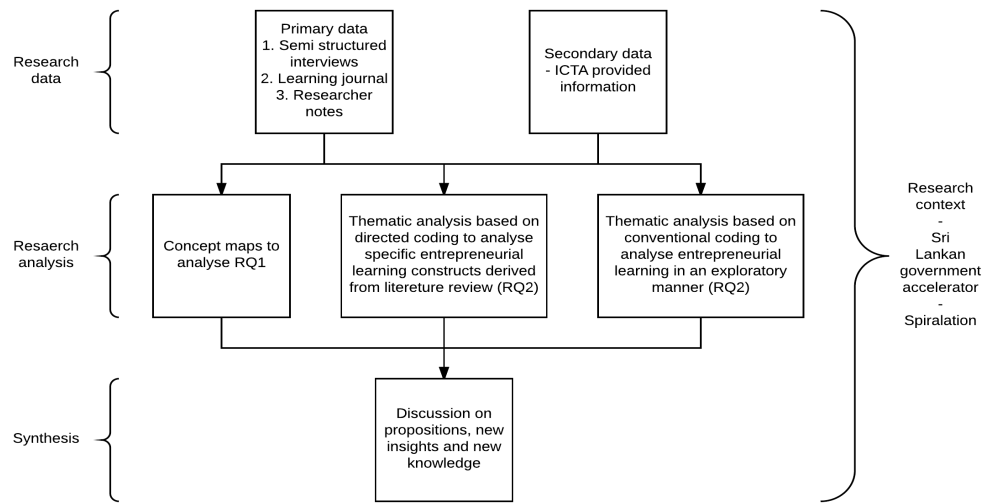
Figure 21 Research design (author developed)

Researcher bias

With the experience of previously starting up companies and after going through a successful acquisition of a start-up company by a Fortune 500 company, the researcher was actively involved in supporting the start-up ecosystem of Sri Lanka, including a significant role in establishing the Massachusetts Institute of Technology (MIT) global start-up labs collaboration with University of Moratuwa, a leading engineering university of Sri Lanka and MIT. Hence the researcher has a potential impact on the findings and should not be considered as a dispassionate observer. As with documentary film, a photograph, or a slice-of-life painting, a research report for a contextual inquiry is a representation of the creativity and perspective of the researcher who observes the conventions of the study paradigm or the views of the study. Therefore, researcher bias is likely to limit the interpretation and analysis of data obtained by the researcher in the start-up ecosystem of Sri-Lanka. Basically, a bias is a predisposition, or rather, a preconceived idea regarding the framing of a research study in relation to paradigm, theory, perspective or method. This has the implication that if researcher bias is noticed by the

reader, then it is likely to impact heavily on the willingness of the reader to accept the research findings relating to the influence of government accelerator programs on entrepreneurial learning (Robson, 2002).

It is evident that a certain research bias could be said to exist in qualitative studies. In light of this, the researcher has employed research techniques to ensure that the data gathering process remains highly objective and that the accuracy associated with the data gathered is appropriately represented through the findings of the study areas. Thus, the results are likely to provide beneficial insights and the outcomes are likely to provide the required benefits in line with the study expectations in the future. It is essential that these tools are used to appropriately manage the bias and to mitigate any negative impact on the accuracy of the findings.

Analysis design

Thematic analysis approach despite widespread use, has not yet achieved the 'brand recognition' as that of grounded theory or phenomenological analysis (Braun and Clarke, 2012). Qualitative analysis can be divided into two aspects:. 1) stemming from a particular epistemological or theoretical position 2) methods that are independent of the epistemological or theoretical position. As exploratory, qualitative research, this study leverages the flexibility of the thematic analysis process.

Thematic analysis is essentially a method of identifying, analysing and reporting patterns within data in order to capture important elements from the data in relation to the research question. The 'keyness' of a theme is not necessarily based on quantifiable measures but on whether it captures something very important in relation to the research question. Braun and

Clarke (2012) suggests six steps for the thematic analysis process which is followed in this research.

1. Familiarising with the the data

It is vital to be familiar with data in an active way when searching for meaning within the data. Whether seeking theory driven meaning (based on directed coding) or searching for latent meaning to answer the research questions in an exploratory manner (based on conventional coding), this familiarisation with data is essential. When dealing with verbal data such as interviews, the transcription process should convert the verbal content into written form in order to conduct thematic analysis.

2. Generating initial codes

After generating the initial framework for ideas during step 1, this step involves the generation of initial codes from the data. Coding will, to some extent, depend on whether the codes are data driven or theory driven. Initial codes should be focused on the realm of meaning in general, not on narrative meaning in particular.

3. Searching for themes

In this step, the focus on the data is set at a broader level of themes after the data has been coded and collated. It may be helpful to visually represent the codes being sorted into themes. At this stage, themes will make sense and will be significant as individual themes.

4. Reviewing themes

During the theme review step, the themes established in step 3 are reviewed and refined. Some themes may not really constitute themes, some may be converged and some others may be split into two or form a set of themes. Data within themes should be cohesive. Ensuring that the

themes are aligned with the data set and that the candidate thematic map accurately reflects the meaning of the evidence are important steps.

5. Defining and naming themes

Defining themes means identifying the essence of each theme and determining what aspect of data each theme captures. Highlighting what is interesting about the data is the key here, along with the narration of the story each theme is tell us about the data.

6. Producing the report

When the themes are fully elaborated, reporting is about expressing the complicated story of the data to convince the reader, within and across themes. Analysis should be concise, coherent, logical, non-repetitive and interesting. Extracts need to be embedded within the narrative that illustrates the story. Narrative should go beyond data and make an argument in relation to the research question.

Clearly, a significant aspect of employing an exploratory research design is in defining the actual case, here, a study of the influence of entrepreneurial learning in a Sri Lankan government accelerator. This approach is a very significant way of exploring available theory for the research objectives. It allows an understanding of existing entrepreneurship theory, in addition to providing a source for the formulation of new research questions and objectives.

NVivo is a software tool that is used in the context of qualitative studies. This software provides the basis for qualitative analysis in this study. The software has many different features that allow the data analysis which is required in an instance of this nature. In this case, the relevant data is highly qualitative in nature and the software must be able to handle such

data with appropriate capabilities. It is vital that an appropriate software that could support this kind of analysis, should have particular features associated with it.

NVivo is a software platform that would allow different activities with the purpose of evaluating the qualitative insights. It is clear that very limited kinds of data operations could be carried out in relation to the qualitative data outcomes when compared with the quantitative outcomes. Thus, the approaches will have to be facilitated in the case of this analysis to reach realistic insights. The software should be be flexible in nature to accommodate many different data types and data aspects and this would lead to the kind of results needed for the findings of the study. This kind of data analysis remains highly useful in nature and strengthens the likelihood of outcomes that would ultimately ensure that new insights are formulated.

This software platform allows the importing of various documents with quantitative contents. These could be the interview transcripts or any other such useful documents. There is the potential that even secondary sources could be uploaded by the software for the analysis. The software has the capabilities of accepting a wide range of material for analysis. This ensures that the information is collected and the appropriate analysis is carried out with the view to meeting customer expectations in the future. The software also facilitates transcriptions of the interviews. These features allow the software to be used completely for a comprehensive analysis of the findings related to a qualitative study of this nature.

In this instance, there are many different data areas that are identified in many different forms; thus it is vital that the analysis approaches are used to ensure that new insights are gained in the context of the data analysis. It is important to note that the learning dynamics and the role of the entrepreneurs at the start-up stage should be identified. This means that relationships

between various learning aspects should also be identified as well. The software has the ability to indicate the nature of these relationships and the related outcomes in this context as well. The software allows the coding of the qualitative aspects so that they could be used in the analysis. This is a part of the content analysis exercise. As such, content analysis is primarily classified into two parts.

    a.   Directed coding based on the outcomes of the literature review

    b.   Conventional coding to determine the emerging themes as an exploratory study

Concept maps approach

Scholars have used mapping as a strategy in management research. Concept mapping of stakeholder statements has helped researchers to classify and to visually represent research data (Eden & Ackermann, 2002; Huff & Junkinds, 2002).

In this research, stakeholder definitions of entrepreneurial learning are linked to each other and a concept map is generated using a social network analysis software called UCINET 6.0 (Borgatti *et. al.*, 2002). From the resulting concept map, emerge cluster definitions of entrepreneurial learning. This technique is more appropriate in this context than identifying frames (Kaplan, 2008), mind-sets (Gosling & Mintzberg, 2003) or metaphors (Morgan, 1980). This is due to the fact that the visual representation of the data allows new insights to be revealed.

The concept maps would be highly useful in the context of evaluating the outcomes of the discussion; these maps would indicate the nature of the relationships in the areas that are of interest for the study. They would also indicate how each of these aspects is related and how they would work with each other in an effective manner. Thus, the overall benefits associated

with these maps remain high. In particular, concept maps are used to analyse the findings of the first research question (RQ1) "what does entrepreneurial mean to you?". During the process, Eden & Ackermann (2002) suggest using a third person when identifying relevant rather than irrelevant definition statements, showing an appropriately contextual understanding of the research data. Spiralation officials were then consulted for this purpose during research analysis, particularly for the statement filtering step of concept mapping.

The sample selection

Warren (2002) indicates that extracting meaningful patterns is the expectation of carrying out qualitative interviewing. Based on the research question, what is important is access to the entrepreneurs involved in a government accelerator program. The following reasons can be highlighted as the primary reasons for selecting Spiralation as the research sample:

1. As a government accelerator, Spiralation does not have the undue pressure faced by the commercial accelerator participants to achieve growth by means of revenue and employment.

2. Spiralation objectives of long term benefits for participants and indirect benefits for the society, align with this study's research question on entrepreneurial learning.

3. Convenience, as the researcher had access to the Spiralation program as an active member of the Sri Lankan ICT sector from its inception.

As Spiralation, the Sri Lankan government's accelerator program satisfied these criteria, this program was selected by the researcher for this study. . In this research, participants from 3

cohorts of the Spiralation accelerator were interviewed, together with mentors and organisers of the accelerator program, resulting in 67 interviews and on-going learning journals maintained by the author during regular conversations with the participants. To answer the research objective and research questions, an in-depth study focused on a small and more specific case and context. From the sample, an information-rich case study was identified to determine the influence on entrepreneurial learning in a government accelerator in Sri Lanka. It is noted that 'convenience sampling' involves the selection of the most suitable units that the researcher can use, although it becomes difficult to ascertain whether the selected sample efficiently represents the target population. Case analysis and case selection are interrelated. Extensive work has been carried out to address the shortcomings of selection bias (Eckstien H, 1975; Achen & Snidal, 1989; Collier & Mahoney, 1996). Seawright and Gerring (2008) in their study on different case selection options argue the need for the case to stand for its population and the research design strategy of this study addresses this criterion as discussed above.

Research context

Entrepreneurship in emerging economies

There are many emerging economies that would support the development of skilled enterprises. This is specifically called knowledge process outsourcing and these industries are based on the knowledge exporting services that are linked with the knowledge aspects. ICT is among the leading in knowledge process outsourcing (Leung, 2011). Thus the role of ICT in the context of the development of the entrepreneurial industries remains vital when it comes to emerging economies.

The emerging countries have to identify the potential these countries have when it comes to exporting knowledge. It is evident that when knowledge based exports are considered, there

should be people in place with the given skills (Sense, 2004). Such people will be able to ensure that they export the required knowledge and skills needed to achieve the desired results in the long term. Industries such as ICT will be able to absorb the highly skilled graduates in the countries and so provide them with a lucrative livelihood. This will also ensure that these industries will develop future business leaders.

Labour costs in developed countries are high compared with the emerging markets. This is also the case in the context of the emerging industries such as ICT. Thus it is important that steps are taken to export these services to centres with a competitive cost point, so that both the developing, as well as the developed, nations would benefit (Johnson, 2014). The organisations in the developed nations would be able to access highly reliable services at a concessionary price point while the emerging nations will benefit from the fact that the workforce has been given exposure to advanced training and competitive work prospects in the future, while securing foreign exchange revenue.

Entrepreneurial thinking will lead these companies to have creative ideas and this could allow the development of unique ICT software products. The fact that there are many domains, contexts and devices that require software, indicates that there are many opportunities for the software developers in the country; thus they will commit to ensuring that products and services are provided to parties in line with their specified needs met. (Ritchie and Lam, 2006). The capability to meet these outcomes should ensure that intended long term results are reached and the benefits are achieved, locally. Entrepreneurial creative thinking matched with traditional outsourcing, is lucrative for emerging nations, as it enables the development of proactive services or products offering enhanced capability for the emerging economies as

well, in comparison to traditional reactive knowledge service offerings based on defined requirements of the western world (Galloway, Marks, and Chillas, 2014).

Thus, the role of entrepreneurship and the development of small scale ICT companies will allow emerging nations to benefit through the development of another key knowledge process outsourcing area (Galloway, Marks, and Chillas, 2014). With these developments, it is evident that they would be able to provide the clients with potentially impressive products and services, both in the emerging nations as well as in the western world, while enhancing the benefits to all stakeholders.

Applying entrepreneurial learning in the context of emerging economies

Governments in emerging economies need to ensure that they provide support for this transformation considering the significance of business and entrepreneurs to the local economy. The support provided for these parties could well ensure that they achieve the desired results and maximise the benefits thereof, with benefits to the economy. The role of the entrepreneurship in this context was evident due to the fact that such approaches would ensure that desired results are obtained in a long term manner (Bieman and Turley, 1995). Thus, all these aspects remain essential ingredients that would allow all of the parties to reach beneficial results in the future.

The above aspects highlight the need for states to take the action to support entrepreneurs and to ensure that they collectively take action towards the development of the industries. However, the main issue is that, first, simple steps taken in this e direction, must be effective. There are various aspects that could prove to be useful in such start-up programs. One of the main issues is that the government's support will ensure that the initial costs of the startup is minimal

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(Mostyn, 1985). This would allow entrepreneurs and businesses to focus their spending on the overall quality levels of the services that they provide.

This highlights the role of importance of the entrepreneur in the market and the kind of infrastructural support that he/she may need to effectively carry out the business plan in these early stages. All these aspects indicate that a state supported program would provide the key initial support and act as a kind of incubator for new business opportunities, nursery for the entrepreneurs of the infant organisations. However, it is also important to note that the role of the learning in this context has to be established (Neuman, 1997). While there have been many theories discussed, the actual application of learning in this context has not yet been identified.

The learning is one of the benefits that such programs could provide; the entrepreneurs may make mistakes at the initial stage and the state support will allow them to mitigate the impact of these mistakes. This enhances the capability of entrepreneurs to learn what is needed to deliver on the expected results. As this thesis has argued, finding learning based solutions will contribute to more positive outcomes for the parties involved and the benefits are likely to be higher in this context in the future (Hewapathirana 2010). Thus, in such supported commercial incubators the entrepreneurs will be able to learn through mistakes.

Another benefit is that the entrepreneurs will be able to learn from each other. This is due to the fact that they will interact with each other and the experiences of the different entrepreneurs would prove to be different from each other. Thus the learning process will ensure that they gather the needed knowledge through this process and they will be able to benefit from the outcome. This is another key aspect associated with the learning process.

The entrepreneurs on the other hand will also be able to benefit from special training programs that the government may have developed in place. The entrepreneurs will benefit from the training programs due to the fact that they will be able to develop vital skill areas that they may lack in this context. This will allow them to build their business based on the experience that they would gain in this context. The results are likely to be positive in nature due to these approaches.

Thus the role of the entrepreneurs and the effects of the outcomes associated with the programs are likely to be high (Wiley, 1997). The entrepreneurial ventures will have to take these factors into consideration when they seek entry into the state support programs (Grafton, Lillis and Mahama, 2011). In case the companies do not have the need in the context of the state support for these areas, the entrepreneurs might opt out from obtaining of such support.

This shows that the learning nexus of the entrepreneurs is vital during the early states of the entrepreneurial journey. A learning base will allow the entrepreneurs to develop the structure and the culture of the organisation in line with the needs of the market. They will be able to use the theory and the practices that they are exposed to in practical ways in the future. This shows the fact that the learning nexus in the context of the entrepreneurs would provide them with the ability to develop desired futures for their organisations.

It is vital that this learning exercise is carried out at the initial stage of the organisational development. This is the stage when the entrepreneurs could shape the organisations that they are working for. The future outcomes and the future development remain vital and may still at this stage, be shaped. However, if the program does not support the entrepreneurial learning and thus the development of the participants, the program is unlikely to be successful.

This is due to the fact that while the initial cost mitigation is possible, the entrepreneurs will not be able to learn the above discussed methods. This makes the organisations highly vulnerable to market forces. The entrepreneurs may not be able to understand the nature of the issues, and the potential benefits of the problems that they need to capitalise on (Hewapathirana 2010). Thus the outcomes in this context could provide less than effective results from knowledge for entrepreneurs being underfunded or not funded at all.

Entrepreneurship in Sri Lanka

This study was conducted in Sri Lanka, an island nation that has, since the early 1900s, enjoyed a comparatively higher literacy rate (92%) (UNESCO, 2015) and above when compared with its South Asian neighbours. The Sri Lankan economy has been mainly dependent on agriculture, small and medium-size industries, tourism and the export of petroleum and mineral products. Prior to ending its ethnic war in 2009, the economy was in a fragile state , currency reserves were low, inflation was high and fiscal borrowing was high due to high military and public spending. At the beginning of the twenty-first century, over 34% of the population lived below the poverty line and this figure has since dropped to 8.9% in 2010 (ADB 2001, 2012; World Bank 2013). The average annual growth rate was 1.14% and well below that of most countries in South Asia. After the end of the war, the Sri Lankan economy began to strengthen, with increased foreign and local investment in tourism, manufacturing, services, agricultural sectors and infrastructure development. Recently, Sri Lanka was ranked 81st in The World Bank's ranking on the ease of doing business (The World Bank, 2013). This ranking shows an improvement in the economy and the emergence of a conducive business environment as well as policies and regulations that facilitate international collaboration.

Sri Lanka has been a multicultural and multi-ethnic society where hospitality, reciprocity and respect for elders and social and business hierarchies have been part of deeply held cultural values in this collectivistic society. South Asian cultures are considered collectivistic as they value relationships over legal bindings (Hofstede 2001; Trompennars 2007); this has been consistently evident in the Sri Lankan culture. However, little is known about how government initiatives would influence the experiences of entrepreneurs, particularly in this case, the influence of a government accelerator on entrepreneurial learning (Hewapathirana 2010), which is a new area of study.

Sri Lankan economy

The study was carried out in Sri Lanka, a middle income island nation, reported to have higher returns on education including a relatively high literacy rate, as well as training opportunities when compared to other South Asian countries (World Bank 2014). After ending a civil war in 2009 and rebuilding the nation after a tragic tsunami in 2004, the Sri Lankan economy began to strengthen considerably during recent years. Sri Lanka was also ranked 99 in The World Bank's ease of doing business rating, which is again a leading indicator where the South Asian region is concerned (World Bank, 2014).

Sri Lanka has arguably the stronger emerging economy in the South Asian region. The country has been able to develop the highest gross domestic product per capita in the region (apart from The Maldives) and has been able to ensure that there has been steady economic growth during the past decade. The ending of the war, as well as increased state spending on infrastructure and industry development, has also contributed to higher levels of benefits (Slasscom, 2015). Thus the country has been able to ensure that it achieves positive results in terms of the development of the country and the economy. This is one of the main aspects that creates a

background for the development of the ICT related industries in the country (Jayaweera and Thelijjagoda, 2010).

While manufacturing is concentrated in a few locations, so are the knowledge based industries. As South Asia is one of the key regions with an economic advantage in this aspect, Sri Lanka is in a very good position to take maximum advantage due to the growth of the knowledge based industry. The Sri Lankan economy has also undergone a number of changes within the past five decades and is at a crossroads as the country seeks to accelerate the growth of the economy to reap the peace dividend. The following diagram indicates how the knowledge economy could align with the interests of Sri Lanka.
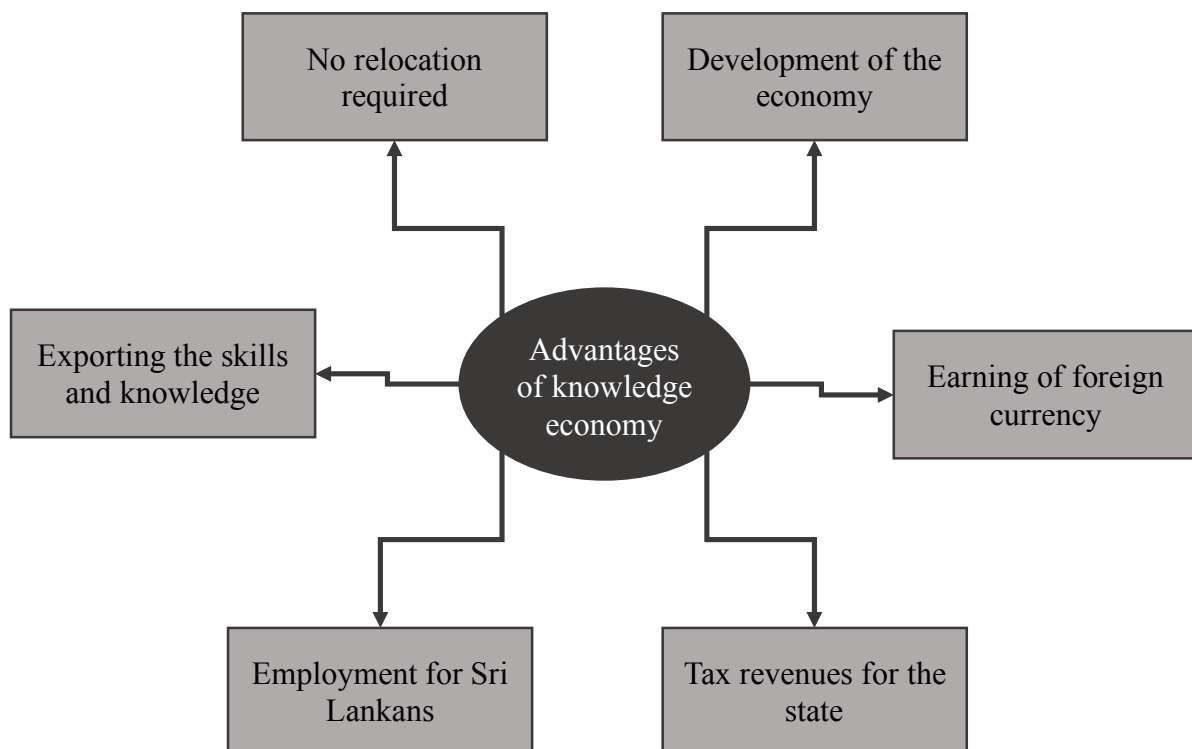
Figure 22 Advantages of knowledge economy in Sri Lanka (author developed)

Thus, it is very clear that while Sri Lanka can benefit immensely from the knowledge economy, it is also highly likely that this would provide a suitable location for the knowledge economy to thrive. However, the key problem could be one of having the required competencies needed by such a local workforce in order to exploit the possibilities of further development in the knowledge economy. It is highly likely that the customers would favour those locations with the required levels of relevant competencies and would go to those locations for services. A country whose workforce could offer the required competencies would have a significant competitive advantage over the other locations. This could result in favoured status for Sri Lanka as a knowledge based outsourcing destination. Continuous growth of the industry would also ensure the sustainability of the benefits the country would receive. Further, the new developments in the knowledge economy would benefit the country as it would already be already known as a centre for knowledge-based outsourcing. In order to gain that status, it is important that Sri Lanka works to build on the required levels of competencies now.
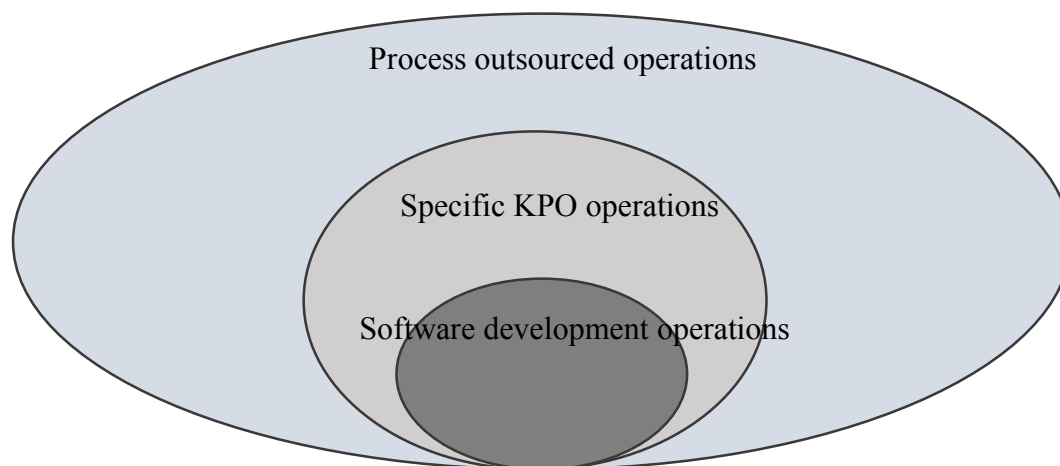
Figure 23 Structure of the operations of process outsourcing companies (author developed)

The software development industry is clearly one of the greatest beneficiaries of the spreading of the global knowledge process outsourcing model. The industry would benefit from the

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expansion of the outsourcing business model and the global dependence on ICT, as this would lead to greatly increased business for the companies in the industry. Gartner (2010) believes that software development outsourcing is expected to remain the core of all knowledge based outsourcing functions (RHK, 2009).

Due to the stability of the software development outsourcing industry and the growing global dependence on the software systems, the demand for software would be expected to increase in a sustainable manner (RHK, 2009). This would lead the industry to grow at a steady rate and would allow the employment and the contribution to economic growth from the sector to increase gradually but sustainably. Further, due to the ongoing ability of the companies to benefit from the increased number of software engineers in the market, it is also very likely that the host country could also benefit significantly from growth in these aspects, through employment.

Sri Lankan ICT services sector

The Sri Lankan Information and Communication Technology (ICT) Services sector has been growing rapidly during recent years. Sri Lanka has won the "Off-shoring Destination of the Year" in 2013 at the National Outsourcing Association Award, the Centre of Excellence for Outsourcing in UK & Europe. In addition, Sri Lanka has been ranked 12th by the IBM Global Location Trends report, in the Top 25 in the Global Services Location Index by AT Kearney, Top 30 Leading Locations for Off-shore Services by Gartner and many other similar accolades (PWC, 2013). With the recent rise in the sector as a top 5 contributor to national foreign exchange revenue, the Sri Lankan government is poised to facilitate the development of the sector to be a USD 5 Billion sector by 2022 (ICTA, 2012).

The role of ICT in the context of the lives of people is dramatically increasing; ICT related services have become globally wide-spread and are complex in nature. This highlights the fact that there is huge global demand for ICT sector related activities. The world is faced with a scenario in which there are not enough ICT professionals to meet the global demand (Pretheeba, 2012). On the other hand, the ICT companies of the developed world attempting to reduce their overall operational costs by leveraging low cost knowledge service destinations.

The software related services industry is fast developing in the context of Sri Lanka; The Sri Lankan Board of Investment (BOI) estimates that there are over 50,000 employees currently working in local ICT related services, with heavy growth potential in the future (Sri Lanka Business, 2016). Thus the role of the ICT sector and the related services remain key areas showing the highest potential for new businesses. This is the backdrop for Sri Lankan businesses looking ahead.

The platforms that demand software are increasing; in a conventional setting, it was only computers that required software. This indicates that the parties could develop software for the computerised platforms (McManus, 2011). However, this is changing with the introduction of many interactive smart devices including mobile phones and TVs. With these different devices, the types and tasks of software continue to develop rapidly to keep up with the needs and the expectations of consumers. (Moraes and da Rocha, 2014). Thus the role of the software industry and its growth prospects remain very attractive.

IDC expects the total software related spending globally to increase irrespective of the fact that the hardware related spending is declining. This is due to the fact that hardware industry stays highly competitive while the software requirements could be unique to each of the customers.

IDC expects the growth of the software industry to be approximately 5.1% to 5.3% during the 2015-19 period in the United States and European regions (IDC, 2016). It is safe to assume that the growth of demand in the emerging markets is likely to be much higher with the proportionate growth in knowledge services outsourcing as well as domestic growth in the emerging markets itself.

Currently, there are a number of success stories in the knowledge management sector, as acknowledged by   The Board of Investments (BOI) (2010) of Sri Lanka. Three companies, which have grown to become global players,   started operations in Sri Lanka: Virtusa, Millennium IT , IFS, WSO2 and Amba Research, all basing their expanding operations on the knowledge based business model. All three companies are now operating successfully at the global level, with   Virtusa now listed on the NASDAQ index of the New York Stock Exchange. Millennium IT has produced the fastest system running on share exchanges while Amba Research has expanded into a number of markets such as India and Costa Rica. It is interesting to note that all these players are originally Sri Lankan companies. Thus, the BOI (2010) believes that there is immense scope for well managed knowledge outsourcing companies to grow in Sri Lanka.

This sets the stage for a global software development industry to achieve positive results; the cost factor and the quality software development capabilities remain vital to reaching these goals. Naturally, this provides a global opportunity for the Sri Lankan software developers to provide appropriate services and to be part of achieving long term beneficial results (Elliott and Scacchi, 2008). This is one of the reasons that points to the development of a software industry and the related entrepreneurships, in Sri Lanka. Such action would allow the parties

to be able to benefit from these approaches towards a new business opportunity. Thus the role of the entrepreneurial opportunity remains a vital one.

ICT sector roles

Sri Lanka's ICT sector is likely to become one of the growth drivers of the economy in the future. This growth would enhance the capability of reaching appropriate results over the long term.   Many large entities have invested in the sector. It is also evident that many companies that were developed in Sri Lankan market are also gradually expanding as . It is also evident that Sri Lanka has been able to develop ICT skills in the private as well as the public education systems. (Sri Lanka Business, 2016). Thus the development of the skills locally remains a vital focus and the potential achievements in terms of the future outcomes, remain important.

The larger companies in Sri Lanka have considerable resources as well as international affiliations   to carry out their activities. However, they also have significant overheads and may not be as cost competitive as some of the small players. It is evident that there are professionals who would like to work in small teams and potentially be involved in the development of new operations (Antony and Fergusson, 2004). Providing they have the chance of developing appropriate businesses and client relationships, they are likely to be able to develop their own operations and benefit from them. Thus the role of the internal players in the growth of the markets for Sri Lanka would also allow parties to achieve positive results.

This shows that the current mix of parties involved within the sector would allow for the provision of highly diverse sets of professional services to meet the needs of various parties. This should provide positive long term results.

State support for the development of small and medium enterprises in the context of Sri Lanka is low; the state has not taken specific steps for such development or development related support programs (Antony and Fergusson, 2004). There have been certain grant programs from time to time, carried out with the support of multilateral donors; however, this does not mean that the country has been able to produce concrete results in this context. , These programs were not consistent and the support that they have had extended remains limited in nature (Terziovski, 2003). Thus, the role of the state has been minimal in the context of the development of the small and medium enterprises.

Another relevant factor that needs to be considered is the fact that many of the Sri Lankan small and the medium enterprises have been focused on the domestic market and have not, in many instances, sought ways to expand to the international markets. Lack of support for these have small and medium sized businesses has resulted in difficulties when it comes to sourcing the capital to expand? these enterprises (Lerro, 2011). This undermines the fact that they contribute immensely to the development of the domestic industries of the future. The state needs to identify the benefits that SMEs could bring in the future and the potential outcomes which are associated with them. (Foggia and Lazzarotti, 2014).

In many other developing nations, the states seek different methods of supporting the small and the medium enterprises. These methods could include providing them with tax concessions, as well as support in terms of loans and capital requirements (Moraes and da Rocha, 2014). There are grant programs that could possibly impact on the growth of these enterprises as well. In the context of Sri Lanka, the private sector and the banks have been at

the forefront of the entrepreneurship development and micro-finance projects. They have been able to achieve successful results from such programs.

With the support of the state and the private sector together, the small and the medium enterprises would be able to achieve potentially remarkable results in the future. It is evident that they would be able to benefit from the results in terms of the development of the various activities, including expansion, so achieving significantly improved results in the future. Thus the role of the state and the private sectors working in collaboration could positively contribute towards the development of the ICT business enterprises of the future.

Entrepreneurial development in Sri Lanka.

The research is based on the fact that there is a clear role for the state to to improve the development of entrepreneurs in the context of Sri Lanka The greater the role that the state plays in the market in the context of the growth of the ICT industries, the greater the likely future benefits to the country. The state's support is required due to many aspects associated with the start-up of the businesses (Pretheeba, 2012). Simply put, if they receive the needed support from the state, both they and the state would benefit from the outcomes and achieve the needed long term results in the future.

The main challenge in this context is the identification of the methods by which the state can provide assistance; literature review chapter discussed main methods through which that the state could provide such support including entrepreneur support programs. It is evident that there should also be appropriate supporting mechanisms identified to facilitate this state role (Tennant, 2007). Clearly, businesses should not be over reliant on state supporting mechanisms that could be developed. The state supportive approaches should therefore include

measures to ensure that the businesses will be able to be self sustaining in the future. This will make sure that the parties who are willing to start such businesses will be confident to do so. Such a shared approach between businesses, including support for entrepreneurs, and the state are much more likely to achieve beneficial results (Chambers, 2005). For this reason, the state will need to engage in actively evaluating such potential approaches in which they could provide support . This will allow a state role as   a facilitator in providing the resources needed to ensure that start-up businesses will be able to reach the next level of growth and to achieve the results that are expected from them in the future. Providing this kind of support may also depend on the nature of the industries (Dwivedi, Shibu and Venkatesh, 2007). This is the reason that with the ICT start-ups, the state needs to identify   the primary requirements of the industry and ways in which the state could provide targeted support for these needs. This will ensure that the companies will be able to initiate and also to develop their operations in line with their mutual needs and ensure that both the state and the business will benefit in the future context.

Sri Lankan government accelerator: Spiralation

Massive growth in the ICT industry is predicted to shift the business landscape globally by 2025 and with it, an exponential increase is expected for ICT and related services around the world. The Sri Lankan government has laid plans to leverage this opportunity (Mahinda Chinthana, 2010).   The government has identified the building up of the necessary entrepreneurial skills for ICT entrepreneurs as one of its strategic initiatives. Sri Lanka has already been identified as a top destination for outsourcing ICT and related services in the recent years (ATKearney top 25 destinations list for the past 3 years for ICT service out sourcing, Gartner top 30 rankings for ICT services, Outsourcing Destination of the Year in 2013 by National Outsourcing Association - UK). Sri Lanka is also ranked among the top 5

emerging countries in 2013 in economic terms. Its enviable geographic location at the southern tip of India places it at the crossroads connecting South Asia, the Far East, the Pacific region with Europe and the Americas. Post conflict Sri Lanka has graduated to the status of a middle income emerging market. In this context, understanding the entrepreneurial ecosystem of Sri Lanka is important.

As an initiative to support the development of the ICT sector of the country, the Information and Communication Technology Agency (ICTA) of Sri Lanka, which is the government authority for the sector, started the first accelerator in Sri Lanka, called Spiralation, in order to support the acceleration of the growth of new ventures. The Spiralation program content and structure have been derived from leading accelerators in the world including the Y-Combinator and MIT global new venture labs schemes and has been customised to fit the context of the country by consulting 21 strategic stakeholders of the programs from both public and private sectors (ICTA, 2012). Over the past three years, the program has been shaped by integrating the feedback of the stakeholders from cohort to cohort.

Sri Lanka is a highly cost competitive destination for outsourcing and was ranked as sixth in terms of financial attractiveness by AT Kearney's Global Service Location Index in 2011. Nearly 50% of the local students who have finished higher education are trained in technical and business disciplines. English is widely spoken in urban centres and is commonly used for education, business and commercial purposes. Sri Lanka offers tier 1 infrastructure with a tier 2 cost structure. Sri Lanka has amongst the most rigorous intellectual property protection regimes in the region (AT Kearney, 2011).

Emerging as a premier outsourcing destination for ICT-BPM services globally, Sri Lanka is gaining increased global brand recognition and visibility. Leading global multinationals, local blue chip companies and corporations alike, have established operations to carry out ICT-BPM operations in the country. HSBC, IFS, Intel, Motorola, WNS, RR Donnel-ley, Virtusa, Pearsons and Accenture are just some of the key investors . The client portfolio also includes global multinationals such as the London Stock Exchange, Microsoft, Emirates, Qatar Airways, Lenovo, JP Morgan and Google.

Re-affirming the confidence of international investors and business partners, Sri Lanka has won the 'Off-shoring Destination of the Year (2013)' at The National Outsourcing Association Award, the Centre of Excellence for Outsourcing in UK and europe which evaluated the overall strategy as an outsourcing destination, its approach in differentiation, focus on skill development, innovation and results generated.

With an estimated revenue of USD 720 million for 2013, the sector is showing an impressive growth trend – 238% growth since 2007 of the total revenue, ICT claim 77.5% of the total and BPM accounted for 22.5% (SLASSCOM, 2013). The top three markets have been Europe (UK and Ireland), the United States and South Asia. Moreover, the Asia-Pacific region has shown faster growth than more mature markets whilst the industry has significant market presence in Australia/New Zealand, Asia Mature Markets and the Middle East.

Traditional tea, rubber and coconut exports are becoming competitive and, to complement the second generation leading exporter, the apparel sector. the Sri Lankan government is aiming to cultivate innovation in information and communication technology, through entrepreneurship as a government strategy, to facilitate the development of the country. With

this agenda in mind, the Information and Communication Technology Agency (ICTA) was formulated by the government of Sri Lanka directly under a portfolio of the President. This research has taken the only government accelerator program "Spiralation" as the example in seeking to answer the research question.

Research data quality

The quality of the research data in this study is approached from the research design. It cannot be judged from the positivist perspective of internal and external validity and reliability. It can, however, be credible, transferable, dependable and confirmable (Miles and Huberman 1994). Patton (2002) discusses the researcher bias and independence of the coding process as key strategies that would provide robust qualitative research. The discussion below highlights the measures taken at the research design level in order to ensure the quality of the research study.
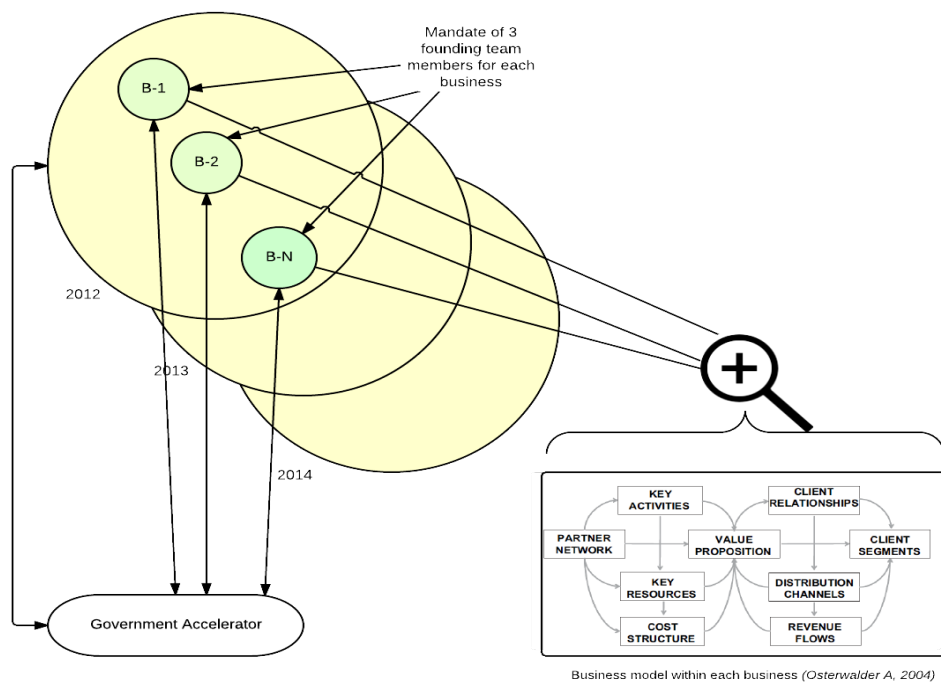
Figure 24 Spiralation Government acceleration program structure (author developed)

Cross cohorts, multiple companies, more than one individual from a given company and more than a single interview (initial preliminary semi-structured interview) followed by the learning journal, provide a higher quality of the research overcoming the typical limitations of qualitative research, which is primarily a horizontal cut for a given research context. With such an approach of non-standardised methods of research, the findings obtained are not necessarily meant to be repeatable since they are a reflection of the reality at the time of collection, especially under circumstances that are subject to change. The business model Canvas was used as an exemplar to bridge the accelerator learning journey with the start up organisation's progression through different facets as and when individual participants and, collectively the entrepreneurial team, are progressing through the accelerator.

Non-standardised methods allow the researcher the flexibility to use in exploring the complexity of the research objective. Gill and Johnson (2002) point out two general rules that guide the quality of research data in a qualitative based study. The first rule requires the researcher to pay attention to research question suitability, data, and the data collection method. This ensures that the data obtained and used are appropriate and are handled appropriately in order to address the research question fully and effectively. The second rule ensures that the researcher can properly account for all the steps during analysis. According to Jankowicz (2005), all studies that use qualitative methods obtain their credibility from the ability of the researcher to support the findings efficiently. Qualitative analysis develops theory from the data in which one interpretation forms the basis of another enquiry. The quality of the data analysis is assured through addressing three quality factors proposed by Seale (1999).

 The focus in the research is a part of the methodology development. If the research data is collected from the relevant respondents and if the respondents have appropriate knowledge of

the area that is in discussion, this indicates that the insights provided by the research remain highly applicable in the context of the study. This will ensure that appropriate insights are developed and the results will ensure that the maximum benefits are provided in each of the instances in consideration. Such an approach will ensure that the research quality is maintained and that appropriate benefits are achieved.

Credibility

This thesis presents a transparent and well-documented process. The data analysis section details and presents the process of the researcher's thinking and identifies key stages in that task. The reader should be able to follow the logic clearly and unambiguously. With credibility, the techniques of data collection, as well as analysis procedures used in this study, assure consistency of findings. The aim of providing such detail is to minimise the possibility of not understanding the logic behind the process. Three questions were first considered to ensure the credibility of the research (Easterby-Smith et. al., 2008). The first was whether the measures applied in the case study were to yield the same results in other situations; the second was whether other observers were to reach similar observations; and finally, whether there was transparency in the way that sense was developed from the raw data collected. With these questions in mind, the study took on a path that assures the reader on the credibility of the findings. This was achieved by maintaining objectivity especially in data collection, to ensure the accurate and complete data which restricts the researcher from exercising subjective selectivity in what is being observed and recorded.

Transferability

The readers of this research are presented with a record of the development of the understandings of the phenomenon under question. The rich descriptions of the participants are

presented to illuminate what is going on and to provide a high level of confidence that what is understood by us the researcher as well as the participants), can be relevant to others. This is not a claim that the findings are generalisable to any particular population in the positivist paradigm; rather, the understanding of the phenomenon is valuable to a wider audience such as entrepreneurs, financiers, policymakers, advisors, and academics. However, two arguments can be used to seek to clarify and also to modify the approach usually applied to the generalisability or transferability of a study with a qualitative design. One argument is related to the situation using a single case study, due to the unstructured nature of the research. In this case, Bryman (1989) points out that various people and activities are invariably explored within a case study to ensure that the contrast with the study samples is not as crucial as when it is seen for the first time. As a matter of fact, the single case may comprise more than one setting under one paradigm such as the government accelerator that applies to many different entrepreneurial stages as shown in this study.

Therefore, a clearly outlined and rigorous case study is highly likely to be applicable in other contexts (entrepreneurs, financiers, policymakers, advisors, and academics) as compared those without sufficient rigour. The other argument, according to Yin (2003), is connected to the importance of this kind of research in terms of theoretical propositions. When a study is able to relate to the existing theory, then the researcher will be in better position to show ways in which study findings will have a wider theoretical significance as compare to the case that is being used for the study. Transferability in this study was established by creating the relationship with existing theory in order to show the broader significance of the study findings concerning the case study of Sri Lanka. The relationship made it possible for the study to test how applicable the existing theory was to the study setting for individual, team, as well as organisational learning. It also allows for the advancement of the theoretical propositions

which can be tested in a different setting. However, Bryman (1989) notes that this additionally has implications for the established relationship between theory and research, especially due to the fact that the identification of existing theory as well as its application will be required before the researcher starts the data collection process. With minimal insight existing in the transition process of individual learning and collective learning, exploratory learning and exploitative learning, as well as intuitive learning and sensing learning, the transferability of this study is intended to reduce this gap by making sure that the research findings can be applied in further investigations.

Dependability

Presenting the clear documentation of meanings as they are generated through insights allows the reader to follow the logic used. In this way, the reader should be able to see the meanings that are proposed and be able to assess them in relation to current and proposed theoretical constructs. According to Bryman (2007), this has to do with whether or not the findings of the study are really about what they seem to be about and whether the researcher achieved the study objectives. Presenting the meanings in this way allows them to be seen as dependable in terms of an overall theoretical paradigm. This is related to the relationship between two variables to lead to what can be described as a simply causal relationship. For instance, entrepreneurs can effectively learn from their environment but if there is no system in place, then they cannot be said to be ineffective (Saunders *et. al.*, 2009). As a result, this potential lack of dependability was minimised through the development of a research design that was based on the opportunity of interviews provided by the questionnaires.

Research questions

In order to make the research questions clear, this study followed the Russian doll principle as illustrated by Clough and Nutbrown (2002). This involved taking the research idea, followed by a breakdown of the research questions from the initial study objective or statement, into something that takes away the various layers and until the innermost part of the question can be brought forward and expressed just as taking apart a Russian doll would reveal a smaller one at its centre. In this study, the main idea was to seek to understand the influence of the government accelerator on entrepreneurial learning, and the following interrelated research questions were identified and established through the literature review and the preliminary information gathered from the key stakeholders of the government accelerator.

- What does entrepreneurial learning mean?
- How does a government accelerator influence the entrepreneurial learning of the individual entrepreneur, the entrepreneurial team and their infant new venture?

Data collection

Data Type	Data Method	Collection Frequency	Collected by
Primary	Semi structured interviews	One time, during the first quarter since the start of each cohort per participating entrepreneur	Researcher
Primary	Learning journal – steming from "aha" moments	Every other month, during Spiralation, for each cohort per participating entrepreneur	Researcher

Secondary	Participating entrepreneur information	One time during Spiralation enrolment	ICTA

Table 3 Data collection details (author developed)

Research sample

Constructivism indicates that the systems and the areas that are studied are viewed as parts of social constructs; the elements related to social constructs remain vital in the evaluation of the study outcomes and an understanding of the insights provided by the study. The selection of a sample for discussion should be in place due to the fact that the whole population cannot be interviewed through the study (Grafton, Lillis and Mahama, 2011). The selection of the sample should take place in a manner that would provide appropriate representation within the issue under consideration. The sampling techniques will have to be selected to ensure that they provide the appropriate representation without any sample bias. This will ensure that the appropriate benefits can be reached through the sampling exercises. Thus, the selection of the sample and   beneficial results in this context remain vital in achieving a quality set of outcomes (Grafton, Lillis and Maham, 2011). Thus, appropriate sampling techniques should be used in line with the needs of the study.

Spiralation, the government accelerator of the Information and Communication Technology Agency of Sri Lanka (ICTA), was launched in 2011. Aptly termed 'Spiralation' to incorporate the 'spiral' model, which combines the advantages of top-down and bottom-up concepts with innovation, it encompasses the true nature of the programme structure. Supported by many partner organisations   including international technology providers, prestigious higher

education institutions and industry (both ICT and other), the programme exposes the selected applications widely in various domains.

The programme targets business enterprises island-wide, either new or in very early stages of development. The primary goal is to encourage entrepreneurs to launch their business ideas in creating new technology products and/or services which address marker gaps and to assist new ICT related innovations. Under this scheme, registered technology businesses in Sri Lanka in existence for under two years and with less than 10 employees, can apply for the program. The accelerator is also aimed at making a contribution towards achieving the goals of the Sri Lankan vision as well as helping to transform the country into an economy based on knowledge as required in the "Mahinda Chintana- Vision for the Future". For the country, innovation is a welcome idea as the government stresses the need to support and promote small enterprises that are driven by innovation and the need to establish a knowledge based society for the future, with collective input from all the players.

The selected businesses will also be mentored through the programme's impressive partner ecosystem in areas of expertise they should acquire in order to develop them into successful enterprises. This line up of partners includes Microsoft, Oracle, IBM, The Sri Lanka Association of Software Service Companies (SLASSCOM), The Federation of ICT Industry Sri Lanka (FITIS), British Computer Society (BCS), The Ceylon Chamber of Commerce, The Federation of Chambers of Commerce and Industry of Sri Lanka (FCCISL), the CIO Forum, The Sri Lanka Institute of Marketing (SLIM), The Chartered Institute of Management Accountants UK (CIMA) and the University of Colombo, School of Computing (UCSC).

Company	Participant	Cohort 1	Cohort 2	Cohort 3
Company 1	Participant 1	Participated	Participated	Participated
	Participant 2	Participated	Participated	Participated
	Participant 3	Participated	Participated	Participated
Company 2	Participant 1	Participated	Participated	Participated
	Participant 2	Participated	Participated	Participated
	Participant 3	Participated	Participated	Participated
Company 3	Participant 1	Participated	Participated	Participated
	Participant 2	Participated	Participated	Participated
	Participant 3	Participated	Participated	
Company 4	Participant 1	Participated	Participated	Participated
	Participant 2	Participated	Participated	Participated
	Participant 3	Participated		
Company 5	Participant 1	Participated	Participated	Participated

	Participant 2		Participated	Participated
	Participant 3			
Company 6	Participant 1	Participated	Participated	Participated
	Participant 2	Participated	Participated	
	Participant 3		Participated	
Company 7	Participant 1	Participated	Participated	Participated
	Participant 2	Participated	Participated	Participated
	Participant 3			
Company 8	Participant 1	Participated	Participated	Participated
	Participant 2	Participated	Participated	Participated
	Participant 3			
Company 9	Participant 1	NA	Participated	Participated
	Participant 2		Participated	
	Participant 3			

Company 10	Participant 1	NA	NA	Participated
	Participant 2			Participated
	Participant 3			

An overview of the participants with regards to the following criteria is summarised below, as extracted from the records provided by ICTA:

1. Industry experience of participants in years for all 3 cohorts

2. Highest formal qualification obtained by each participant

Company	**Participant**	**Cohort 1**	**Cohort 2**	**Cohort 3**
Company 1	Participant 1	12, BSc	15 BSc	5 BSc
	Participant 2	10 BSc	15 BSc	5 BSc
	Participant 3	9 BSc	4 BSc	4 BSc
Company 2	Participant 1	12 BSc	8	17 PhD
	Participant 2	8 BSc	8	20 MSc
	Participant 3	2 BSc	7	12 BSc

Company 3	Participant 1	5, BSc	12 MSc	13 BSc
	Participant 2	5, BSc	8 BSc	8 BSc
	Participant 3	5, BSc	7 BSc	
Company 4	Participant 1	3 BSc	7 BSc	2 BSc
	Participant 2	2 BSc	7	2 BSc
	Participant 3	2 BSc		
Company 5	Participant 1	2 BSc	4 BSc	1 BSc
	Participant 2		3	1 BSc
	Participant 3			
Company 6	Participant 1	12 MSc	0 BSc	5 BSc
	Participant 2	6 BSc	0 BSc	
	Participant 3		0 BSc	
Company 7	Participant 1	12 MBA CPA	10 MBA	5 BSc
	Participant 2	3 BSc	20 PhD	3 BSc

	Participant 3			
Company 8	Participant 1	12	1 BSc	5 BSc
	Participant 2	12	1 BSc	3 BSc
	Participant 3			
Company 9	Participant 1	NA	7 BSc	2
	Participant 2		7 BSc	
	Participant 3			
Company 10	Participant 1	NA	NA	6 BSc
	Participant 2			4 PhD
	Participant 3			10 BSc

Table 5 Participant profiles (Experience in years and highest formal educational qualification)

Based on the Spiralation records and researcher observations, following tables outlines the accelerator program structure including the seminars, workshops and networking events for which the participants are exposed.

Seminars

	Seminar Name
1	Innovation
2	IPR and legal aspects
3	Patterns and practice
4	Financial insights for start-ups
5	Marketing on a shoe-string budget
6	Technology vs. marketing
7	Lean start-up model
8	Blue ocean strategies
9	Design thinking
10	Pitching

Table 6 Seminars of the accelerator (author developed)

Tradeshows

	Tradeshow Name
1	INFOTel Sri Lanka
2	NASSCOM Summit India
3	4YFN Spain

4	Gitex Dubai (2013 2014 Only)
5	Gartner Consortium Australia (2014 Only)

Table 7 Trade shows of the accelerator (author developed)

Networking events

	Tradeshow Name
1	WSA World Café
2	Midterm client negotiation day
3	Spiralation drill day
4	Demo day
5	Spiralation networking events – on going – in conjunction with partners

Table 8 Networking events of the accelerator (author developed)

Data collection design

Data collection takes in two primary perspectives. The first view is rich detail in keeping records of observations, interviews, and events. Direct observations, are generally recorded over an extended period, to be determined by the researcher and other controlling forces. During this period, the researcher records the observed events that are relevant and applicable to the study at hand. Write-ups of interviews are likely to be more detailed as compared to more narrow issues on which the study focuses. The second view of case study data collection is in

utilising existing data from the ICTA as secondary data. It is crucial to use multiple techniques in the collection of information.

Despite the fact that primary data are of greatest significant, they are supported by secondary evidence. In addition, participant observations have also been taken into account during interviews and in reviewing the learning journals Participant observations are different from direct observations by the researcher in the sense that the researcher takes part in the review process. In this study, the researcher was actively involved in the support of the start-up ecosystem of Sri Lanka. In addition, the researcher was also heavily involved in establishing MIT global start-up labs in collaboration with the University of Moratuwa a leading engineering university of Sri Lanka. Therefore, the researcher was in a position to affect the research findings. In some processes, researchers may not let their identity be known to other participants, which calls for the consideration of ethical perspectives.

Notably, participant observation provides the researcher with a strong foundation for addressing weaknesses related to direct observations whereby the identity of the researcher is known.

Spiralation records

With the initiation of the Spiralation program, the government of Sri Lanka created an opportunity for various participants to be involved in the process. For the study, three cohorts were developed into which different participating companies were categorised. Therefore, details of participants across all the new ventures as well as program details of Spiralation were collected for the study.

Preliminary review

Preliminary interviews led to the collection of formal interviews, mid-program, with participants from all three cohorts, mentors, program directors, resulting in 36,458 words selectively transcribed verbatim for analysis purposes in the study.

Learning journal

A learning journal that was compiled based on the conversations carried out with the entrepreneurs in the Spiralation process, through Skype, Viber and WhatsApp led to a composite journal of over 12,000 words of selective text transcribed verbatim.

Qualitative data analysis challenge

The concept of data analysis requires that the collected data is arranged in such a way that they create meaningful insights to those who study them. When the main data patterns have been identified, the information provided can be used in the appropriate manner to reach conclusions in the area of discussion (Patton, 2002). This is the reason that data has to be captured in the expected manner and analysed. The approach towards the data analysis is therefore crucial to ensure that insights are reached in the context of the data and the analysis approach.

When the quantitative data analysis is taken into consideration, it is evident that statistical models can be used. The main advantage of the statistical models is that that are well set and accepted methods of data analysis and the insights they provide remain accepted. This highlights the fact that when the statistical model provides a certain outcome in terms of a certain number, the parties do not tend to disagree with it, due to the fact that the demarcations

are well accepted, providing that the interpretations of the models remain clear in nature (Maylor and Blackmon, 2005). Thus the output can be interpreted with a high level of accuracy.

There is potential for the statistical models to provide results containing errors; however, the impact of these errors is minimal in nature due to the fact that they do not provide a detailed set of insights about the area of discussion. The statistical models would not leave room for ambiguity in the interpretation of the data. Thus the role of the statistical models remains vital in the context of the data analysis and the related outcomes. These will ensure that relevant right insights are achieved in the appropriate context. This illustrates that analysis based on quantitative data is relatively easier to handle.

The main issue with qualitative data is that there are hardly any numeric that are associated with them; due to the lack of numeric, it is evident that the analysis which is used in the context of the data, must be different. The main issue here is that there is considerable room for ambiguity, due to the fact that the interpretation of the qualitative data is always dependent on the insights that the respondents provide, mostly in qualitative form. Thus, any further analysis or evaluation of the results, may not be possible. This is an area that should be identified when the qualitative data is used.

There is a clear difference in the data structures involved in the two forms of data; the qualitative data structures are highly ambiguous in nature. This indicates that there are no clear data structures in place and the data could be available in different places at different levels. Thus the correct data must be collected for the analysis (Neuman, 1997). This is likely to provide the right outcomes and ensure that appropriate results are achieved in the long term

context. Thus the insights that they provide remain highly useful and in line with the needs of the given situation.

There are many different analysis techniques used in the context of the qualitative data; the main issue with the approach is that when analysing the qualitative data, the insights that are formulated in this context remain highly subjective in nature. There is room available   for a wrong interpretation or event researcher bias to be involved in the analysis of this context. These are the main reasons that the right kinds of analytical tools will have to be used to maximise the benefits. This will also ensure that the outcomes are more in line with the reality.

In a qualitative study of this nature, there cannot be room for subjectivity and ambiguity; one of the reasons for this is the volume of the data that is collected. Irrespective of the fact that the study is qualitative in nature, there are numerous data points that are collected and it is important to ensure that they are simply not ignored through the study (Patton, 2002), and that the relevant approaches to be considered would not be involved with the data analysis. Thus the outcomes from the data analysis and from additional related interpretations will align with the given needs of the situation.

Collectively, these factors lead to the clear understanding of an appropriate approach for data analysis; in this study, the available data volumes are high and there is a significant tendency for the research findings to be influenced in many different ways. Lack of coherent data structures could lead to ignoring certain data points. Care should also be taken to ensure that any irrelevant or inappropriate information is not included in the data analysis or interpretation. All of these are important considerations when the data analysis is taking place.

This indicates that the usage of the data analysis approach is highly important for this study; the accuracy of the findings is dependent on the fact that the appropriate data analysis techniques are used. This will further enhance the nature of the outcomes and the eventual findings. The study should generate knowledge of the particular scenarios that are the subject of the study (Neuman, 1997). The required insights may change depending on the times and the other dynamics that are involved with the study outcomes.

All these aspects would have to be applied in the context of the study insights; In order to ensure that the findings are useful, concept mapping and thematic analysis were used to analyse the findings. This will allow the study to ensure that useful results are provided in the context of the analysis. The NVivo approach is used to ensure that a comprehensive analysis is carried out in the context of the study, while capturing all data areas. Thus the needed data analysis can be carried out, leading to optimal results.

Content analysis

As a qualitative research technique, content analysis forms a major part of the overall analysis. Content analysis aims to provide knowledge and understanding of the idea being studied (Downe-Wamboldt, 1992). In this study, it has been used as a method of research in the subjective interpretation of the content of text data by the systematic classification procedures of coding and establishing patterns or themes in the entrepreneurial learning environment.

Content analysis has three distinct approaches and it does not simply use a single method. The three methods are comprised of conventional, directed, or summative approaches, that are used to understand the meaning as obtained from the context of text data, and therefore follow a

naturalistic paradigm. Among these three approaches, the coding schemes, origin of codes, and threats to being believed, form the major differences.

Yin (2009) suggests an approach that is transparent and reproducible in the codification and analysis of the case study data. The challenge in case study research is clearly setting the analytic strategy. Yin (2009) suggests relying on theoretical propositions, using qualitative and quantitative data and examining rival explanations as mechanisms to be considered during the analysis. The general strategy in this study was to use theoretical propositions to execute the directed coding and conventional coding, while rival explanations were also linked to provide a holistic picture of the phenomena. This approach was taken for to two reasons: first, to find the propositions that are associated with the research questions in a focused manner; Second, rival explanations were used in order to position the findings of the study within the broader influence on entrepreneurial learning during the government accelerator. Multiple sources of data on the same area of analysis increased the validity of the study. For instance, the learning experiences of the participants were also validated with the observations of the respective mentors and accelerator organisers.

Conventional content analysis

In the conventional approach, the categories for coding originate directly from the text data. It is generally used with a study design that focuses on the description of a phenomenon, which in this study, was based on the influence on entrepreneurial learning in a government accelerator. Instead of using preconceived categories, Kondracki and Wellman (2002) suggest that researchers may prefer to let the categories as well as the category names emerge from the data, then to immerse themselves in the data to allow the emergence of new insights. This approach is described as the inductive development of categories. This initial approach is

applied in many qualitative methods to explore design and analysis, primarily in cases where data are collected chiefly through interviews, with mainly open-ended questions. (Mostyn, 1985).

Data analysis in the conventional sense started with immersion in the data to obtain a sense of the general idea as a whole. This is followed by a word-by-word reading from which to derive the codes first, by highlighting the exact words from the content text that captures the key ideas or concepts. First impressions, deductions and initial analysis obtained from the text were noted down and as the analysis progressed, labels for codes emerged, reflecting more than one line of thought. As a result, the labels became the initial coding scheme, originating directly from the text. In this conventional analysis, codes were then sorted into different divisions based on the different ways in which codes are connected and related. The categories that emerge have been used in this research to organise and divide codes into significant and meaningful sections (Patton, 2002). With the relationships that have been established between the sub sections, researchers are able to combine or order the many subsections into smaller categories. Morse and Field (1995) suggest that a tree diagram or a table can be created to help in ordering these sections into a more defined structure.

What follows is the definition for all the sections, subsections, and codes created so that reporting the findings from an analytical perspective is made possible. Based on the aims and objectives of the study, researchers could highlight the relationship between sections or subsections that are further founded on their concurrence, consequences, or antecedents. A conventional approach to content analysis allows for relevant theories, as well as other research findings, to be addressed in the analysis and discussion section of the report. In this study, the findings have been compared and also contrasted to the theory by Kubler-Ross (1969) in which

the discussion provides an overview of how the study findings contributed to the knowledge of entrepreneurial learning, and hence, make recommendations and suggestions, as well as identify future research areas.

Using the conventional approach adds an advantage to the study in that it enhances the obtaining of direct information from participants in the study without being influenced by preconceived categories or even theoretical dispositions. The research question in this study, as established, was appropriate for this content analysis approach. The information and knowledge obtained from this content analysis is founded on the unique perspectives of the participants and based on the actual data (Gillham, 2000). The sampling technique used in this study was also designed to enhance the diversity of emotional responses, in addition to the analysis methods that were structured to encompass that complexity. Therefore, in conventional content analysis, coding categories are derived directly from the text data.

Directed content analysis approach

With a directed approach, analysis of the content begins with a review of theory or necessary research findings, to lay the ground for the development of initial codes. In some cases, existing theory or previous research exists about an idea that is either not complete or is very likely to benefit from further review or analysis (Krippendorf, 1980). Here, the researcher can also apply a directed approach to content analysis, taking into consideration the role of theory in the study. The aim of a directed content analysis approach is to conceptually extend or validate a theoretical basis or content theory. With existing theory, it becomes easier to focus the research question since it can provide predictions regarding the variables under study, or regarding the relationship among the variables. This helps in determining the first coding scheme or establishing the relationship between codes.

Content analysis, with the application of a directed approach, is based on a process that is more structured than a conventional process, in a way that allows each to complement the another Therefore, in this study, both approaches were applied, one based on studying raw data, while the other on existing theory. With existing theory or previous research, key concepts or variables are first identified by researchers as coding categories (McTavish & Pirro, 1990). This is followed by the development of operational definitions for every category based on available theory. In this study, experimental learning and organisational techniques served as an initial framework to determine the relationship between government accelerator and entrepreneurs. Data collected primarily using interviews requires the use of open-ended questions, followed by focused questions regarding the predetermined categories. With a qualitative method approach, the researcher can explore further experiences by entrepreneurs and their entrepreneurial learning (Cavanagh, 1997).

Coding in directed content analysis can take place in two strategic approaches, depending on the nature of the research question. This first strategy could be used with the research aim \of identifying and categorising all aspects of a certain phenomenon including emotional reactions. It then it becomes significant to go through the theory and highlight all text that appears to reflect an emotional reaction on a first impression basis. Predetermined codes are then applied in coding all the highlighted texts as the analysis progresses. The other strategic approach can be applied immediately in the content analysis using predetermined codes. Selecting the approach to use depends on the data available as well as the goals and objectives of the researcher. In this study, there is the need to capture all possible situations of a phenomenon including personal views, since highlighting the identified text without coding is likely to increase the credibility and reliability of the study.

Coding can begin immediately when the researcher has confidence in initial coding that it will not bring bias to the identification of necessary text. The type and scope of a section greatly impacts the need to identify subcategories with ensuing analysis (Saldana, 2009). For instance, this research was inclined to distinguish between experiential learning, learning by doing, learning from past experience, learning from negative and positive experience, vicarious learning and conversational learning, as the subcategories of experiential learning and absorptive capacity and external learning, learning organisation, exploratory and exploitative, single loop and double loop learning, and higher and lower level learning as the subsections of organisational learning. The findings obtained from a directed content analysis approach provide both supporting and non-supporting evidence for a foundation of theory. As a result, the evidence can be presented as illustrating codes with credible examples and also by providing descriptive evidence, where relevant. On the other hand, Curtis *et. al.* (2001) suggest the application of rank order comparisons of codes' frequency, based on the fact that study design and analysis are less likely to produce coded data that can undergo meaningful comparisons using statistically differential tests.

When using a directed approach to content analysis, the advantage is that it allows for the support and extension of existing theory. Additionally, as the research in a particular subject progresses, using a directed approach ensures that the research is highly unlikely to operate from a naïve point of view, that is often taken as the pointer of naturalistic research designs. As suggested by Saldana (2002), coding in this study was carried out in line with the theoretical perspectives, using properly and effectively collected data, all leading towards the establishment of validated principles after three rounds of passing.

Specific analysis approach

Miles and Huberman (1994) recommend the research design itself to be a part of data analysis as the researcher works to exclude some facets from the research design. The aim is to identify the propositions that are emerging from the study as a result of analysing the data. This will be important for answering the research questions.

Data collection type	Analysis approach	Purpose
Existing data	Cross checking	Secondary data source
Interviews	Thematic analysis and concept maps	Primary data source
Learning journal	Thematic analysis	Primary data source

Table 8 Analysis framework (author developed)

The goal of the study was to consider the existing Spiralation data, interview data and learning journals as the key data sources for research analysis. This was important for understanding the influence of the accelerator program on entrepreneurial learning. The researcher interviewed participants and cross checked what they said with what mentors and organisers revealed of the participants. Based on the use of monthly learning journals by entrepreneurs, the researcher added to the initial interviews.

For directed coding, the researcher use the derived entrepreneurial learning nexus from the literature review as the basis for directed coding, taking the following into account:

    i.   Exploratory learning

ii.   Exploitative learning

iii.   Individual learning

iv.   Collective learning

v.   Intuitive learning

vi.   Sensing learning

These codes are the initial codes that are being used for the directed coding process.

Summary

This chapter has presented the methodology that was used to obtain and analyse data for the study. The philosophical underpinnings of the study took on a constructivist approach that claims that the truth in a setting is always relative and relies greatly relies on the perspective of individuals. This approach is of an exploratory nature which, as seen, seeks to identify the variables likely to be present in the environment under study and at the same time, have some significance to the study. The theoretical perspective of the research involves the researcher's philosophical views to form the foundation for the methodology of the study. Because of the exploratory nature of the study, a qualitative research design was developed that allows the researcher to study phenomena in their natural context. Qualitative methods are comprised of the tools and techniques used in this research to collect and analyse data.

This study has used the Sri Lankan government's Spiralation accelerator program as a case study in order to understand the influence on entrepreneurial learning of a government accelerator. Additional data collection methods were employed; these include   interviews, Spiralation records and learning journals. In order to assure the reliability and credibility of the study, the researcher had to consider the potential impact of researcher bias on research data quality and ways of eliminating that bias. By examining credibility, transferability, and

dependability, the researcher ensured that threats to the quality of data, findings, and analysis are minimised in the study. In examining the research sample and the data collected, this chapter also highlighted an analysis of case study data and content analysis which will be presented in the next chapter in a more detailed manner.

It is evident that appropriate further research approaches are needed for use in the context of studies of this nature. The relevant approaches towards these studies would enhance the quality of the insights associated with the study areas and how such structures are best a structured. This would ensure that the desired results are achieved in the long term and that the benefits are maximised. The discussion uses a qualitative study approach and the case study is based presentation of the issue. This will ensure that the new insights provided in the areas of discussion and the results remain highly valuable and relevant, based on the multi-paradigm perspectives employed for theory building.

Chapter 4: Findings and Analysis

> "Think left and think right and think low and think high.
>
> Oh, the thinks you can think up if only you try!"
>
> - Dr. Seuss

Introduction

In order to understand the influence of the government accelerator on entrepreneurial learning, the study employed a range of data collection techniques, which were earlier discussed in the methodology section. The current section offers the findings and analysis of the study, based on the data gathered using the discussed research methods. Spiralation is the only government accelerator in Sri Lanka and this makes the findings of this study immensely valuable since very few studies has been conducted on the government accelerators in the context of entrepreneurial learning. The key areas of focus will be an analysis and interpretation of the data collected in the study, across the three cohorts of Spiralation. This aligns with answering the research questions of the study: '*What does entrepreneurial learning mean?*' and '*How does a government accelerator influence the entrepreneurial learning of the individual entrepreneur, the entrepreneurial team and their infant new venture?* The findings and analysis section briefly highlights the literature and methodology that were earlier been discussed in the previous sections. Additional sections have been included, beyond the answers to the research questions, in order to highlight other important findings. Among other things, participants emphasised the practical aspects of being able to leverage the benefits of the accelerator eco-system beyond the defined cohorts, based on the phase of firm and domain of firm. A theoretical model will be proposed in the discussion chapter to facilitate this. This includes coding the research data of RQ1 - 'what does entrepreneurial learning mean?', to analyse using UCINET for concept maps and coding the research data of RQ2 - 'How does a government accelerator influence the entrepreneurial your learning as an entrepreneur, the entrepreneurial

team and your infant new venture?', to analyse using NVivo for thematic analysis. Both directed coding and conventional coding were used for thematic analysis.

Data analysis and interpretation

One of the main challenges involved with this area of discussion is the approach that the study would take towards data analysis and interpretation. It is vital that an appropriate approach is taken for beneficial results. Thus the data analysis and interpretation will have to be carried out in line with the needs of the given scenario. This would enhance the kind and quality of information associated with the study. The main challenge in this context is the fact that the data involved in this case are qualitative, and therefore the analysis of this data to align with the given needs of the scenario, may require appropriate tools.

Qualitative data tends not to have a data structure that is easy to manipulate. This, in other words, indicates that the researcher will have to go through all the material and use the discussions and verbatim texts to correctly identify the facts for the study. There tends to be 'noise,' that, is data that may or may not warrant inclusion, which will need to be filtered out to eliminate potentially negative outcomes of the study. The relevance of the data is essential to the analysis in order to reach the desired results in the context of the study.

Data analysis structure

Participants were first asked to explain their entrepreneurial journey, taking into account their key learnings during the Spiralation program. As depicted in the methodology chapter under research design, RQ1: 'what does entrepreneurial learning mean?' was analysed using concept maps and primary data. RQ2: 'How does a government accelerator influence the entrepreneurial your learning as an entrepreneur, the entrepreneurial team and your infant new

venture?' was analysed using two approaches. First, using directed coding based on the findings of the literature review and second using conventional coding based on the exploration of the entrepreneurial learning experiences of the participants, with an open mindset.

Study findings – concept maps

In this context, it is clear that there are several areas that are incorporated in the context of the study. There are various concepts involved and the nature of the relationships between these concepts will have to be established. Knowing the nature of the relationships would enhance the benefits in terms of the study in reaching accurate conclusions. Thus the role of concept mapping and the evaluation of the relationships in the clusters and within the clusters, will be very important.

The main issue is that this needs to be carried out with due care so that none of the data points' related aspects are lost; this will also reinforce that the expected benefits can be reached in the context of the outcomes of the study in the future. All of these factors lead to better results in terms of the study's insights. Thus the study should be able to provide the results in terms of the benefits that to be achieved in the future.

In order to understand this phenomenon through the lens of entrepreneurial learning, a thorough literature review was carried out in chapter 2. The outcome of the literature review calls for further research in three areas that ideally fall into the entrepreneurial learning nexus of the startup firm. As shown below, they are: individual learning vs. collective learning, intuitive learning vs. sensing learning, exploratory learning vs. exploitative learning.

However, as the entrepreneurial learning literature does not directly discuss the entrepreneurial learning nexus, the researcher asked the Spiralation participants what they understood by the term "entrepreneurial learning". As it was not practical to group participant statements into pre-directed categories, the creation of a concept map helped to group similar definitions together. Using mixed methods, concept mapping combines qualitative group processes with statistical analysis to categorise groups graphically (Glen, 2007). The process in creating the concept map followed, as based on the methodology followed by Schell *et. al.* (2013).

In order to map the concepts, there are several steps that must be taken; the first is to identify the sources of information. It is possible that the sources of the information take many different forms; one of the possible is the transcription of the interviews. On the other hand, there is also a chance to reach the results using material such as the secondary sources. These may sometimes have to be combined with the evaluation being carried out to identify the nature of the relationships between the concepts.

Once the sources of the data are identified, steps will have to taken to upload the facts to the right software platform. Having a software platform for the above purpose would be vital due to the fact that the required features and flexibility must be in place. This will make sure that the software meets expectations and achieve positive results in the future.

The clusters will have to be created and each of the materials that is input into the system must be analysed based on the clusters; this allows the contents of the discussion to be analysed to identify the deeper insights related to the area of discussion. Accurate analysis of the information should lead to appropriate results that are likely to benefit all the parties in the future. There could be several approaches that the companies may use to analyse the insights

to ensure that they achieve results in line with the needs of the given scenarios. Thus the thinking behind the concept mapping is vital to reach the right outcomes.

It is essential that the results are reached in the context of the study areas associated with the discussion. This is the main reason that the parties will have to use the interpretations of the data; the qualitative data allows space for subjectivity and this shows that the outcomes of the study may not be accurate. Thus, it is vital that appropriate techniques are used in the data analysis.

The role of the concept mapping is one of the aspects that could provide positive, yet accurate results to the study. The approach that is used in this context indicates that the concepts have been used in line with the needs of the given scenario. Thus the insights that are gathered through the concept mapping approach can be used to identify the nature of the relationships between the various concepts and many other aspects thereof. In this particular instance, the NVivo software platform has been used to evaluate the nature of the findings and to provide the needed interpretations of the data that are involved with the study area.

Developing the focus prompt: the researcher used the focus prompt "What does entrepreneurial learning mean?" which is the finely tuned version of the prompt after the initial pilot with a few Sri Lankan entrepreneurs.

Developing the participant matrix: case study based exploratory research of the Spiralation program; participant matrix included the Spiralation participants of all 3 cohorts, mentors and organisers.

Obtaining responses for focus prompt: a total of 163 statements were selected from the open ended interviews from the above participant matrix and were transcribed. By discussing these statements with the Spiralation officials, they were reduced from 163 to 48, as discussed in the Methodology chapter – Concept maps – filtering statements section.

Creating the concept map: using UCINET and Garvin-Newman community structural analysis, similar definitions were grouped together.

Concept map - coding structure and approach

The study is qualitative in nature and the respondents should be provided with the chance to indicate their perspectives in the total discussion. Based on their points of view, they have to be able to highlight how the learning process has taken shape for them and how the learning process has influenced their behaviours. In order to ensure that the required insights are gained, the respondents should have the freedom to express details about these issues and to project on how this is likely to provide the parties with various benefits in the future. They should also have the freedom to provide information with occasional interruptions from the moderator. This highlights the fact that the total discussion is based on an unstructured approach.

The main challenge of taking this route is that the information the entrepreneurs might provide could be different in capturing and comparison capabilities. This is due to the fact that data structure differences exist between the data that has been collected. Coding will allow the researcher to identify the data items that are involved with each of the scenarios and allows an establishing of comparative relationships.

The entrepreneurs on the other hand, have different learning approaches, irrespective of the fact that they have gone through the same program; the main issue to note is that different people take different approaches when it comes to learning. Thus the learning is not a static process and this has to be understood in the conduct of the study. This naturally highlights the need to use approaches that would allow the parties to carry out the necessary changes in the future. Thus, the study must use unstructured interviews for collecting the required information from the respondents.

With the unstructured information in place, in order to analyse it and to identify the nature of the relationships between the units of information provided, the parties will have to work towards establishing the outcomes and ensure that they achieve the expected results. Qualitative studies are at a disadvantage when compared with quantitative studies due to the lack of an appropriate and coherent data structure in place. Thus, an extra set of efforts are required to ensure that the required kinds of results are reached. Such approaches will envisage the fact that the benefits can be maximised through usage of the selected software platforms, to ensure that all the required data items are taken into consideration when focusing on the evaluation of the outcomes. These are some of the approaches that could provide positive results in the future context and ensure that the study findings remain accurate.

Creating the entrepreneurial learning concept map

The initial concept map, as shown below, illustrates the connections between the responses received from the participants across all three concerned cohorts. The nodes of the map, correspond to the definition of entrepreneurial learning provided by each participant. Nodes that are closer indicates similar definitions and nodes that are further apart indicate different definitions.
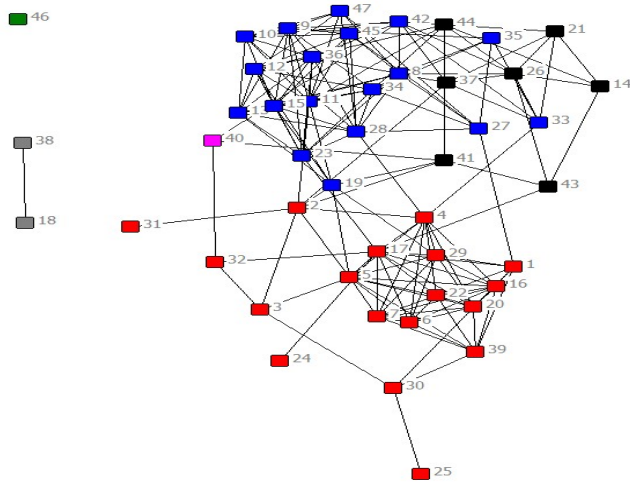
Figure 25 Concept map – primary cluster classification (author developed)

Qualitative identification of clusters of the concept map

Clusters were classified using UCINET and each cluster identified is explained in the table below.
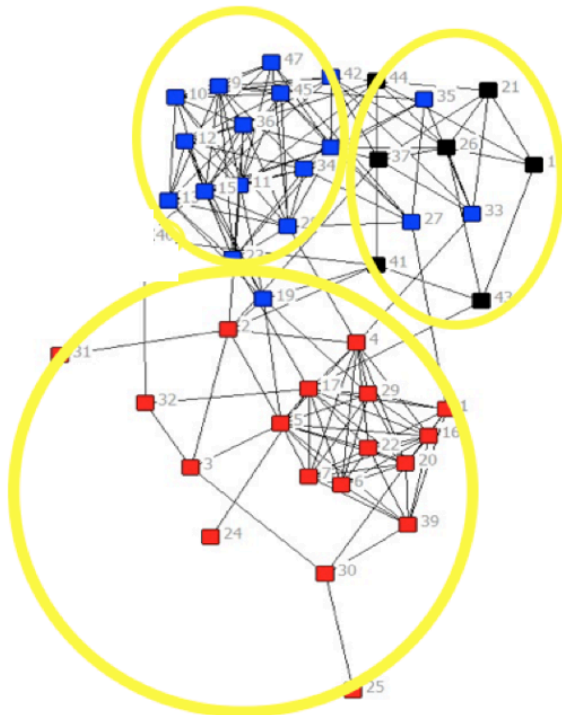
Figure 26 Concept map - cluster identification on the map (author developed)

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Cluster	How the cluster was identified
1	The cluster at the top left hand corner seems to be tightly interconnected. Bordered by statements 19, 27, 33, 35, 47, 10 and 13.
2	A separate cluster was distinguishable by the border 44, 21, 14, 32, 41 and 37.
3	The bottom cluster is bordered by statements 25, 39, 1, 4, 2, 32 and 24.

Table 9 Cluster definitions and clarifications (author developed)

Validating the clusters

Girvan-Newman (2002) suggests the cluster verification by the number of clusters and the size of each cluster. The concept of community structures, recognises the existence of smaller communities within a larger structure. The "edge-betweenness" allows the researcher to examine which numbers of clusters would best represent identification saturation.

Naming the clusters

Naming the clusters requires careful consideration of the analysis results. The significance of the process has been highlighted earlier in the Methodology chapter. The researcher grouped the cluster statements together in the original excel sheet, after colour coding each cluster. This facilitated being able to determine the common theme for the cluster. For instance, the top right cluster statements are listed below:

44	Learning how to do it fast in your words - accelerate and learning how to it right. The right thing being learned.

37	It's the good practice and new value. You got to learn both these and it's the nexus.
26	Learning the finance and learning the business
21	Learning what is something of big value and learning how to do it
14	Learning how to embark on entrepreneurial journey
41	Learning the skills and learning the knowledge. These are different and the same.
43	Learning how to sell and learning how to hire. This is both in one person, the entrepreneur

Table 10 Cluster 1 statements (author developed)

Reflecting on these statements and the dialect, the researcher determined that these participants perceive entrepreneurial learning as understanding how to act as an entrepreneur when creating new value, whether selling, hiring, managing finance, acquiring skills or knowledge. This process was undertaken for the remaining clusters as well.

The final clusters, as shown below, summarise the definition of entrepreneurial learning based on the input of the participants of the Spiralation accelerator across the 3 cohorts.

#	Cluster colour	Number of statements	Cluster description
1	Blue	18	Learning through practice, from successes as well as from failures
2	Black	6	Learning how to be an entrepreneur taking contrasting roles
3	Red	20	Learning the market and exploiting the market to be profitable

Table 11 Cluster descriptions (author developed)

Examples of entrepreneurial learning from each cluster

The conceptual map that is identified above would lead to the following set of conclusions. This would indicate key inferences that the study would reach from the conceptual maps. It is important to note that the interpretations are carried out in a relative manner and the absolute aspects, when compared with another study, could change. The different clusters are interpreted in a different manner so that new insights can be reached. Thus the study findings are likely to provide beneficial results that are likely to be highly useful in nature.

Learning through practice: these areas are tightly interconnected in nature; this highlights the fact that when the aspects of employee learning are considered, one of the aspect of learning exposure is linked with the others in a tight and a direct manner. Thus the learning related experience remains vital and is in line with the needs of the parties. Learning through experience links with the failures as well as successes levels. Thus the outcomes will make sure that beneficial results should be reached in the appropriate context in the future. This shows that different aspects of the learning through experience should be tightly managed in order to reach the appropriate results. Close interconnectedness indicates that an impact on one of the aspects could impact on the whole learning approach and the effectiveness of the total learning program could be affected.

Contrasting roles: naturally the entrepreneurs will have to play contrasting roles and this indicates that they have to play effective sets of roles throughout the learning process. However, it is also important to note that when the entrepreneurs are playing these contrasting roles, results must still be reached. Within the given cluster area, there are separate aspects that impact the overall outcomes associated with the learning exercise. Thus, the cluster related learning outcomes will have to be interpreted with these aspects in mind. This demonstrates an

approach towards learning that will allow the parties to achieve beneficial results in the future context. The interpretation of the findings in this instance indicates that the nature of relationship between these variables is not as tight as the previous cluster that has been identified. It is also clear that there could be possible formulation of a sub cluster in this instance.

Learning from the past and modelling for the future: it is evident that results will have to be reached by learning from the past; it is important to use the information that is derived from the past to better plan for the future. This capability will ensure that new insights are achieved in the context of the past experience and will eventually allow the parties to work towards achieving the desired results in the future. Thus the learning related aspects will have to be suitably evaluated in the appropriate context in order to position positive outcomes in the future

Exploiting and learning from market: many different aspects were discussed in this context; it is evident that this has provided relatively important information about market conditions and how the parties can clearly learn from market related outcomes. The evaluation of the outcomes indicates that entrepreneurs have been able to view certain areas with tight interconnectedness. However, not all the areas enjoyed the same levels of interconnectedness as indicated above. This shows that while there are areas that would create tightly interconnected sub-structures even within the given groups, it is also clear that there are certain elements that are not tightly linked with all the areas in the discussion. Thus the nature of the relationships and the insights that they provide will have to be understood in this context in the future.

Learning from individuals and firm the learning from individuals and firms remains another area of vital importance for the entrepreneurs, because they will be able to learn from the

organisations and the experience of the parties who are involved within the organisation. Irrespective of the fact that the employees could be working under the entrepreneurs, this should not have stopped them from gathering the knowledge required for them to carry out the activities. However, in real terms, this remains a weak area in the companies involved. This is due to the fact that the employees undergoing the training have shown very little tendency towards learning from more senior employees and achieving the kinds of results they produce. This remains another area for future consideration and the companies will have to ensure that they achieve results in managing such areas appropriately.

Thus the above aspects indicate that learning is a tightly knit process in many instances. However, it is also clear that results can be reached through addressing the issues to ensure the desired outcomes. It is evident that the learning approach will potentially maximise the benefits and ensure that these desired outcomes are reached. Thus, the above conceptual maps provide useful results in terms of understanding of each of the areas associated with the learning process and the actual significance of each of these areas. It is important that the weak areas are identified and suitable approaches are developed so the entrepreneurs are able to address them in order to fully benefit through programs such Spiralation.

It is evident that steps are being taken and the benefits are achieved in the long term context. In order to make sure these outcomes are consistently reached, the companies will have to look to the learning process and eventually to structure them in order to meet the needs of the market in the future, for positive future results to be delivered, highlighting both the strengths and weaknesses of current practice, in order to build on these so as to maximise future benefits.

Entrepreneurial learning concept map conclusion

Just as there is lack of clear definition of entrepreneurial learning in the literature, so practitioners also provide contrasting meanings to entrepreneurial learning. This thesis, interprets these findings through correlating entrepreneurial learning theory in this section.

Although the sample is a single case study from a developing country, the findings from this research suggest a challenge for entrepreneurial learning researchers. Although many participants have provided the notion of a transitioning state during the entrepreneurial learning process based on contrasting areas, not all the areas are directly in line with the existing theoretical contrasts. This research extends these existing areas of concern during the entrepreneurial learning process based on the existing literature.

Learning from the market first and then leading the market second.

Traditional single-loop, double-loop and triple loop learning theories have stemmed from the philosophical basis of correcting or improving the delivery, based on the feedback loops. Extending these organisational learning theories, this research finding suggests that during entrepreneurial learning, the first phase of learning is obtaining the details from the market, before any value or solution has been pitched to the market.

Phase of the learning journey	Description of learning source and method
Initial – exploratory phase	Entrepreneurs learning from the market
Subsequent – exploitative phase	Entrepreneurs leading the market, taking feedback from the market. This phase is

	aligned with single loop, double loop and triple loop learning constructs.

Table 12 Entrepreneurial learning definition based on the findings (author developed)

During the startup stage, entrepreneurial learning is transitioning from phase 1 to phase 2 and provides a new interpretation as to what is found in the entrepreneurial learning literature. For this reason, rather than focusing narrowly on the directed coding and deductive analysis during the analysis and findings, the researcher maintained an open mind during the findings and analysis when seeking the answers to the second research question.

Study findings – directed coding

Previous studies on government accelerators are very limited; accelerator literature is also still in its infancy. Furthermore, the competitive application process and cohort based approach, differentiates accelerators from traditional incubators. As a result, understanding how entrepreneurial learning takes place within the context of a government accelerator is a novel contribution to literature.

Importantly, the government accelerators eliminate the short term profit requirements which are a barrier in non government based accelerators. Particularly in the case of the accelerator that is the focus of this research, a long term view is established by the government. The government believed that instead of considering short term employment growth and profit growth, a long term vision of influencing the strategic intent is more important for the country. As such, the case provides a better setting to gain insights on entrepreneurial learning than

would be present in a commercial accelerator setting, where the short term growth objectives take precedence over learning objectives.

The majority of the participants in this stud reported a shift in their operational paradigm as a result of taking part in the government accelerator. Equally importantly, in order to modify the processes to meet emerging demands, having access to a broader social network facilitated through the government accelerator is also significant.

The status of this information is, at December 2015, as per Spiralation records obtained and the rest, at the time of enrolment. For this study, at first, the researcher became familiarised with the dataset. Next, significant verbatim texts were coded using NVivo. This approach continued for conventional coding forming a tree structure based on the recommendations of Morse and Field (1995).

The following section outlines the directed codes derived from the literature and expanded upon in the findings of the study:

- Explorative
- Exploitative
- Individual
- Collective
- Intuitive
- Sensing (sensing is the logical learning where you use your 5 senses)

Company - Participant	Cohort 1						Cohort 2						Cohort 3					
	Exploration	Exploitation	Individual	Collective	Intuitive	Sensing	Exploration	Exploitation	Individual	Collective	Intuitive	Sensing	Exploration	Exploitation	Individual	Collective	Intuitive	Sensing
1-1	M	S	M	S	M	S	S	S	M	M	M	S	S	S	M		M	
1-2	M	S	M	S	M	S	M	M	M	M			M	M	M	M		
1-3	M	M	M	M											M			
2-1	M	M	M		M		S	M	S	M	M	S	S	S	S	S	M	S
2-2							S	M	M				S	M	M	S		S
2-3					M	S		M							M		M	M
3-1	M	M	M	S	M	M	M	M	S	S	S		M	M	M	M		
3-2	M	M	S	S			M		M	M	M			M	M			
3-3			M	M	M	M			M	M								
4-1	M		M		M	S	M		S	M	S	M	S	M	M	M	S	S
4-2			M			S	M	M	M						M			
4-3			S			S												

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5-1	S	S	M	S	S		M		S	M	M	M	M	M	M	M	M	M
5-2									M					M				
5-3																		
6-1	S	S	M	S		M	S	M	M	M	M		S	S	S		S	S
6-2	S	M	M	S			M	M	M	M		M						
6-3							M		M		M							
7-1	S	M	M	S	S	S	M		S	M	S		M	M	M M M	M	S	
7-2	M		M		M	S		M							M			
7-3																		
8-1	M	M	S	S		M	S	S	S	M	S	S	M	M	M	M	M M	M
8-2			M				S	M		M	S		M	M			M	
8-3																		
9-1						M	M	S	M	S	M	S		S	S	S		

9-2							M	M		M				
9-3														
10-1									S	M	S	M	S	S
10-2									S		M	M	S	
10-3														

Table 13 Summary of directed coding (author developed)

Validated summary of the directed coding based deductive analysis results are shown in the table below table. S (Strong >5 occurrences) denotes strong evidence and M (1<Moderate < 5 occurrences) denotes moderate evidence.

Propositions are based on the contrasting learning dimensions discussed for directed coding. The attributes associated with each of these aspects have been identified through the literature review, as well included in the research method design in the methodology discussion. At this stage, these direct (based on literature) structures would be used to evaluate and in contraposition for the study. Thus, the contents from the interviews are analysed to identify each of the related outcomes and the likely benefits that they would provide.

Study finding 1- exploratory and exploitative learning

Directed coding has identified exploratory learning and exploitative learning as one dimension with two key areas that are linked with the proposition: exploratory and exploitative learning. These are vital aspects of entrepreneurial learning as is evident through the Spiralation program

Exploratory learning takes place first, as it allows experiencing the scenarios and building an initial understanding of possible options; it is also referred to as learning to reach particular the ends. The following chart indicates an analysis of how the respondents related each of these areas with their work, where the number of occurrences of the codes are summarised in the table.
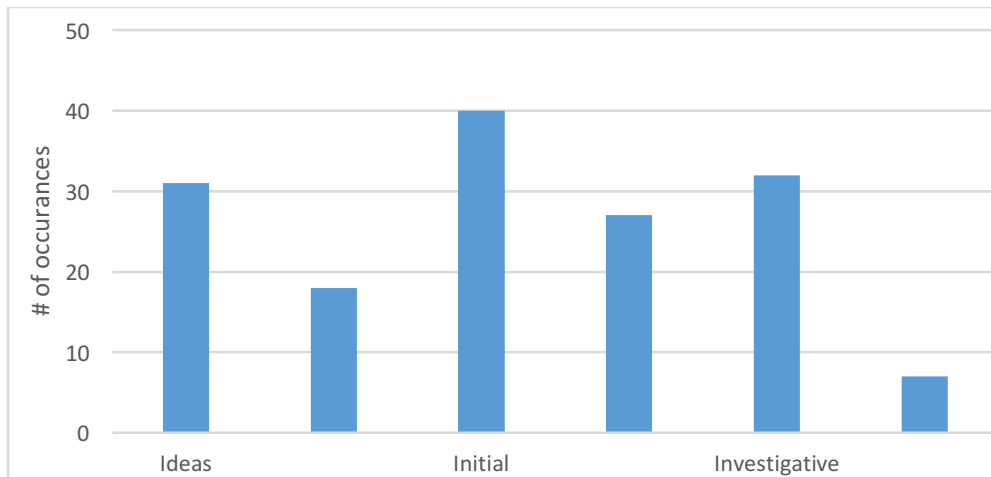
Figure 27 Exploratory learning process (author developed)

Many have related the process with the degree of control they have and the fact that the learning has become multi-dimensional and investigative in nature. This shows that the trainee entrepreneurs have to formulate their ideas and carry out the learning process in line with the needs that are in place. Thus, steps will have to be taken to continue this aspect in accelerator programs such as Spiralation and ensure that appropriate results are reached though the discussion. As exploratory is evident to be taking place first, the exploitative learning follows the exploratory learning process.
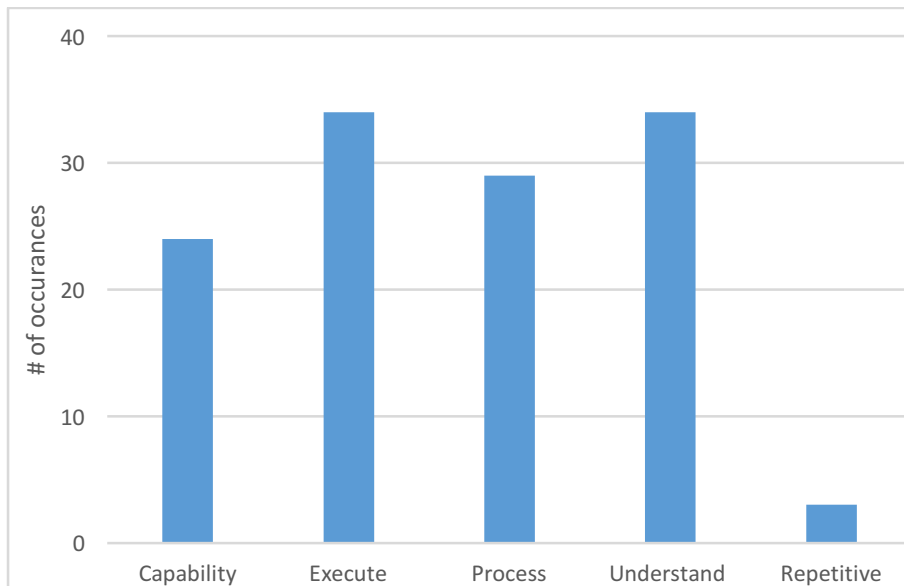
Figure 28 Exploitative learning process (author developed)

The prominent aspects of the exploitative learning process remain the ability to execute activities and to form an understanding of the nature of the impact that the action would create. It is also important to note that the process is developed in a sound and a fair manner to achieve these results in the future, which is also referred as learning based on the available means. Exploitative learning has contributed to capability building activities as well. Thus the above aspects indicate that the Spiralation program has made a contribution to both exploratory and exploitative learning process and related outcomes.

Synthesis of study finding 1 can be indicated as follows:

Figure 29 Synthesis of study finding 1 (author developed)

Directed code	2nd order code	Sample verbatim
Exploratory	Ideas	*It's all about new ideas and new 'aha' moments. In many ways we get them [ideas] if we know that knowing your options are important.*
Exploratory	Breath	*We were exposed to a variety of new areas. Before Spiralation, we were too engrossed in the technology delivery part of it.*
Exploratory	Initial	*Whenever I start something new, first thing I do, for that matter most of us, is to explore the possible choices and sometimes you learn new choices too if you ask the right questions.*

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Exploratory	Multidimensional	*You can't say just one or the other. Everything is interconnected. Specially technology can be leveraged for many areas if you use it right.*
Exploratory	Investigative	*So we didn't have any experience in marketing or positioning. We simply decided that we will investigate what's going on locally as well as globally.*
Exploratory/ Exploitative	Repetition	*It doesn't stop with a single moment or Spiralation. Not that we sit down in a classroom setting to study but if we don't keep up repetitively, I don't think we can survive.*
Exploitative	Capability	*I think the gain is in building your capability.*
Exploitative	Execute	*Finally, it boils down to getting the job done.*
Exploitative	Process	*We learnt early that the ad-hoc nature of doing tasks [had] resulted in confusion among us, so we started to define very simple and light weight processes.*
Exploitative	Understand	*Understanding is the key here. It has happened to many of us but if you try it's not hard too.*

Table 14 Thematic analysis summary of study finding 1 (author developed)

Study finding 2 - individual and collective learning

The individual and collective learning have evidently been achieved through the appropriate Spiralation programs. Individual learning is important due to the fact that it contributes to enhanced exposure of the parties to learning and ensuring that they achieve the needed results. The attributes associated with individual and collective learning have been identified primarily during the Methodology discussion area and the outcomes will have to be evaluated in line with the given scenarios. The following chart indicates how individual learning is structured.
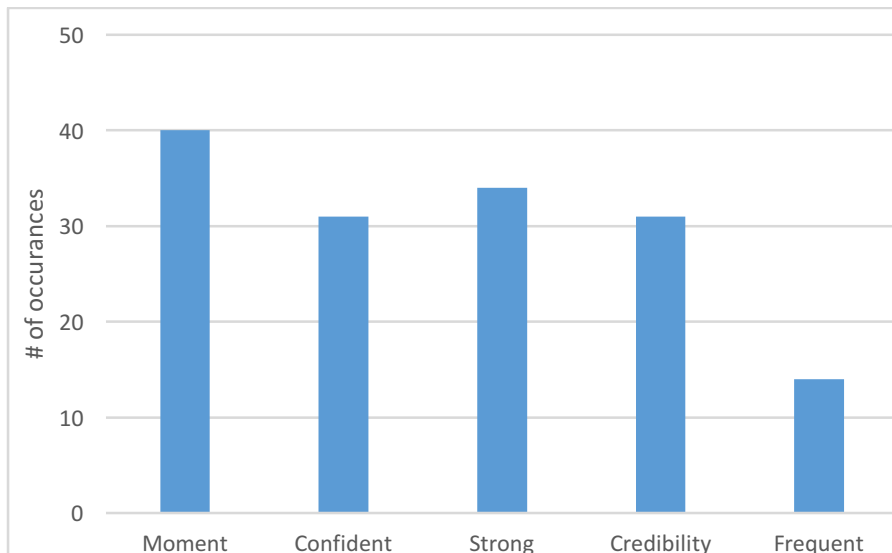
Figure 30 Individual learning (author developed)

When individuals capture the opportunities available for learning, this allows them to learn from the experience that they gain and the people they meet. There is a high level of credibility associated with individual learning exposure due to the key benefits associated with it. The learner's level of confidence is enhanced due to this approach towards learning. Thus individual leaning remains important to achieve results in the future. The following chart indicates the collective learning attributes associated.
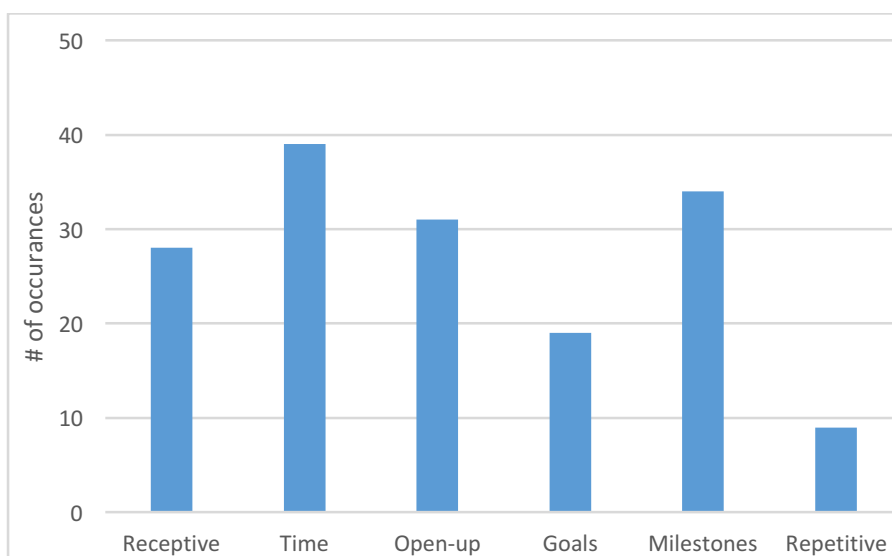
Figure 31 Collective learning (author developed)

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Many have linked the collective learning approaches with timeliness. This is due to the kinds of time management practices applied as there is no need for learning to take place through experience over time. Milestones can be set and the targets can be shared. Further, the parties will be able to work together to ensure that appropriate results are reached through the process in a collective manner. This is based on the common understanding derived through the process of collective learning that occurred during the Spiralation program.

Synthesis of study finding 2 can be indicated as follows:
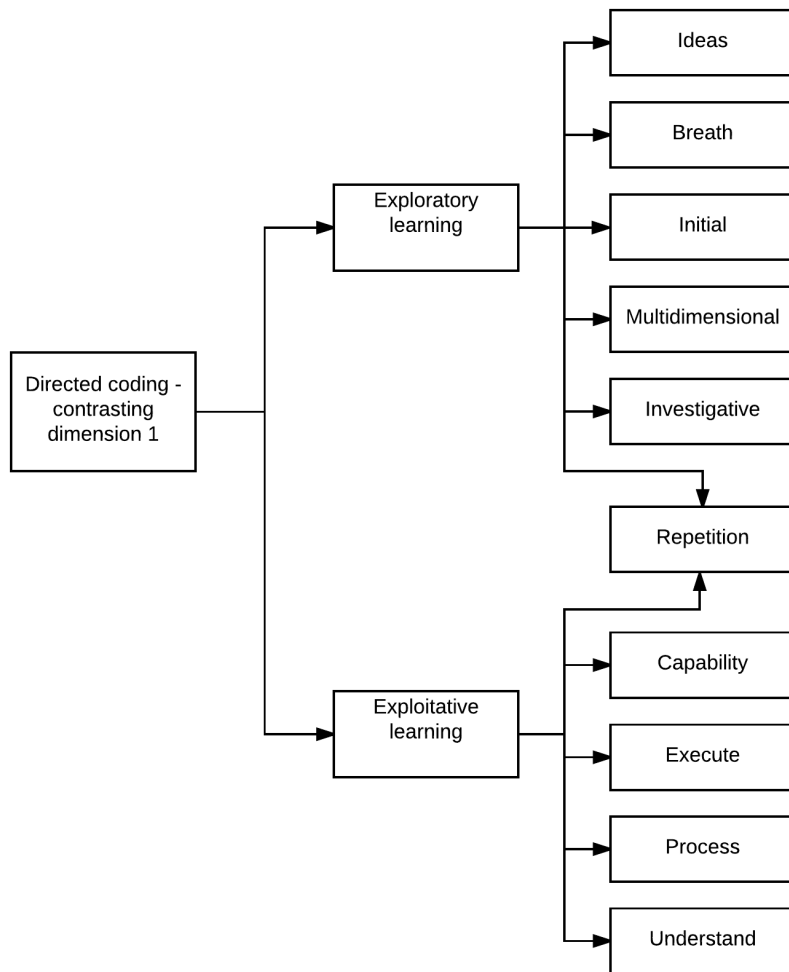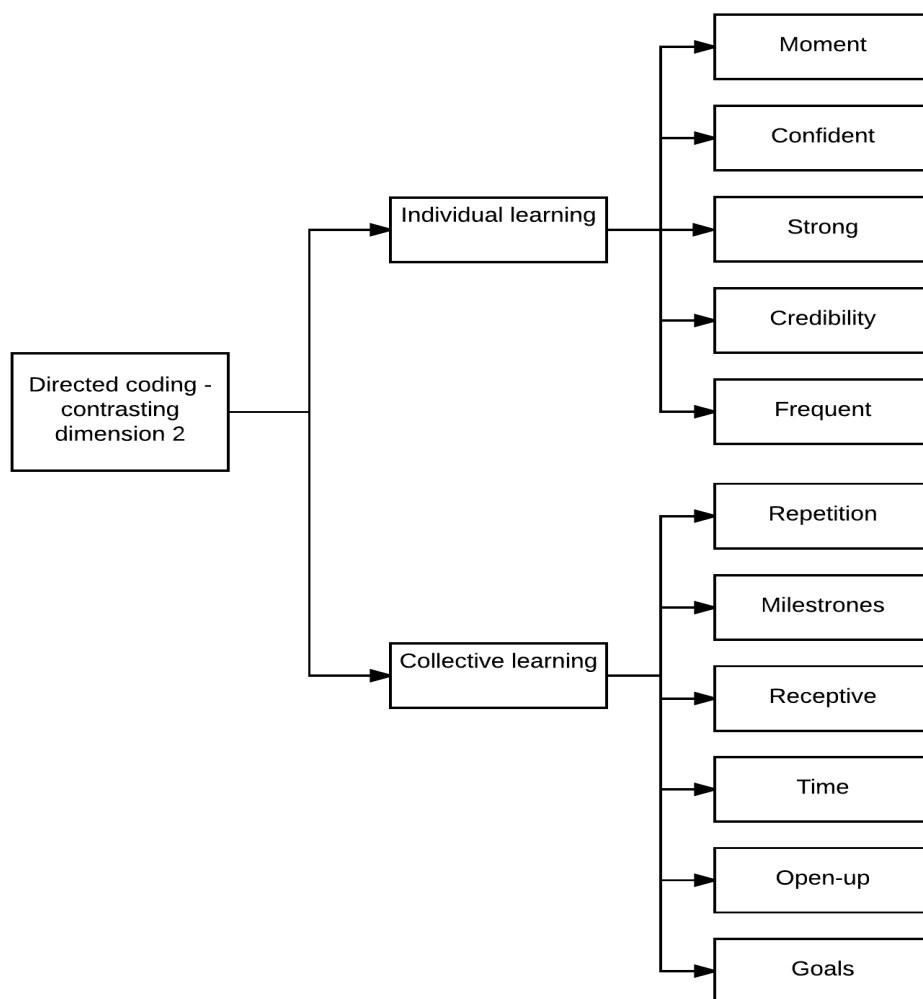

Figure 32 Synthesis of study finding 2 (author developed)

Directed code	2nd order code	Sample verbatim
Individual	Moment	*I have these moments when it clicks – you know. Like you get it.*
Individual	Confident	*The more you learn the more you feel confident. Personally I found it a challenge to face customers but the presentations we had, workshops we had to attend has shaped me I feel.*
Individual	Strong	*You can't learn everything under the sun, we simply don't have the time. Areas you think you should be strong on, I always invest time and energy.*
Individual	Credibility	*The fact that we are in Spiralation helps. It's gives me credibility when I reach out to potential customer, partners or even mentors.*
Individual	Frequent	*Learning is a key element specially if you are into technology, it changes so fast. So you should attend to it frequently than not.*
Collective	Repetition	*All the group settings whether it's an internal meeting or with external parties or even having lunch together, I feel we all learn repeatedly from one another as long as we interact.*
Collective	Milestones	*The Spiralation milestones we had to achieve really mandated us to work together and apply all we have learnt.*
Collective	Receptive	*It's a two way thing, if the other party is receptive to listen and question.*
Collective	Time	*I feel we save so much time when a colleague can help than trying to figure things out by an individual.*
Collective	Open-up	*Sometimes only when one opens-up, one can understand the real problems and actual perceptions whether it's a client or your own team member.*

Collective	Goals	*Achieving goals together makes us interact and learn from one another.*

Table 15 Thematic analysis summary for study finding 2 (author developed)

Learning naturally remains a complex process; none of these learning activities takes place in its purest form at any given point of time. It is vital to note that while the complexities exist, the patterns of learning have been identified through the process as well. Exploitative and exploratory learning aspects, as well as individual and collective learning, have been recursive through the growth cycle that is taking place.

The above chart indicates that the learning mix and the recurrence of learning patterns are two of the prominent aspects associated with the learning process. This indicates that learning would take place in line with the needs that are in place, that is, the learner's needs, at particular points in the learning process. Thus, the learning outcomes would provide positive results in line with the findings of the study in appropriate manner. It is also clear that recursion may not necessarily mean repletion of the knowledge, even through there are elements of repletion involved.

Study finding 3 - intuitive and sensing learning

This is another important aspect associated with entrepreneurial learning. The role of intuition which is commonly referred as the 'gut-feel' is important, as the entrepreneurs need to have a feel for the industry and the needs of the market. This will allow them to be creative and to develop solutions that will satisfy these needs. Thus the role of the intuitive learning approach remains vital in order to reach the desired results and eventually benefit from the outcomes.
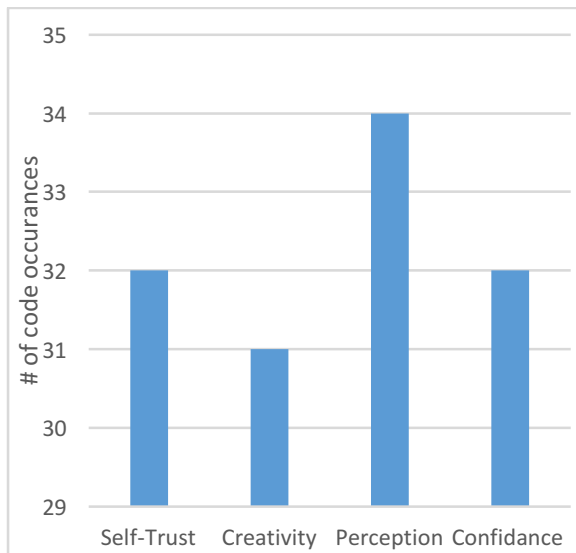
Figure 33 Intuitive learning (author developed)

One of the main aspects associated with learner intuition is the shaping of the perception. The main aspect of this approach towards the development of the perception, could lead to positive results in the future. Factors such as trust and confidence are also seen as primary aspects that contribute in this context. Thus the optimal outcomes will see the entrepreneurs using their intuition and eventually learning from the outcomes. The following chart indicates the sensing learning approach.
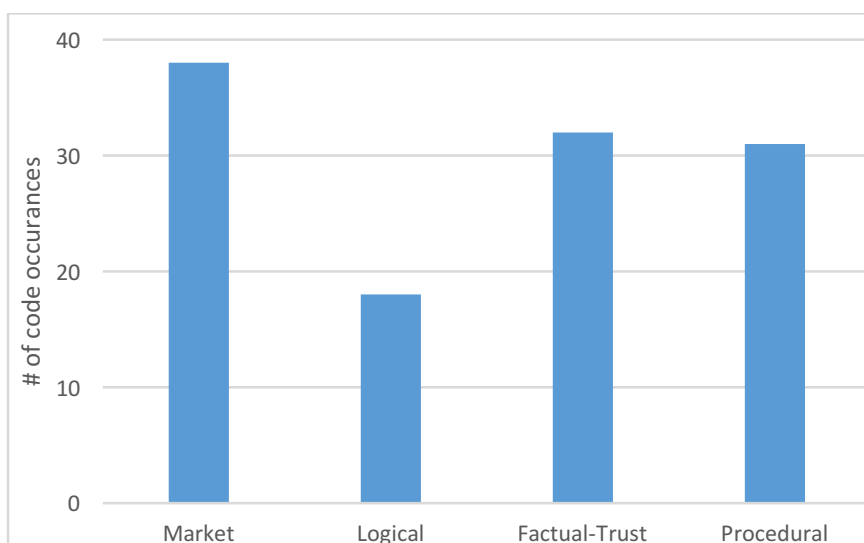
Figure 34 Sensing learning (author developed)

One of the main aspects learned through sensing learning is closely linked with the market. It is factual in nature and there are procedures in the learning process that are associated with the level of trust the learner has to a source of truth. These aspects remain vital. It is also important to note that the logical aspects of the learning process were not gauged in an unqualified manner. Thus, sensing learning remains another area of importance for entrepreneurs and they use this to gather knowledge through the growth spiral.

Synthesis of study finding 3 can be indicated as follows:
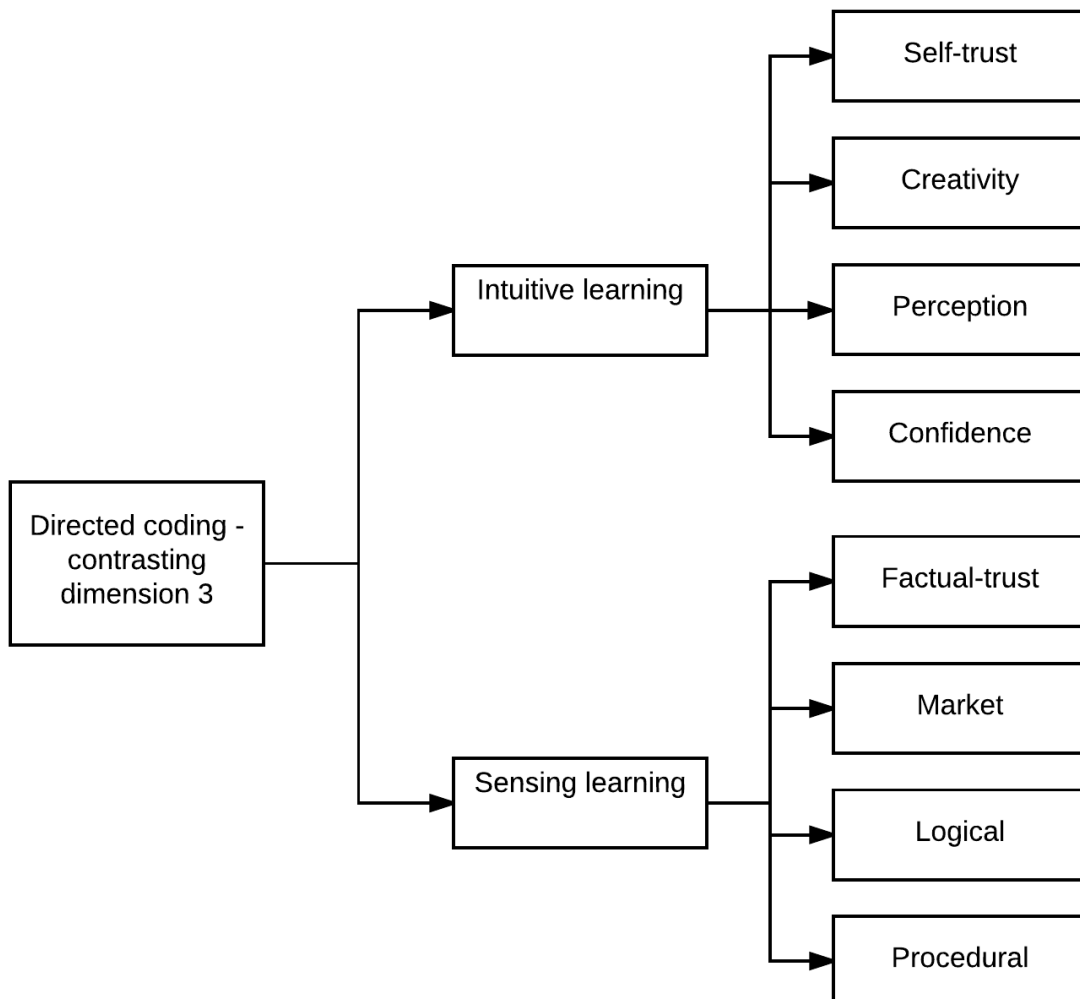
Figure 35 Synthesis of study finding 3 (author developed)

Directed code	2nd order code	Sample verbatim
Intuitive	Self-trust	*I trust my instincts and whenever I encounter a new problem, I try to work it out and learn.*
Intuitive	Creativity	*What I feel comfortable with, I tend to apply to all possible scenarios and situations. You can call it creativity as well, I suppose.*
Intuitive	Perception	*Sometimes the way I see things are different than others. I learn quite a lot in trying to understand why others don't perceive the same way.*
Intuitive	Confidence	*If I am confident of the subject matter, I will apply the know-how in known or unknown contexts.*
Sensing	Factual trust	*Boils down to whether I trust the source be it the person or approach or whatever it is. Initially I am skeptical about anything new but if I [start to] trust the facts, I start adopting over-time.*
Sensing	Market	*Market will tell us whether it works or not. You should watch closely, otherwise you will just play catch-up.*
Sensing	Logical	*The new business model was so logical even though we hadn't looked at it that way before.*
Sensing	Procedural	*Good procedures will give you better results more often than not.*

Table 16 Thematic analysis summary for study finding 3 (author developed)

A synthesis of these, interconnected learning activities was elaborated based on the above three propositions. Learning is a process that involves many aspects and opportunities. If these learning approaches are integrated with the eventual purpose, they should ultimately enhance the benefits associated with the learning process. Thus the element of interconnectedness remains vital.

The interconnectedness of the learning experience is synthesised through the facts of relevance to the area of discussion and the learning experience in the context of the findings of the studies.

Study findings – conventional coding

The next section outlines the propositions derived based on the conventional coding mechanism. In line with Patton (2002), the coding process helped the researcher to process the large data set into a form where the researcher could make sense of the data. Saldana (2009) explains the approach of elemental codes during primary coding and as such, the first set of codes was derived from interviews and journal transcripts which were parsed in a second round, to derive the high-level codes that are depicted in the following section. On synthesising these codes, the following propositions were derived.

Study finding 5 – positive cognitive shift towards the entrepreneurial journey

The learning aspects had to contribute towards an appropriate level of cognitive shift among individuals as well as within the given organisation. This would allow the organisation to make the impact permanent. Having the appropriate approach towards the cognitive shift would enhance the benefits associated with the outcomes and ensure that results are in line with the needs of the scenarios. Thus, the cognitive shift will ensure that appropriate results are reached.
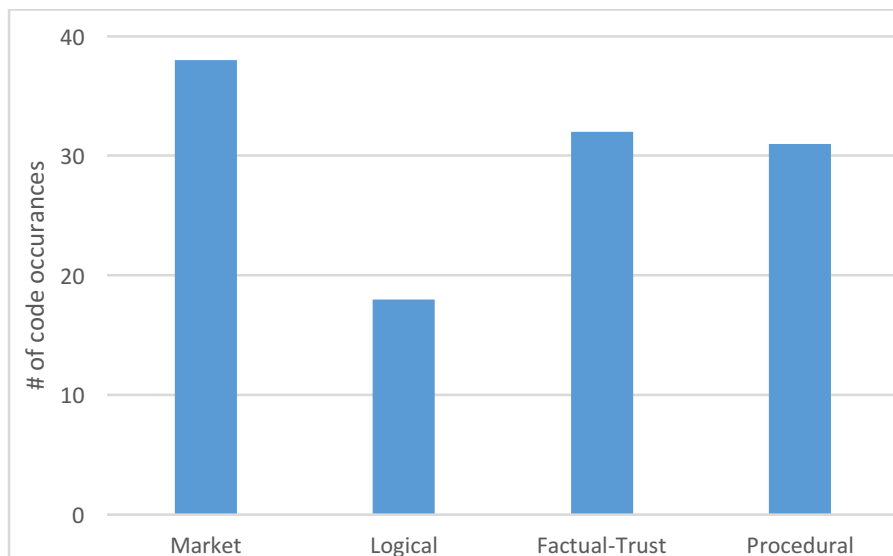
Figure 36 Positive cognitive shift towards entrepreneurial journey (author developed)

Figure 37 Construction of study finding 5 (author developed)

Theme	2nd order code	Sample verbatim
Cognitive shift	Thinking	*It's a new way of seeing things and thinking. Outside-in but in a very supportive and encouraging manner.*

Cognitive shift	Understanding	*At first the grants excited us but the more we understood the strategic significance for us as individuals, for our company, sector and Sri Lanka, we felt more determined.*
Cognitive shift	New perspectives	*We learnt a lot of new perspectives whether it's about business models or strategic overseas partnerships. .*
Cognitive shift	Mindset	*xxx [our firm] built partnerships with local investors to grow the company internationally. Total mindset shift thanks to Spiralation. We had no feel for these aspects.*

Table 17 Thematic analysis summary of study finding 5 (author developed)

There are many new perspectives developed in the context of the cognitive shift The required approaches will benefit all the parties and ensure that focus is gained through the outcomes. Thus the above aspects indicate that cognitive shift is likely in the context of the study outcomes. The mindset is developed to be in line with the needs and the expectations associated with these outcomes in the future.

Study finding 6 – partnerships with other learning support groups

It is possible to develop different partnerships with other groups. This would allow learners collectively to reach the required results and to benefit from outcomes in the future.
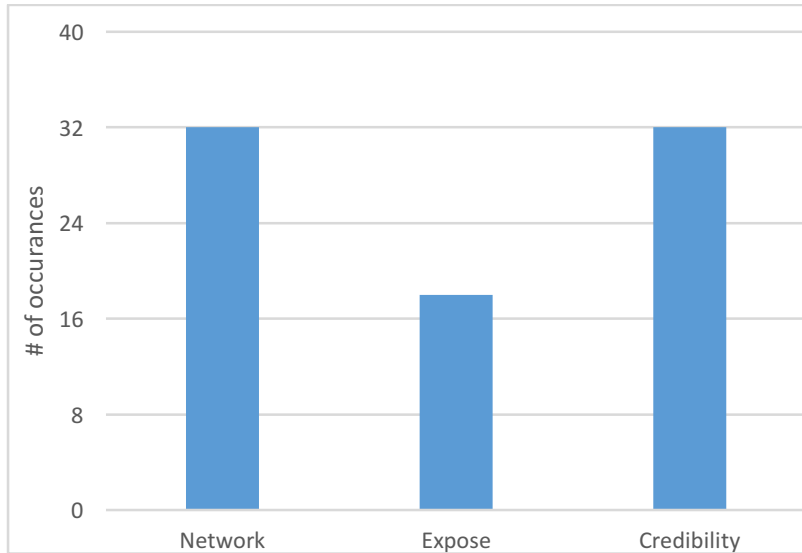
Figure 38 Partnerships with other support groups (author developed)
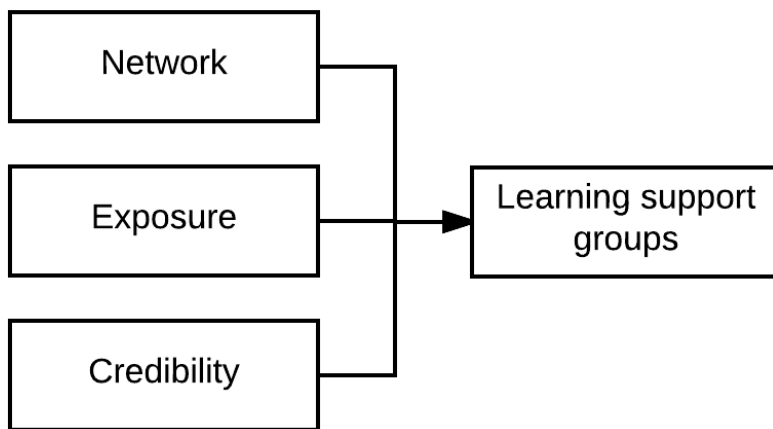
Figure 39 Construction of study finding 6 (author developed)

Theme	2nd order code	Sample verbatim
Learning partnerships	Network	*Networking opportunities we got through Spiralation was simply amazing both locally and internationally. We learnt a whole lot.*
Learning partnerships	Exposure	*We were exposed [to a broader community and tools/techniques] and that helped us in many ways, managing the immediate cash-flow through to strategic decision making.*
Learning partnerships	Credibility	*Being in the country pavilion of Sri Lanka at tradeshows was simply providing the next level of credibility to us.*

Table 18 Thematic analysis summary of study finding 6 (author developed)

The above outcomes indicate the credibility of the experience provided to those who are involved with the Spiralation learning activities. This also leads to benefits in terms of building the required networks for continued learning and support. This is a very positive outcome and ensures that the parties involved would be able to continue to benefit from these activities in the future. All these aspects would eventually result in positive outcomes and ensure that beneficial results are reached.

Study finding 7 – forming a learning culture

Establishing the appropriate learning culture will ensure that all the parties will be able to share the knowledge and gain the benefits associated with this knowledge sharing process in the future. Thus, the learning culture plays a highly important role when it comes to shaping the organisations in the future. There is strong evidence of this resulting from the concerned accelerator program.
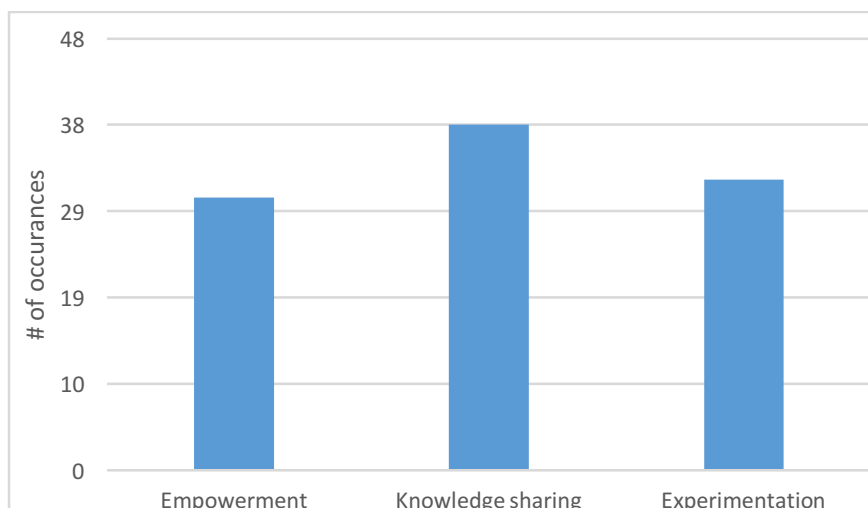
Figure 40 Forming a learning culture (author developed)
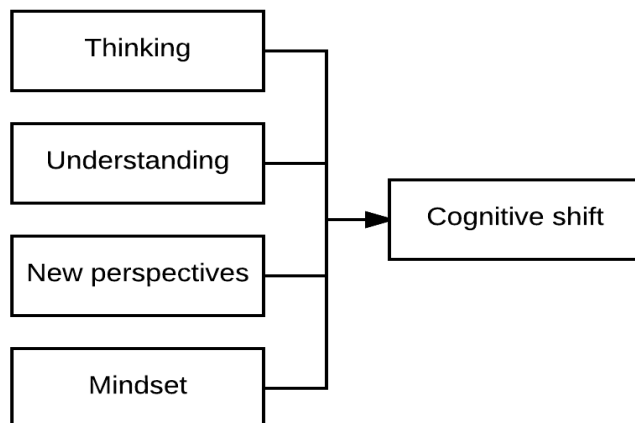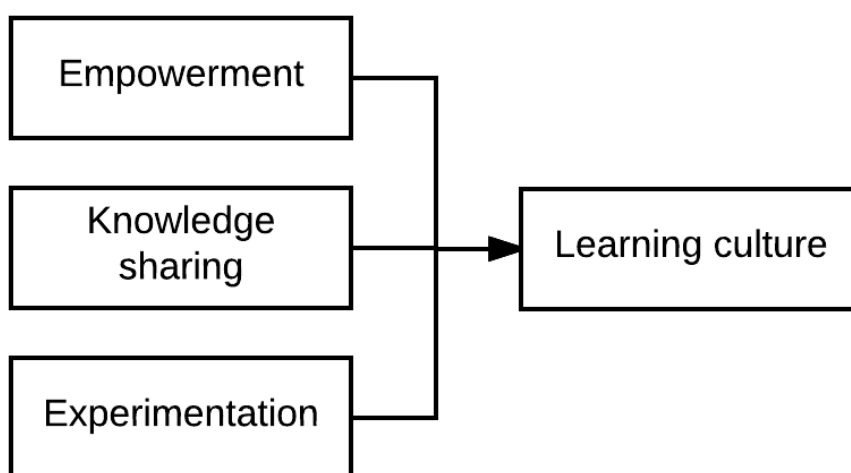

Figure 41 Construction of study finding 7 (author developed)

Theme	2nd order code	Sample verbatim
Learning culture	Empowerment	*Spiralation simply empowered us to learn effectively and built the confidence that we can learn primarily during the workshops.*

Learning culture	Knowledge sharing	*Within the company, among companies and with the broader industry, there were enough and more spaces for casual [informal] knowledge sharing.*
Learning culture	Experimentation	*One thing that I so loved was the insights on Silicon Valley growth hacking techniques and alternate financing options, beyond traditional venture capitalists. You know it's non-existential actually over here. You simply have to experiment by yourself with new methods without risking a lot.*

Table 19 Thematic analysis summary for study finding 7 (author developed)

The chart above indicates the importance of knowledge sharing within the learning culture as developed in this model. It allows the parties to identify the kinds of results and benefits from the outcomes, they wish to reach. The learning culture and the affiliated benefits remain important in this context, a the result of the Spiralation program's learning by action during the program.

Summary

This section has analysed the findings from the qualitative research conducted and has developed seven propositions. First, a high degree of interconnectedness exists in the entrepreneurial learning program in response to highly volatile market conditions. These market conditions include strength of competition or rate of change of the market. Second, collective activities among the founding team members influence a shift from individual learning to collective entrepreneurial learning that leads towards strategic intent at the level of the firm. Understanding how individual learning and collective learning intertwine opens a supplementary door to examine how these levels of learning are affected. Third, based on the new venture context, exploratory learning and exploitative learning takes place within the new

venture in a recursive manner when navigating from one context to another, or in parallel across different contexts. Fourth, unless and until stakeholder trust is established, intuitive learning practices dominate the sensing learning practices. Stakeholder trust is important for this aspect. Fifth, government accelerators have the effect of influencing participants towards a positive cognitive shift towards entrepreneurial learning. The data gathered in the accelerator process suggests that entrepreneurs display four basic types of attitudes/behaviour, with regard to interacting with the formal educational activities of the programme. Sixth, government accelerator partnerships with industry, universities, chambers and related bodies and the ability to extend these services to the learning participants, significantly increases the influence of the government accelerator on entrepreneurial learning. Finally, seventh, teams in an accelerator program when engaged in experiential action, learning from the influence of a learning organisation culture. This occurs through action learning.

The approach towards learning in the context of the organisation should be studied. Different studies have been conducted in this context and focus on the organisational learning aspects and how learning is facilitated within the organisations. It is important to note that there are different approaches to learning, established with the view of gaining the optimal results. Thus, an examination of the identified organisational learning approach at each stage of implementation, should be evaluated in line with the needs of the given scenario.

Much of the research that has been carried out in this context highlights the fact that entrepreneurial learning should take place in the appropriate context. Entrepreneurs need to develop relationships with the customers as well as other stakeholders. They should be encouraged to continue to consolidate learning into the future. This ongoing knowledge

development should eventually lead to beneficial results, including establishing the fruitful and collaborative relationships needed for appropriate results in the future.

However, it is also evident that with future developments in the context of entrepreneurial leaning, positive outcomes could also be reached through a more factual approach. Decisions taken in the later stages of entrepreneurial learning at the will be more likely to be taken based formalities factual insights achieved throughout the process. Thus the learning would progress to this second stage where the sensing learning (as opposed to intuitive learning) becomes more prominent in nature. These are aspects that would support the organisations to strengthen their learning cultures and to act in line with the needs of the markets.

Explorative and exploitative learning aspects can take place within the new organisations. However, it is important to note that exploitative facts in this context may be lacking due to the fact that the past records of a previous related organisation may not be available in case of a new company. However, it is important to note that this approach to learning will ensure that the information about the learning process is achieved and the benefits in this context are optimised. This shows that the exploratory and exploitative learning approaches remain highly important in this context.

In any study of entrepreneurial learning, it is evident that the entrepreneurs are generally strong learners. This is due to the fact that they are curious as to their surroundings and are keen to identify the issues and the benefits these surroundings could provide. The ultimate result of this is that they are generally determined to would learn from the process and to achieve optimal benefits in terms of the results they reach. This leads them to enrich themselves with the knowledge needed to navigate their way through their entrepreneurial journey.

The selection of an identified approach towards learning activities is useful due to the fact that it will directly influence the outcomes the entrepreneurs seek. It is also evident that organisational activities will eventually provide high end results as with successful collective learning in the organisational contexts. There are ideally, many parties who would participate in the organisational learning process and this will strengthen the likelihood that the desired benefits are reached by the organisations in the future. It is therefore very important that entrepreneurial learning is taking place and that the most effective learning approaches are evaluated and used widely.

The appropriate entrepreneurial learning aspects should eventually lead to effective and beneficial long term learning activities. Collective learning will be one such result of this. Entrepreneurial learning will flow down into the organisation through the learning systems that are adopted as the most appropriate for their needs. Thus, the long term role of the organisational learning is likely to be beneficial in nature and the outcomes would eventually lead to better outcomes as a learning organisation. All these aspects indicate the fact that organisations should be encouraged to lead and equip their employees to gather the necessary knowledge for a successful organisation.

These findings indicate the fact that the organisations may have an assortment of learning approaches at a given time. However, this does not mean that the learning approaches that are being followed will provide the same results in the future context. It is vital that the kinds of benefits they seek are reached by the parties in line with the needs and the expectations of the situation. Thus the management of the organisations should be encouraged to develop the

approaches that would allow them to maximise these results as the result of workforce learning approaches.

The focus on the nature of the learning activities would allow the parties to ensure that the learning is taking place in the desired manner. Related industries always change and the learning is a part of the working process for all. The market dynamics continue to change and the entrepreneurs will have to provide the leadership in the context of the learning process. All these aspects would eventually indicate that beneficial long term results are reached by all. The relevant approach towards this will enhance the benefits that the parties are likely to achieve in the future. Thus, the companies have a responsibility to ensure that they develop the most appropriate learning approaches and achieve optimal results from the available opportunities to achieve competitive advantage for their entrepreneurial venture.

Chapter 5 Discussion & Conclusion

"We are what we think. All that we are arises with our thoughts.

With our thoughts, we make the world."

- Gautama Buddha

Introduction

The objective of the thesis was to understand the influence of a government accelerator on entrepreneurial learning. This goal was developed in response to lack of an understanding on the government accelerators where the primary objective is different to commercial accelerators. In addition, the phenomenon of entrepreneurial learning has not been examined in the context of an accelerator. There are a number of ways in which this objective was achieved. This chapter reviews the answers to the research question and the steps through which the study conclusions were derived. The chapter then turns to the implications of these findings, limitations of the study and then makes a number of recommendations for future research.

Discussion

Based on the research findings of this study, it is reasonable to suggest that the influence of the government accelerator during entrepreneurial learning can be positive. The recent recognition of the ICT sector as a top 5 forex earner in Sri Lanka, the establishment of the apex body for ICT services Sri Lanka Software Service Companies (SLASSCOM), as well as the establishment of the ICT Agency (ICTA) of Sri Lanka, has sharpened the need for the formation of the Spiralation accelerator program (Brahmanage and Weeraseker, 2011). Research to better understand the influence of the government accelerator on entrepreneurial learning is very timely and necessary, considering Spiralation is the only accelerator program

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that is facilitated by the government of Sri Lanka. This phenomenon has not been examined locally in the eastern world (Buddhadasa, 2003). The research that has been carried out in the western world in this area is also in its infancy, as the research on accelerators is just starting to receive attention leaving aside the fact that research on entrepreneurship is also a relatively new topic.

The theoretical facets of entrepreneurial learning and contextualising entrepreneurial learning (Dawes, 2006) and related constructs has been examined in the Literature Review chapter of this study, together with a discussion of the existing literature to do with accelerators. The Methodology chapter outlined the research design of the study in order to answer the two research questions through the exploratory case study of the only government accelerator in Sri Lanka – Spiralation. The previous chapter presented the analysis and findings of this research, primarily the meaning of entrepreneurial learning to Spiralation participants and how Spiralation influences entrepreneurial learning. In addition, the chapter also discussed the other key findings of the study as the research design was exploratory in nature. This chapter discusses the main conclusions and results of all parts of the study. The aim of this chapter is to provide clear answers to the central research questions that were put forward in the introductory chapter.

The thesis contributes to scholarship in this area by demonstrating how individual learning, collective learning, exploratory learning, exploitative learning, intuitive learning and sensing learning are intertwined in a recursive manner, as depicted in the conceptual framework using a temporal view. The progression through the spiral represents the contextual competency growth starting at an individual level and progressing through collective learning to the strategic intent of the infant organisation. Contextual competencies are those competencies

required for new ventures to achieve competitive advantage which should be context specific. As such, the thesis contributes to the literature by providing the nuances of entrepreneurial learning within a coherent framework which extends the traditional high level entrepreneurial learning frameworks (Rae, 2005; Pittaway and Thorpe, 2012).

This thesis departs from the traditional organisational learning literature, which encompasses single loop, double loop and triple loop learning, by describing the entrepreneurial learning phenomena as learning from the market first and leading the market next.

By extending the contextual learning theory of entrepreneurial learning, the thesis contributes to the literature by conceptualising that government accelerator settings are positively influencing positive mindsets among the participants of such entrepreneurial learning programs and the resulting learning network also contributes in developing a learning culture. The learning culture is a result of the 'aha boom' phenomenon theorised in the thesis, that starts at an individual level, grows into collective learning and potentially results in an organisational learning culture.

The thesis integrates the theories of entrepreneurial learning in developing a conceptual framework and also adding a critical piece of theory from the learner's perspective, taking the individual, team and the infant new venture into account.

Discussion of the study propositions

This section discusses in detail the concluding study propositions that were derived as a result of synthesizing the study findings.

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Study Propositions
(1) Exploratory learning and exploitative learning takes place within the new venture in a recursive manner when navigating from one context to another, or in parallel across different contexts
(2) Collective activities among the founding team members influence a shift from individual learning to collective entrepreneurial learning that leads towards strategic intent at the level of the firm
(3) Unless and until stakeholder trust is established, intuitive learning practices dominate the sensing learning practices
(4) A high degree of interconnectedness exists in the entrepreneurial learning constructs
(5) Government accelerators have the effect of influencing participants towards a positive cognitive shift towards entrepreneurial learning
(6) Government accelerator partnerships with industry, universities, chambers and related bodies and the ability to extend these services to the learning participants, significantly increases the influence of the government accelerator on entrepreneurial learning
(7) Teams in an accelerator program when engaged in experiential action learning, influences towards building a learning organisation culture

Table 20 Study propositions

Proposition 1 - exploratory and exploitative learning

Traditional single loop, double loop (Schon, 1978) and low order, high order learning (Fiol and Lyle, 1985) model based classification is challenged through the exploratory and exploitative learning metaphor. According to McGrath (2001), Kreiser (2011) and Zhao *et. al.* (2011), exploratory learning emphasises enactment and interpretation to generate sufficient variations

(variance seeking learning), whereas exploitative learning focuses on improving mean performance (mean seeking learning). March (1991) and Siren *et. al.* (2012) argue that positive performance effects derive from the balanced application of exploration and exploitative learning. This research extends this view further through the following proposition:

> *"Based on the new venture context, exploratory learning and exploitative learning take place within the new venture in a recursive manner, when navigating from one context to another or in parallel across different contexts."*

For instance, when a new business model is derived for the new venture, exploratory learning is used to identify the viable variances, and when a given business model is decided on, exploitative learning is used to determine the means to implement the same, as observed as a common theme across multiple new ventures.

As one of the interviewees put it:

> *"We always explore when we want ideas for a given thing but we have our own process to evaluate and start to execute…"*

Studies in the past have acknowledged the impact of the market conditions (Boussouara, M, 1999, Schumpeter, 1934) on the performance and innovativeness of new venture organisations. In the past it has been observed that environmental factors such as market conditions are usually a moderator of the relationship between performance and innovation. It appears that the competitiveness and the dynamism of the market would be highly likely to moderate the impact of both exploitative and exploratory innovations on the performance of the organisation. One interviewee said:

"We've won two competitions, both national and international, This is thanks to the variety of options and the knowledge we got to execute them during the program. I drove certain aspects that I felt strong at and others took their own turn on merit."

The dynamism of the market refers to the level of instability and rate of change of the market. This can be compared to past studies on the topic, which not only reflected the environmental dynamism via the level of change, but also by virtue of how unpredictable the change (Dess & Beard, 1984). Markets that are dynamic could be characterised by technological changes, changes in the preferences of the customers and alterations in the supply and demand of products. Markets that are dynamic lead to the obsolescence of current services and products, and entail that an organisation come develops new products. In order to lessen this possibility of products becoming obsolete, organisations should innovate in ways that are exploratory and differentiate from the current services or products to the market. An organisation which pursues innovations such as those could take advantage of circumstances which are shifting by meeting the demands of upcoming markets or with new services and products (Zahra, 1996). Such organisations create new opportunities for returns that are above the normal through targeting segments of the premium market or by discovering new market niches. Depending on the stage progression of the firm, a startup firm may focus on different areas to grow the business. For instance, during the market segmentation, participants in all three cohorts have considered exploratory options first and the selected choices has been exploited subsequently. One programme participant interviewed in the study said:

"I think companies at their early stages gained more through Spiralation as they could approach the problem having the end in mind. Initially we had issues with our own level of clarity on different areas, however, now we mostly see the pattern of thinking

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broadly initially and focus to execute as we get clearer of what needs to be done. Like

we have our own funnel when we progress from one to another step of our journey."

As such, in market conditions which are volatile, it can be expected that new venture organisations in the three cohorts which have pursued innovation leveraging exploratory learning during the search for means to progress?, would have an improved financial performance, even though this element was not a part of this study. Such organisations in the three cohorts have applied the exploitative and exploratory learning combination to different areas including market segmentation, revenue models, cost structures and operations and hence it could be argued that the learning paradox between exploratory and exploitative learning is recursive in nature.

The competitiveness of the market refers to the level to which the external markets experience competition that is intense (Matusik & Hill, 1998). The competitiveness of the market can also be a reference to the level of competition that is portrayed by the number of competitors and the number of markets that demonstrate competition (Zahra, 1996). It can be anticipated that a market which is competitive would increase pressure to be more efficient and to offer reduced prices to consumers. This is according to the study that was carried out much earlier by Matusik & Hill (1998). This study extends the existing scholarly arguments of how indirect learning facilitates an increase in achieving competitiveness in the market (Levinthal and March, 1993; Haunschild and Miner, 1997; Beckman and Haunschild, 2002; Kim and Miner, 2007) through the influence of a government accelerator and by way of recursive application of exploratory and exploitative learning.

This main consideration forms the discussion as to which of these areas are prominently assisting the entrepreneurs within Spiralation. It is evident through the discussion that both of these areas are important in the development of entrepreneurial learning. This ensures that entrepreneurs in such accelerators gain the knowledge of programs and how the parties are likely to reach beneficial results in the future context. It is, however, evident that the learning will take place at the early stages. This is a major concern through the discussion due to the fact that towards the latter stages, the effectiveness of the Spiralation accelerator could prove to be less important when the leaning aspects are taken into consideration. Thus, it is vital that learnings from the insights are taken into the development of the learning capabilities associated with each entrepreneurial venture.

It is also important to note that these ideas exist and that there are relevant methods in place to ensure that these ideas are internalised and appropriate steps taken to carry out the approaches and to improve the benefits in these terms. The learning and the filtering processes associated with the ideas are developed in line with the entrepreneurial learning process and this will ensure that the learning will take place within the companies with a view to achieve the positive results in the future. Thus the role of the Spiralaton program and its likely results should be assessed in this light and to ensure that the required results are reached.

It is important to note that the learning process is recursive and exploitative, and that exploratory learning will take place in this manner. This shows that there is absolutely no preference in the context of each of the above discussed learning approaches in the context of the companies. Thus, the learning process would take place at the right time and in right context, in line with the business and the entrepreneurial requirements.

Proposition 2 - individual and collective learning

After analysing the changes in the strategic intent of the new ventures through these team activities, the researcher grouped these changes. These strategic changes included considering new markets, re-focusing on the 'go-to' market strategy, adding a partner (mainly when the new venture realised the strategic value of Intellectual Property and significance of technical know-how), seeking smart money and determining a viable business model.

The participants in the Spiralation accelerator are the key resources for each company. Employees practice individual learning and collective learning in a less complex working environment (Zahra, 1996); therefore, the entrepreneurial factor in their learning process remains hidden. Understanding how employees' individual learning and collective learning intertwine opens a supplementary door to examine how these two levels of learning are affected in the emergence of disruptive events and business failures, answering the question of whether entrepreneurial learning and practice occur at both an individual level and a collective level. Employees may have similar emotional and cognitive responses to failures as their "boss" – the entrepreneur and top managers, and thus, gaining similar learning. First, Shepherd and Cardon (2009)'s work on negative emotional reactions to project failures places a foundation to consider such emotional aspects. According to these scholars, the employees would experience learning from failures of activities within the organisations such as launching "new ventures, new products, new services, entering new markets, and/or implementing new processes" (p.923). These projects vary in terms of scale and risk level, however, they could all cause various negative emotions by taking away the opportunity to satisfy psychological needs for competence, relatedness and autonomy (p.927). The more shared knowledge, the faster individuals learn and the larger individual knowledge is accumulated. It enables individuals to find their own learning area, which needs to be more specialised, and to know

how to collaborate with other individuals in the group to deliver better outcomes. According to Durkheim (2014), this phenomenon is called the division of labour or specialisation. One may question whether specialisation has any role in the entrepreneurial learning process because, from a dynamic perspective, there remains a pressing need to understand how individuals learn to work in entrepreneurial ways (Cope, 2005). The answer to this question could be a means to explore the collective experience of entrepreneurial learning. According to Anderson and Lewis (2014), if individual knowledge becomes too specialised, that is, overspecialised, it will negatively affect the collective learning rate for two main reasons. First, once a group member achieves a certain level of shared knowledge, he/she may become over-confident and less likely to search for new information, which in turn reduces a new shared understanding of the work. Second, overspecialised knowledge limits communication among members. A highly factual finding given by Fraidin (2004 cited in Anderson and Lewis, 2014) explains that information is encoded into special terminologies that are hardly understood by non-expert (of that knowledge area) members. In addition, both positive and negative experiences are influencing the learning at both an individual as well as at the collective level (Cope, 2003; Minniti and Bygrave, 2001; Rueber and Fischer, 1999). As Young and Sexton, (1997) suggested, individuals in new ventures show different approaches to specialisation. Entrepreneurs seem not to try to specialise in one particular area but to look for specialised talents. Top management team members may focus on the area of which they are in charge, and on team management, such as guiding employees in their functions. Therefore, specialisation may create entrepreneurial learning from an experience of failure by staff in different ways. Subsequent to individual learning, the study reveals that the learning outcomes at a collective level are influenced by the receptiveness of the team, whether the co-founders, management team or staff and considers their emotional states. The following diagram depicts this notion by using a concept called 'aha-boom' and 'aha-doom'. 'Aha-boom' occurs as a

result of the emotional preparedness among the team members for the contributions of the person who has learned as an individual. In hindsight, 'aha-doom' occurs for whatever reason, when the team is not emotionally prepared to be receptive for the contributions of the person who has learned at an individual level. For instance a participant stated:

> Participant: *"There were many bits and pieces that I felt were spot on that I gathered during seminars and during networking events. Some were really timely and the entire team took them on board when I positioned but not always."*

> Researcher: *"When did they not take your learnings on board?"*

> Participants: *"It's more so the timing. If we had other exciting or critical priorities, obviously it's easy for others not pay attention to anything and everything that comes their way."*

Individual	Collective	Organisational
Initial aha moment	Aha moment progressed with collective acceptance	Aha moment progressed with startup strategic alignment

Time
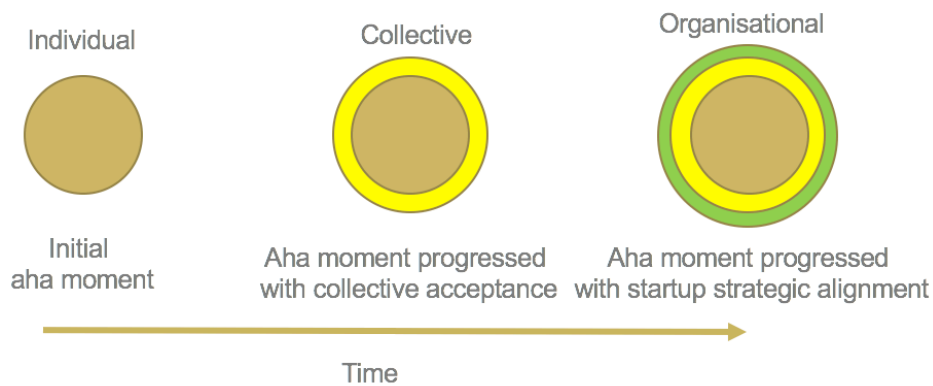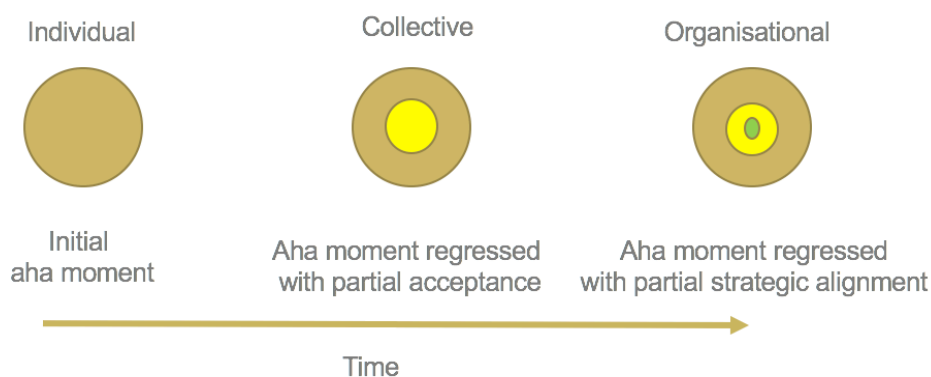
Figure 42 Aha boom and aha doom – extending the momentary perspective of entrepreneurial learning (Rae, 2010) and traditional experiential learning construct (Kolb, 1984)

Extending David Rae's (2010) perspective on entrepreneurial learning, based on the findings of this study, individual 'aha' moments, which are that essentially, the individual learnings can be 'aha-boomed' or 'aha-doomed' at the collective learning level, based on the collective circumstances. These circumstances could be relevant to the individual learning contribution at the collective level by way of timing, as well as criticality or severity. Further more, when the government accelerator has resulted in 'aha' learning moments across more than one participant from the same organisation, a higher degree frequency of 'aha-booms' have occurred.

Kolb *et. al.* (2002) discussed in detail how an experiential approach can lead to the creation of knowledge. The work by Kolb (2002) can be extended in the current study, especially by bringing into focus the individual, team and organisational learning. The individual learning leads to developing a participant mental model. When individuals perceive the environment around them, vision leads to a mental model of the items that are in front of them. In such a manner, when the individual understands the description of an issue, the individual will construct the same, even though not exactly detailed, representation of the issue, and this will

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be the mental model of the environment. This is done on the basis of what the description means and also based on the knowledge of the individual (Johnson-Laird, 2010). From individual learning, learning progresses to the team level as a result of an increase in the confidence of the programme participants towards the application of the knowledge gathered from the programme. This also results in alignment of the mental model. As one of the interviewees put it,

> *"It was a good deal for us, more like hearing things from the author than the teacher who has read the book. As individuals, not just me, all of us started seeing things better. Most of it, we aligned with what we were doing in the company too."*

This mental alignment by the individuals in the program results in collective learning, as all individuals in the organisation would be able to share the knowledge they have earned as individuals with others, and in the same instance, absorb the knowledge shared by other members of the team. This collective learning is extended to the formulation of the organisational strategy, and this can be said to result in organisational learning. From here, organisational growth occurs when the resultant learnings are integrated into the strategic intent of the organisation. As such, as a key proposition of this thesis, can be highlighted inline with the illustration of figure 44 as follows:

> *"Collective activities among the founding team members influence a shift from individual learning to collective entrepreneurial learning."*

'Entrepreneur' in this context refers to an individual and the exposure that he/she will receive to the outside aspects would allow him/her to learn individually from the outcomes. However, the learning process does not stop at this level. It is evident that the collective learning would take place in the context of the company due to the coherent relationships between the team

members of the company. This is also prominent at the initial stages of the team building process. The results, then, are likely to be positive in nature and the benefits are likely to be high.

The individual gathering of knowledge by the individual should lead to the gathering of collective knowledge. Steps should be taken to ensure that individual learning filters down or across to the level of collective learning from the initial stages. This will ensure that all the participants in the program benefit form the learning approach and all will be able to contribute in the right manner in the future context. Entrepreneurial learning is an interchanging process and this is linked with the learning of the other members of the team. They will be able to learn together from various scenarios that they are faced with.

It is highly important to note that steps are taken to improve the learning collaboration between the team members so that the entrepreneurial learning process also improves through one integrated and effective outlook.

Proposition 3 - intuitive and sensing learning

Sensing learning involves learning by knowing facts or details based on external sights, sounds or signals, practised by practical thinkers while intuitive learning involves learning by knowing the relationships of facts through discovering possibilities practised by abstract thinkers (Felder and Silverman, 1988). Cook *et. al.* (2009) noted that sensing and intuitive learning types are similar to the concrete-abstract learning dimension of Kolb's (1984, 1985) experiential learning theory.

However, researchers have called for further explanation of entrepreneurial learning when it involves sensing learning and intuitive learning (Wang and Chugh, 2014). This research contributes to this area through the following proposition:

> *"Unless and until participant trust is established, intuitive learning practices dominate the sensing learning practices."*

This research suggests that, if the government accelerator establishes understanding and the trust among the participants, entrepreneurial learning would be influenced by the government accelerator. Sensing learners are practical and logical thinkers mostly make decisions based on analysis. Conversely, intuitive learners arrive at decisions based on abstraction and conceptual thinking. These two styles are generally contradictory, wherein research (Davis, 2012; Miner et al, 2002) has suggested that if the cognitive style is more towards intuitive learning, the chances are that the individual is further away from sensing learning. One interesting and inter-related instance is the comparison of Schumpeterian and Austrian entrepreneurship views using yin and yan notions by Cheah (1990). The findings of this research demonstrate a similarity to the notion that intuitive learning and sensing learning taking place in a recursive manner during the government accelerator program.

Jung (1971) is credited with concepts of sensing and intuitive learning styles. His findings are largely applied in research on entrepreneurial activities. Sensing learning entails learning through knowledge of details or facts on the basis of external contacts via physical sensations, sounds and sights. In comparison, intuitive learning entails learning through being aware of how facts are related via the discovery of possibilities. Since learners who are sensing can be thought of as practical and concrete thinkers, they exhibit a higher likelihood of discovering and identifying opportunities which exist around them via the analysis of how conditions in

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the market are related. On the other hand, learners who are intuitive can be thought of as having abstract thoughts, and in that manner, have a higher likelihood of creating new opportunities on the basis of discovery of possibilities and conceptual thoughts. To this effect, one programme participant claimed:

> *"You must be 100% clear about the market gap not just an idea and to realise the market is way matured than your hypothesis later in the journey. This is what the accelerator help us understand."*

The current study has made the observation that the higher the style of cognitive processing of the programme participant, the more it leans towards intuitive learning and deviates from sensing learning and the higher the number of opportunities that the programme participant will be able to identify. Intuitive and sensing learning types appear to be important in gaining an understanding of the process of learning by entrepreneurial firms. Buernsof (2007) discussed the conflicting perspectives on whether opportunities for entrepreneurship are created or discovered. Studies from North America institutions predominantly hold the view that entrepreneurial opportunities are discovered, and this seems to convey that the opportunities are present even without the entrepreneur's presence. In such a case 'entrepreneurial alertness' is what distinguishes non-entrepreneurs from entrepreneurs. This refers to the capability of seeing a gap in terms of services or products yet to exist (Kirzner, 1979). This can be compared to studies from European institutions which favour the view that entrepreneurship opportunities arise due to the understanding, interpretation and perception of the entrepreneurs regarding the environment they are in. The nature of these studies places an emphasis on how entrepreneurial behaviour is developed, and refers to the entrepreneur learning, growing and changing with respect to the entrepreneurial events which unfold.

In addressing the gaps between the two schools of thought, the current study makes the argument that opportunities can stand alone as realities which are objective, although the discovery of such opportunities could need a creative approach by the entrepreneurs in question in order to be realised. Moreover, an entrepreneur can utilise his/her expertise for recognising, discovering or creating opportunities with respect to the existing conditions on the market. As such, exploring the opportunities available could entail both sensing and intuitive learning. However, unless and until stakeholder trust has been established, intuitive learning practices dominate the sensing learning practices.

This proposition has demonstrated how trust is important in the collective learning of all the participants in the Spiralation program. The cycle of experiential learning also assists in filling the existing research gap concerning how abstract conceptualisation is obtained from concrete experience. The experiential learning theory posits that learning emerges from the proximity with other individuals, observing them and imitating behaviours of the role models. As Levesque *et. al.* (2009) convey, learning can happen vicariously. The managerial experience, self-efficacy, levels of education and business skills are all impacted by the entrepreneurs' processes of socialisation and in such way are impacted by the social groups to which the entrepreneurs subscribe.

To sum up, the influence of stakeholder trust in sensing and intuitive learning has not yet been adequately addressed by literature on entrepreneurial learning. This research area is quite important, especially considering that sensing and intuitive learning assist in enhancing knowledge of the creation and discovery of opportunities.

It is also essential that intuitive learning takes place in the context of the companies and the results are likely to be in line with the outcomes that they achieve. The entrepreneurs would always be willing to take a risk and to learn from the mistakes that they make. This matches with the intuitive learning model that is associated with these outcomes. However, it is also important to note that the role of sensing learning is also useful in the case of the companies. However, this would generally take place after the intuitive learning takes place. Thus, the companies are initially focused on the intuitive learning process, while at a later stage, the sensing and learning could take prominence. This is applicable in the learning context due to the fact that the companies have to be focused on both of these areas in order to ensure that the results are reached in the long term context.

Proposition 4 – interconnectedness

This study has established that while the accelerator has made some progress in encouraging entrepreneurial learning, influences on the market conditions have a direct influence on entrepreneurial learning. In the study, themes of exploration and exploitation were mentioned severally in all three cohorts in relation to their learning experiences. Recognising that the accelerator may not be able to see how to affect the growth acceleration of the firm, this study then sought to identify the factors affecting the implementation of significant influencers. As an outcome of this study, a conceptual framework was constructed to better understand the influence of the accelerator on entrepreneurial learning and to recognise the significance influencers. As such, the proposition 4 highlighting this facet is:

> *"A high degree of interconnectedness exists among the different entrepreneurial learning constructs and is highly volatile, based on the market conditions."*

Conceptual entrepreneurial learning model

The program has identified the need for the development of a model associated with this thinking. The literature indicates three key areas within entrepreneurial learning that have not been sufficiently explored: exploratory and exploitative learning, intuitive and sensing learning and individual and collective learning. These three aspects of learning will ensure that the appropriate approach is taken towards the learning exercise and that the benefits are reached in line with the market expectations. As such, one area of focus, through the directed coding approach aimed to understand the nuances of these contrasting learning approaches within the accelerator.
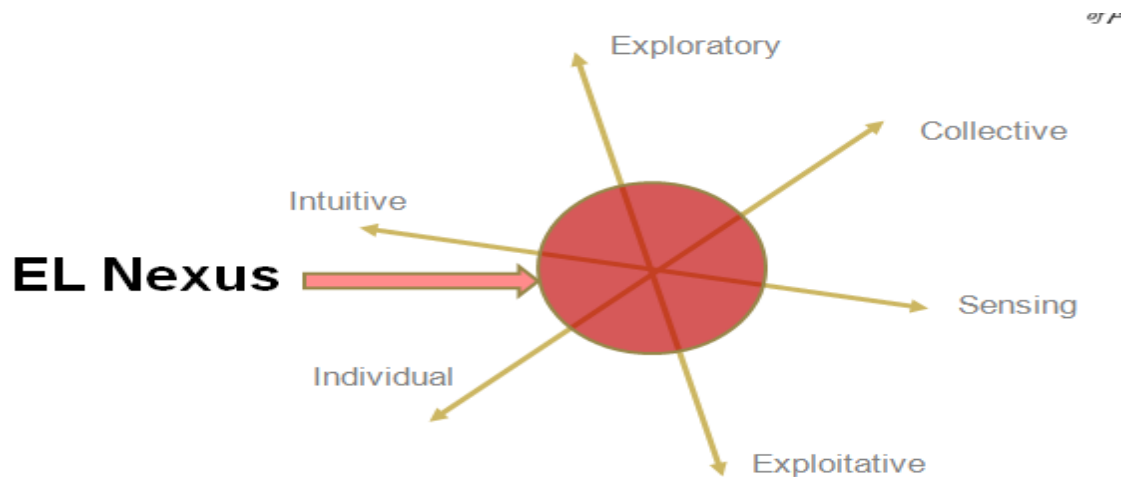
Figure 43 Conceptual entrepreneurial learning model (derived from the literature review -author developed)
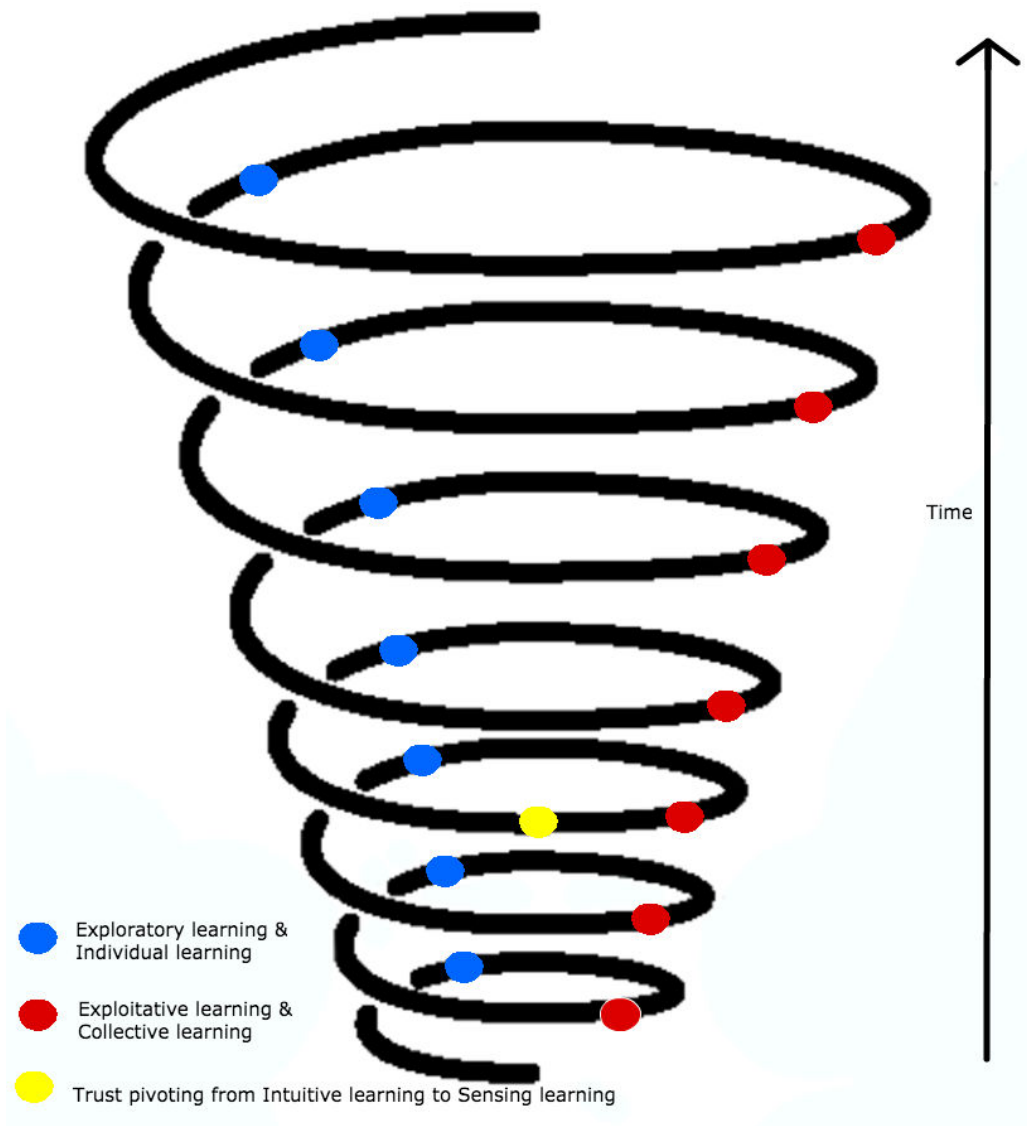
Figure 44 Conceptual entrepreneurial learning model (author developed)

The above three propositions discussed to how the learning could take place. The types of learning, as well as the timeline for learnings, have been identified in this context. It is vital that the learning aspects are placed in context and that the results are in line with the needs of the given scenarios. The conceptual framework depicted in figure 44 consolidates the findings of the above 3 propositions.

1. Exploratory learning takes place before exploitative learning. As such, the Blue legend is depicted in a consistent manner before the Red legend in the diagram. The repetition of Blue and Red depicts the recursive nature of the learning as the firms progress.

2. Similar to exploitative learning and exploratory learning, individual learning takes place before collective learning. As such, a common legend Blue and Red had been used in the diagram to depict both these learning approaches.

3. Pivoting from intuitive learning to sensing learning has resulted based on the level of trust bestowed on the learning. As such, intuitive (the gut-feel) learning is exercised, until the participant trusts the learning experience and there after sensing learning is exercised.

The inclusion of the time dimension would provide a 3D structure to the model. However, it is also important to note that the spiral emerges through growth and the activities associated with the growth are linked with complex behaviours. The diagram indicates the model in summation of the entrepreneurial learning that has been observed in the organisation, based on the government program that is in place. All aspects need to be incorporated when summing up the findings of the study.

While the diagram depicts the recursive nature of learning by repeating the indicators, the study outcomes can not ascertain the specifics, or the certainty of the learning occurring. As such, it is significant to note the model as a conceptual model. However, interestingly, exploratory learning and individual learning comes before exploitative and collective learning.

Growth factors should also be taken into account when these outcomes are developed. The spiral model shows the evolution of the firm from a conceptual growth perspective. In reality, several firms pivoted from the original value proposition. A variant of the above model to depict the pivot would better suit such instances as illustrated in figure 45 below.
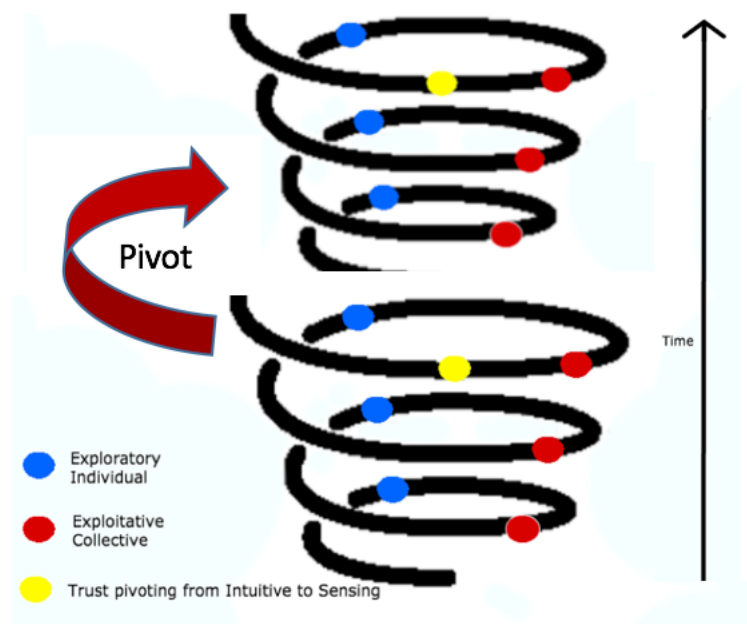
Figure 45 Conceptual entrepreneurial learning model extension – pivot of the value proposition (author developed)

The above aspects indicate that the program will influence different approaches, at multiple instances, during the program. This is significant in that the learning will indicate to each entrepreneur the learning methods that they will have to focus on. The entrepreneurs will then have to ensure that they take the required steps to improve the overall learning context of the organisation. This highlights the fact that learning at all levels as the venture progresses through the spiral within the context of the organisation remains vital. The results would indicate that positive results can be reached providing the companies remain focused on the different learning approaches.

The above diagram also indicates this very important aspect of recursion in exploitative and exploratory learning as well as in collective and individual learning aspects. These aspects highlight the fact that this kind of learning can take place at any given time. With continuous learning, the companies will see more business opportunities. New ventures and new business formation could be possible as the result of to seeing these new opportunities.

The research has, therefore, been able to identify the nuances of the key learning approaches derived during the literature review as areas requiring further exploration. Other aspects associated with entrepreneurial learning will be discussed in detail in the remaining section of the thesis. It should be noted that the resulting conceptual model for the identified learning areas provides an overview of how these learning areas have benefitted the government program. The eventual understanding of this model is that learning is a complex process and, at any given time, there are few dominant learning approaches in existence in a given organisation. Thus each kind of learning has to be developed in each of these instances.

When the learning culture is developed, these complexities in a learning organisation need to be considered. Understanding these complexities will allow the parties to identify how they can best develop various activities and achieve benefits in line with the needs and expectations. Thus, the program may have to develop the benefits and ensure that suitable long term learning approaches are made available for the participants of the program, as well as other employees of the entrepreneurial new venture.

The spiral portrays how the entrepreneurial firm grows over time. When the firm moves from one level to the other, the areas on which it focuses expand, and its footing in the respective

playing field becomes more secure, as depicted by the expansion of the firm, based on the spiral model.

The beginning point in the spiral could be an event that has occurred in the market place and to which the organisation must respond, or perhaps the firm had acquired certain knowledge before the event in the market place occurred. The lessons that are learned from such events would then be utilised in the firm's decision making. This response to learning would feature a re-assessment of the strategic thinking of the firm as to how it can best respond to the market by strategically realigning itself and further establishing its competitive advantage. The learning that is obtained from the response, if successful, would improve the development of further strategy. A more innovative and creative strategy can then be cultivated, and in such a manner, the firm would be able to achieve global competitiveness. In turn, this would result in a new achievement level in the spiral growth of the firm, and the spiral continues. From this example, the learning outcomes emerge to reflect sustaining competitive success, and this grows and shifts as the organisation generates its learning capacity. Such learning outcomes were also highlighted out by Doole & Lowe (2005). As one of the interviewees put it:

> *"I think companies at their early stages gained more through Spiralation as they could approach the problem having the end in mind. But it was in any case where we were, and they worked with us in exposing us to broader picture at a national if not global level. Initially we had issues with our own level of clarity on different areas, however, now we mostly are receptive any idea even internally. Like we have [our] own funnel."*

The study finding in this case places high importance on the context for the development of entrepreneurial learning. This confirms that there is a relationship between the learning approach and the insights provided by the study. This highlights the fact that there is also a

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clear need for the identification of new insights. Such learning would, for example, take place through the government Spiralation program. This is important due to the fact that the new learning opportunities could well play a significant role in achieving the needed benefits in terms of achieving the desired results in the future context of the enterprise.

The main challenge in the context of the development of the government Spiralation program is to support multiple learning approaches by the entrepreneurs (and the other employees). The government must ensure that the benefits are maximised through such programs and that future results are reached with positive context. It is also important to note that the multiple learnings could take place in a simultaneous manner. This, in other words, highlights the fact that different kinds of learnings may take place at different stages. However, the previous area of discussion has identified the role of intuitive learning at the earlier stage of the organisational learning, while sensing learning would be for the most part, secondary for the entrepreneurs.

Taking into account the findings from the concept map, and based on the research study, the resulting conceptual learning framework can further be extended to depict the notion of learning from the market and subsequently, through leading the market.
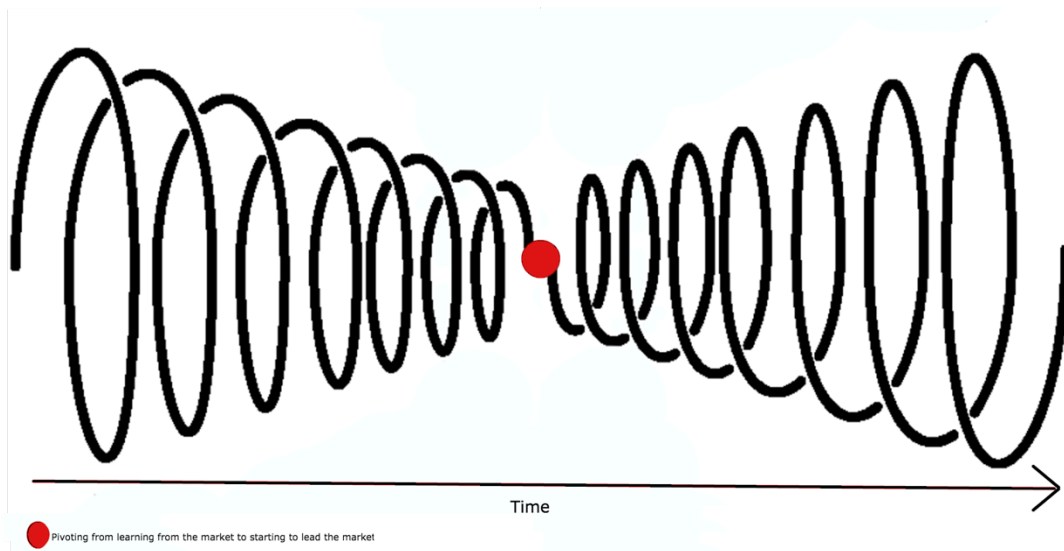
Figure 46 Conceptual learning framework (author developed)

During learning from the market state, entrepreneurs seem to gather the market conditions with an open mind without having a specific offering in mind, unlike in the case of single loop, double loop and triple loop learning, where the feedback loop initiates learning. However, when the entrepreneur pivots to lead the market (figure 46), the leaning process similar to traditional single loop, double loop and triple loop learning.

Taking all these elements into account, when the core value proposition is understood, the teams will progress as depicted in figure 44 while they will continue to learn recursively learn during their journey. If, during the learning process, they are diminishing their competitive edge, they could also pivot as depicted in figure 45. However, from a broader perspective, they will first learn from the market and only then potentially start to lead the market, as is illustrated in figure 46. This potential is derived from the findings and analysis of the concept map, based on the data collected for the first research question 'what does entrepreneurial learning mean to you?'. This model also acknowledges the entrepreneurial nexus framework presented by Shane and Venkataraman (2000) and further expanded by integrating the learning process

perspective to the entrepreneurial opportunity by Dimov (2003). However, the focus of the entrepreneurial opportunity nexus focuses primarily on the objective aspects, whereas this extends the model by including the temporal view. The model used in this research also shows how the contextual subjective elements come into fruition during entrepreneurial learning, when the learning itself helps to pivot from learning from the market, to potentially leading the market. Opportunity confidence (Davidsson, 2015) constructs and better supports the new knowledge contribution of this thesis, as it is the confidence of the entrepreneur or the entrepreneurial team, that enables the pivoting process of 'learning from the market' to 'leading the market' for a given context.

The study also highlights the fact that the learning takes place in a volatile context driven by the market conditions. These market conditions remain highly competitive in nature as the companies compete for the market share. Thus the learning process becomes a part of this exercise and ensures those engaged in the learning process in this case through the accelerator are able to gather the required knowledge and to benefit form the outcomes.

Proposition 5 – positive cognitive shift towards the entrepreneurial journey

One of the interviewees in cohort 1 said:

> "*xxx [our firm] built partnerships with local investors to grow the company internationally. Total mindset shift thanks to Spiralation. We had not feel for these aspects.*"

It appears that the government accelerators encourage the participants towards a positive cognitive shift. The Sri Lankan government's Spiralation program is taking place within the cultural context of an eastern culture. Recognising the limited positive influence towards

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entrepreneurship and new ventures in general from the education system, families and friends, the government is taking the initiative to influence the development of upcoming new ventures. This initiative is unanimously supported by all the mentors of the government accelerator. Without such initiatives local cultural perceptions see risk taking and possible failure as very negative events. As such, the following proposition:

"Government accelerators influence a positive cognitive shift on the entrepreneurial journey among participants, which is significant in a context where risk taking and failure is perceived as negative and is discouraged."

As this study has observed, the attitudes of the programme participants are not only influenced by the 'perceived task'. The perceptions of their peers by the programme participants as well as the manner in which the participants view the Spiralation programme's contents are also important. One of the interviewees in the study said:

"I can simply compare to my masters [MSc] where it was more strategy not closer to the ground level for me. I spent time on risks, industry analysis, what are strategic decisions etc. yet at Spiralation the ballgame was very different. It was all about figuring out what is the MVP. Internal dialog, breaking the barriers of communication and workshops helped a lot. When we are new to an area, we had an open mind and as we focused, it was only energising in that direction."

The data collected by the current research from the Spiralation accelerator programme posits that four kinds of behaviour are demonstrated by the entrepreneurs in the study, in the context of their interactions with formal programme activities. The first behaviour to be demonstrated is that very inexperienced programme participants observed that everything was very

interesting. For example, one of the interviewees who was new to accelerator programme claimed that:

> *"I came just out of college so I had to bounce myself back as my ambitious [ambition] was challenged so much by the panellists and mentors. Yet they didn't want me to stop. It was confusing at the start. But now I see how relevant the experience was to have got me to establish our MVP based on true market needs. Not just me, we as a team crafted our own art of doing things collectively."*

This observation can be compared to other types of behaviour exhibited by the programme participants, and which the study has observed. The more experienced entrepreneurs seemed to participate in many sessions of the programme, however they mostly concentrated on the material which was new to them, and an instance is highlighted below:

> *"The [Our] product has of course matured a lot more now, with Spiralation, the company is very different today than it was then. It was a nice step by step process when you look at it"*

The entrepreneurs in the accelerator program who have the most experience, exhibited a third kind of behaviour, in that they were more selective in choosing the content of the programme in which they would participate, and in many instances, they could miss a session so as to focus on alternative issues.

However, the experiences of the individual programme participants do not fully explain the attitudes of these individual entrepreneurs concerning the content of the accelerator programme. The entrepreneurs, who had perceived that their key job in the accelerator programme was to search for funding for their projects exhibited a different kind of behaviour

from the three behaviours discussed above, in that they were generally not interested in the content of the Spiralation accelerator programs, irrespective of the topic or issue being handled. The attitudes of the participating entrepreneurs towards the content of the accelerator programme were not only influenced by their perceptions of the program, or the educative opportunities of the accelerator programme; they were also significantly influenced by how they initially perceived their peers' value in the whole accelerator programme. In all three cohorts under the Spiralation study, the attitudes of the participating entrepreneurs towards the entire accelerator programme, appear to have been impacted by the assumption that each person in the study was valuable and was able to significantly contribute to the ventures of the other entrepreneurs. This cognitive shift has been aptly captured by one of the programme participants, who claimed:

> *"Very good, do not think I have learned so much in adulthood as I did during Spiralation. I see that after we got* back*, so we were much quicker to focus on the right things. We always explore when we want ideas for a given thing but we have our own process to evaluate and start to execute. We learned to focus on the Minimum Viable Product - what is the minimum you need to develop that someone will see value in us."*

Hjorth (2013) suggested that accelerators in the future would become more effective than the current accelerators, as instead of focusing on the place, they would focus on the space. This means that the accelerator would put more focus on the programme's cultural climate and the participants' context instead of the entrepreneurs' physical location. Even though the current research agrees with this earlier observation to some extent, its view, however, is that it is very difficult to disconnect space and place. A major objective of the education that entrepreneurs receive in less formal settings, is how to create and resolve disjuncture (Hjorth, 2013; Cohen S, 2013; Dempwolf *et. al.*, 2014). As such, the design of the Spiralation accelerator programme

demonstrates an attempt to create intervening circumstances that assist the entrepreneurs in the program to experience how to create and resolve disjuncture. Cognitive shift does not appear to be the only aim of the Spiralation accelerator programme. The programme also attempted to enhance the ability of the entrepreneurs to devote effort and time to the projects they have, in much the same way that it has enhanced the general possibility of entrepreneurial learning by the programme participants. It appears that apart from entrepreneurial learning, the design of the Spiralation programme has entailed compromising on a number of objectives. One of these involves a positive cognitive shift towards manoeuvre the entrepreneurial journey, which obviously has ups and downs.

The program that is in place would encourage all the entrepreneurs to benefit from the outcomes and to improve aspects of their learning. It was based on the understanding that learning would take place in a positive manner and that the outcomes were likely to be beneficial in nature. Thus, the overall issues and the benefits from the program were likely to provide positive results in the future context. The entrepreneurs in general had a positive view about the government program due to the fact that they have been of the view that positive results had been attributed to this program. This shows that the role of the program has been supportive for the learning associated with the entrepreneurs and this had naturally contributed positively to their organisations in the future context.

Proposition 6 - partnerships with other learning support groups

A scenario can be pictured whereby the individual entrepreneurs benefit their neighbours. Even though the initial entrepreneurs are important, the subsequent entrepreneurs are not very important. In that manner, local authorities typically select policies which are industry-specific to target entrepreneurial firms which seem to possess comparative advantages from their

locations. The authorities could also decide on whether to concentrate the policies on old or new entrepreneurial firms. Even though this could be done on a firm-by -firm basis, the same could be achieved through policies that are more general in nature. For instance, moving from local taxation on labour to taxation on businesses would have the effect of favouring new entrepreneurial ventures, rather than placing the new ventures and more mature firms on an equal pedestal. This is because the new ventures usually have lower profits even though they also need to remunerate their staff (Fallick *et. al.*, 2006). As one of the interviewees suggested:

> *"... As for our part, it was so tough and Spiralation was the inspiration to keep moving. Today we are pretty much international yet there were times, I had to worry of paying my electricity bill. This was after giving up my job that paid me very well compared to the industry. Today I am happy that I kept going and if not Spiralation, I would have given up, I feel. Whether we are going to this country or that, is not an easy choice, but when you start it's a matter of moving on"*

If the government is able to select entrepreneurial firms which bring especially extensive local advantages it could avoid the claim that incentivising government policies do not simply go to the firms which are well connected. As such, policies identified to support Spiralation and/or new entrepreneurial ventures could increase the possibilities for the entrepreneurial firms to benefit immensely by way of operationalising new learning models such as connectivism (Siemens, 2014) that is ideally for the new digital era.

The involvement of the government has a clear impact on the influence of the government accelerator on entrepreneurial learning. For example, some governments have laid out cluster policies with regards to innovation and entrepreneurship. These cluster policies favour a specific location, such as the Innovation District of Boston or Silicon Valley in California. The

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geographic concentration of the entrepreneurial firms makes it possible for these firms to generate positive externalities as well as obtaining the greatest value for scarce financial resources. The Sri Lankan government's policies have leaned towards entrepreneurial new ventures. However, the policies are not exclusive to Spiralation firms only, but Spiralation firms have the first right of refusal , if qualified. Since the entrepreneurial new ventures in the Spiralation programme are not large enough to be addressed on an individual basis, as a senior government policy maker, who is also a mentor of Spiralation stated:

> *"We realised cash flow is the primary struggle for the participants to keep the company afloat. You know most of these companies are self funded. To support this situation and understanding their ICT talent, we came up with a policy offer small and mid size ICT projects to these firms before we call public tenders. It worked out well for them as well as for us."*

Additionally, the affiliations Spiralation has with other institutes provide further opportunities for participants. The results of these affiliations include participation in industry events, engagement in overseas delegation visits and access to required social capital on demand. As a government agency, Spiralation is able to obtain special concessions for such events when Spiralation participants take part. For instance, according to a participant:

> *"I never thought of having Australian clients just within 3 years of our launch and it was great to be a part of the country pavilion at CEBIT. [This] helped us to secure the initial face to face meetings with our prospects"*

Many participants acknowledged the value of being able to interact with mentors and advisers when they wanted to. In line with the existing literature (Cox and Jennings, 1995; Deakins *et.*

al., 1995; Sullivan, 2006) advice from mentors is recognised as of immense value by the participants of Spiralation across all three cohorts. For instance a participant stated:

> *"Approaching successful entrepreneurs for advice was very much a possibility with the Spiralation endorsement. Being a small company, we always had the challenge to approach the high profile but we all knew that understanding their perspectives were critical to us."*

Moreover, even though selecting the sectors which are winning has been shown to be possible, it is more difficult to select firms which are winning. The findings of the study, show that benefits emerge from the government's support of smaller entrepreneurial firms as opposed to larger, mature firms. Government partnerships with industry, universities, chambers and related bodies as well as being able to extend the services to the participants from these partnerships enhances the government accelerator's influence on the entrepreneurial learning gained by the Spiralation program participants. As such, the following proposition:

> *"Government accelerator partnerships with industry, universities, chambers and related bodies along with the services extended to the participants collectively can be called as learning support groups, increase the influence of the government accelerator on entrepreneurial learning."*

There are different stakeholders who can be highly useful in the context of the learning process. The government accelerator has been able to ensure that these stakeholders will participate in the learning process and ensure that desired results will be reached in the long term context. This would ensure that results are reached and the outcomes are in line with the needs and the expectations of the given scenarios. There are universities who would be able to support entrepreneurial learning and ensure that the required knowledge would be gathered in line with

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the needs of the given situations. The benefits associated with these activities are likely to be high as well. Thus, the learning will be deepened due to the government based collaboration that is in place in the long term context. In other words, extending the argument of Shane (2009) that blanket policy is bad public policy for start-ups, this research suggests that government accelerator is in a unique position to support the participating entrepreneurs. Every ecosystem is different (Mason & Brown, 2014) and government accelerator is in a strategic position to create the unique learning ecosystem taking the spatial and temporal factors of the concerned government context into account, to facilitate the potential high growth firms who are currently an infant venture.

Proposition 7 – forming a learning culture

It is important to recognise there is a fundamental difference between knowledge (the known) and learning (the process by which knowledge is generated). The following dichotomy best illustrates where the outcomes of this research align is in the top right context, where the focus is on how the founding team learns during their journey through the accelerator.

Figure 47 Organisational learning landscape (Easterby -Smith and Lyles, 2003)

Action learning is an approach, to enhancing performance, promoting learning, and positioning organisations to have better adaptation in tumultuous periods, which is increasingly gaining in popularity. Action learning is also observed to be a manner of developing individuals' capabilities, the capabilities of teams in the organisation, and the capabilities of the organisation in general. It has previously been observed that "some of the most interesting and promising innovations in management learning have taken the form of what is called action learning" (Leigh, 2013). Action learning can best be described as a process that entails a small team in the organisation trying to find solutions to real problems and pursuing courses of action based on the learner objectives; subsequently, learning occurs on the individual, team and organisational levels. For instance, Mason and Arshed, (2013) carried out the value challenge exercise and was found to be fruitful where based on needs of the learner actions, the learning environment provides supporting instruments, tools, theoretical constructs to be used. This notion is directly evident during the government accelerator process as well based on the research findings.

Politis (2005) had earlier discussed in detail how entrepreneurial learning can be understood as process which is experiential. Politis (2005) had made the observation that the entrepreneur's process of transformation, career experience and entrepreneurial knowledge were the three major elements in the entrepreneurial learning process, and these seem to resonate well with the current study.

In this study, a significant number of firms in the three cohorts have used an action learning approach. Every year, private sector employers as well as the government make considerable financial commitments to the training and development of staff. Such expenses are motivated

by the desire to make the employees more accountable and the desire to demonstrate how the training has impacted on the firm's 'bottom line'. The employers set aside a considerable amount of their training investments to the development of the management team. Even though a considerable portion of these undertakings are centred on specific subjects and place an emphasis on certain targets, the programs also focus strongly on experiential learning, which is a representation of the inherent physical, psychological and intellectual challenges. Models of experiential learning are currently being applied in more diversified ways than before in industry and in business, since experiential learning raises the legitimacy of gathering individual knowledge. With respect to the Spiralation programme, the participants acquire the mandate of seeing, learning about and examining the specific situations that affect them as they progress through interaction with other participants in the programme. One of the interviewees in the study claimed:

> *"Now I am very good on cold calls - to make contact with people you do not really have a basis for contact with. It started as an exercise. But now I can feel it when the contact is right. Also LinkedIn channel to start things off the ground, for example, to obtain new contacts. We see the effect of it all the time really.... "*

The current study observed one popular approach towards experiential learning: action learning. This approach required that the programme participants became fully immersed in the new experiences, reflected on these experiences through a learning journal, came up with ideas and concepts which were observed on their social media accounts, and utilised what they had learned to make decisions, to bring about solutions to problems, and to meet emerging challenges.

Firms have also supported action learning as it allows the participants of the action learning programme to utilise what they have learned to address key problems at their firms, during their conditions of actual work. One of the participants in the Spiralation programme claimed that:

"Simple concept of searching in a systematic way for your competitors, following them on social media are simple ideas. When you truly focus and do it, the value is enormous. That's probably how it started but now we all do it all the time." whereas another participant claimed:

"…For so many years that I have done without that piece purely navigating the friends and family randomly. When you know the target, you still go through friends and family, but with the end in mind. You grow more confident then. You learn so so much… The first experience changes your life and gives that boost."

Action learning can be seen as a social approach to resolving the challenges which confront the management of firms at an increasing rate, with no solutions from the past available. The Spiralation study shows that action learning seems to be founded on the basic notion that learning cannot occur in the absence of action, and action cannot be observed in the absence of learning. From the Spiralation study, action learning was exemplified by a number of processes, such critical exercises that are significant for most firms, which were addressed by the programme participants. As such the following proposition:

Teams in an accelerator program, when engaged in experiential action learning, influence the formation of a learning culture in their respective venture.

In addition, the programme participants were required to question their underlying assumptions in order to know if the assumptions were appropriate for achieving the desired learning objective. The action learning exercises in which the participants in the program took part, demonstrate two key components: the issues that some of the the Spiralation programme attendees identified; and the outcomes other program attendees, who challenged and supported each other while trying to resolve those issues. One of the attendees in the programme claimed,

> *"I didn't have much faith that the program will be of any value for me, yet the collective decision making environment it created for us as a team as well as among other firms really helped. We identified new markets and cross selling opportunities. What to pick and what not to was a challenge but we had our cycles, mostly positive and upward I must say…"*

The accelerator programme participants used real tasks from which to learn, and in this way, the individual participants developed skills in leadership and management as they worked on the problems that afflicted the firms and tested that their assumptions against consequences that were real. Through selecting a real issue afflicting the firm, conducting its analysis and affecting solutions that have been obtained from discussions with the other programme participants, the individual attendees in the Spiralation accelerator program can track the outcomes and are responsible for what they have done. This demonstrates that, in order to deal with shifts and changes at the firm level, it is important for individuals to place their confidence in insights and experiences of other colleagues in the firm as well as their own.

However, it is first necessary to have an urgent and real desire to come up with a solution to an issue which is not familiar, and which does not necessarily require the opinion of experts. Rather than having the luxury of relying on experts to offer solutions to issues, the members

of a firm need to engage in opportunities for learning in order to come up with appropriate and usable knowledge. As the current study has observed, this needs strong support from the management of the firm. In this case, the founding team mandated to be a part of the program would have had a significant effect. Moreover, it is important for participants who are taking part in the accelerator program to select and gain access to various stakeholders throughout the entire accelerator programme. Whereas various specialists were present to cover different modules in the programme, it was important that the accelerator programme should have a facilitator who would have worked independently of the government culture, and help the programme participants to critically reflect on what they had pursued.

Entrepreneurial learning is positively impacted by the discussions associated with the aspects of active learning. It is evident that this would eventually filter down through the organisation. When the organisation is placed in the business Spiralation program, it is important to note that it is exposed to high level learning activities. The learning environment thus remains positive and the results could be obtained through acquiring the results in the future. Thus, the overall program in this context could lead to beneficial results in line with the market needs.

When the employees of the companies are learning, it is important to note that they will be able to find beneficial results in terms of the outcomes that they achieve. It is evident that outcomes will have to be developed in line with the company's needs to shape the company's culture and its outcomes. This will ensure that all the parties will be able to work with the company to achieve positive results in terms of the future developments. This shows that the eventual result is that the culture of the organisation shifts to increase a greater learning orientation for the other employees as well. This will contribute to higher levels of benefits for all the parties.

Research shows that action learning is increasingly crucial in peer-to-peer entrepreneurial learning to facilitate collaborative critical reflection and reflexive action (Clarke *et. al.*, 2006; Floren and Tell, 2004; Cope, 2011, Anderson, 2008, Thorpe *et. al.*, 2009). By extension, experiential learning, during the Spiralation program, has demonstrated a number of advantages. Those who have attended the accelerator programme have not only improved their understanding of themselves but have also been able to unearth the reasons for their underlying assumptions. As the entrepreneurial firms attempt to sail through the shifting business environments comfortably, experiential learning needs to be thought of as a considerable influencer whose potential is limitless.

Suitability of an exploratory case study for this research

Yin (1994) using rubrics has suggested that case studies using chains of evidence are suitable for social science and field research. When a study is planned, it must identify what the underlying reality is, the right context for the issues has to be indicated in the case of understanding and then ensuring that the right results are reached (Creswell, 2003). It is important that the right kind of information is collected and the right kind of insights are developed from it. Thus, the role of studies of this nature remains valid and important. As much as there is a possibility of conducting a quantitative study in this context, it would also create a number of limitations associated with the study area (Grafton, Lillis and Mahama, 2011). This is due to the fact that a quantitative study would create a highly defined framework in place.

On the other hand, the exploratory approach shows the key details in the context of the qualitative aspects gathered through the study. Being able to gather the qualitative information indicates further that new insights are formulated in this context. A qualitative approach allows

the collection of the information using appropriate levels of probing (Kondracki & Wellman, 2002). Being able to probe a given scenario will enhance the ability of the parties to reach illuminating results in the future context. This illustrates the importance of the choice of the research techniques and the fact that qualitative and exploratory techniques selected entirely align with the goals of this study.

Entrepreneurial learning has different structures, in other words, entrepreneurs learn through different sets of experiences and methods. Thus, the overall outcomes that could be reached in the context of the appropriate results remain highly important in this context (Lévesque, Minniti & Shepherd, 2009). The long term benefits which the parties may reach are likely to be high due to these outcomes. Thus, the exploratory approach towards the study remains an important area of consideration. This highlights a particularly appropriate path to reach the desired benefits and outcomes.

This study uses the research approach, which examines in this instance, the methods used by the participating entrepreneurs to explain their learning experience and its connection with the Spiralation program. The researcher may have to extract in depth information to identify these issues and to provide appropriate of solutions. These aspects collectively indicate that the research is more qualitative in nature. This approach allows the parties to gather the needed information from a variety of sources and to probe into the areas where more clarity is required (Cohen, 2003). Utilising a multi paradigm view of theory building and the combination of subjective and objective methods in data collection and analysis, have supported the development of new knowledge in this exploratory study. Thus the outcomes of the thesis will be contributing to the literature on entrepreneurial learning, so extending and complementing

the current empirical findings. Data related statistical manipulations and their particle and qualified significance may not have provided these insights.

Dissemination of findings

The time between the literature review, data collection, analysis of the data and recording of the findings, enabled the researcher to present at a number of conferences and co-author several book chapters. The response to presentations has been very positive and there has been a reassuring degree of interest from others involved in entrepreneurial learning, which has contributed a sense of timeliness. The findings of the study remain vital to many of the stakeholder groups including policy makers, organisers, mentors and practitioners. This is due to the fact that they present a number of important points that would allow them to identify the importance of the program and ensure that they develop the solutions thereof. Thus the benefits for the said stakeholders associated with the study area remain high and actions should be taken by these stakeholder groups after the issues are identified. Thus the dissemination of the findings and confirmation of results have to be carried out by the stakeholders in future government accelerators or related initiatives to facilitate entrepreneurial learning.

The role of the study and the related discussion should be evaluated in context. Government supported programs to foster entrepreneurships are starkly different when compared with the private sector commercially oriented programs. This is due to the fact that the private sector programs are limited by the context of profits expectations. They will only venture into the area provided that there is profit involved. However, the role of the state in this context is very different due to the fact that it looks to the national interest as well as the benefits to the entrepreneurs as priority reasons for such programs, creating an ideal context to understand the influence of entrepreneurial learning.

By evaluating the effectiveness of programs such as Sri Lanka's government supported accelerator, Spiralation, indicates that the effective results can be reached through such programs, offering a much higher probability of successful results and beneficial outcomes for Sri Lankan based businesses whose entrepreneurs have taken part. The findings of this study should be disseminated in the form of similar programs either government initiated or otherwise, however concerning the acceleration of the learning process of involved entrepreneurs beyond looking at the short-term profit margins. All these areas of consideration show the importance of the state support program in the context of the learning of the entrepreneurs and the subsequent development of businesses.

Conclusion

The literature clearly reveals the diverse theoretical, philosophical and methodological approaches to entrepreneurial learning (Wang & Chung, 2014). Over 20 years, entrepreneurial learning has emerged to be a field with different areas (Rae, 2015). However, when entrepreneurs are transitioning a new entrepreneurial venture through early stages of survival and growth, how entrepreneurial learning is exercised has not been sufficiently explored. This context includes the transitioning to a team setting, in most cases, from an individual nascent setting, as well as actioning various phases of the entrepreneurial new venture. While accelerators are creating an ideal learning space for entrepreneurs, scholarly examination on entrepreneurial learning in government accelerators has not been examined before. This thesis contributes to how entrepreneurial learning theories can be intervened and influenced using the empirical evidence of the government accelerator. The knowledge contributions of the thesis converge many theoretical constructs and directions that were derived literature with the rich insights gained by the practitioners. The assumption behind the entrepreneurial learning

framework is that learning is a continuous process specially for the ICT enterprises that are operating in a knowledge intensive industry. Different phases of the enterprise will require different entrepreneurial learning processes to accelerate the learning process. However, the final aim is to develop the mental model of the entrepreneur beyond the enterprise as life long learners and the government accelerator creates an ideal learning space for two reasons. Firstly, a government accelerator does not have the short term profit objectives. Secondly, a government accelerator for entrepreneurs allows a true action learning environment than learning in a hypothetical or conceptual learning space. Extending the definition given for entrepreneurial learning in the literature review chapter, the thesis concludes entrepreneurial learning as a multifaceted construct embodying different forms of learning experienced in a temporal dynamic. It involves individuals, teams and the strategic posturing of a new-young firm.

The discussion below indicates implications of this thesis to policy makers, practitioners and researchers. The role of the study in this context remains highly useful and the insights that this has provided shows the role of the research in the context of influencing entrepreneurial learning through a government accelerator program.

The outcomes show that the accelerator programs can facilitate entrepreneurial learning in a positive manner. This naturally highlights the fact that the entrepreneurs will benefit from the government accelerator programs and they will be able to grow into mature entrepreneurs. The initial learning level is marked by individual learning and the enrichment through experience and relationships. These will assist in the development of the infant new venture in the future. However, there will be gradual changes and the outcomes indicate that organisational learning

will become more procedurally oriented in nature over time, through creating a learning culture.

Thus the above aspects of the discussion show that the kinds of results are obtained and the appropriate benefits are reached in the context of the study outcomes. The study outcomes indicate how the government can further develop the accelerators in the context of the country.

While the thesis limitations and further research recommendations stated below are valid, the intent of this study has been upheld and it is for future studies to test and explore a variety of contexts and methods to build further on the theory development of entrepreneurial learning particularly as it may pertain to an accelerator program, ideally employing the theoretical contributions of this thesis.

The thesis contributes towards understanding the learning experiences of the entrepreneurs during the various phases of the entrepreneurial new venture, taking the temporal view into account. This will facilitate the efforts towards accelerating the progression of new entrepreneurial ventures in a sustainable manner, reducing the failure rates of entrepreneurial new ventures.

Implications for policy makers

The implications of the study and its findings should be supported by government and private sector policy makers. The state is the main policy maker in this context and it remains with the state to confirm that such programs remain highly important and are worthy of support. Thus, in the first instance, it is up to the policymakers to further develop the policies in line with the needs of all the parties and to decision makers at higher levels to ensure that such programs are

supported for the kinds of positive results detailed in this study, including the development of further entrepreneurship support in other key industries, so expanding the benefits to local businesses and to the economy.

The global economy is continuously changing and the change has picked up speed. This would the global economic players to interact more frequently than before and to work with each other for the purposes of economic development in these countries. With the increased ICT facilities in place, Lakhani, Karim and McAfee (2007) believe that the development of the knowledge based economy is an inevitable part of the development of global capitalism. While companies try their best to maximise the use of resources, and to ensure that they optimise wealth to the shareholders, they adopt new techniques to minimise their costs. The development of the knowledge economy is an integrated part of an accelerator program of this nature. While this would benefit the companies by allowing them to reduce their non-core activity costs, the effectiveness of the operations could also be improved.

Manufacturing based economy	Service based economy	Knowledge based economy
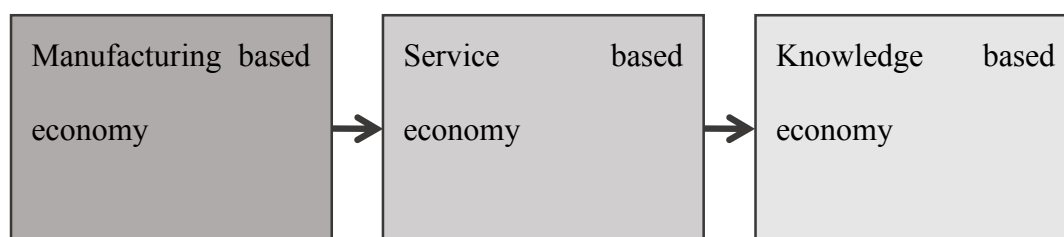
Figure 48 Evolution of global economy in the 20th to 21st centuries (author developed)

When knowledge can be transferred from location to location, it is natural that those who require knowledge would consider locations for outsourcing which would provide them with the maximum cost benefits. Thus, the companies now have the option of "purchasing" knowledge from some of the key global knowledge centres, which is essentially a concentrated centre offering knowledge based services. There are various knowledge centres available including not limited to knowledge centres offering software services, financial services, back-

office operations such as medical transcription services and they provide various levels of knowledge in supporting the activities of the large operations established in the developed nations. The transformation of the global economy to this level of integration has created new possibilities and business opportunities.

After the significant fall of Socialism in the 1990s, the expansion of open economic policies and neo economic practices has been increasing. The global barriers to trade have been easing while the enterprises have been continuously seeking to maximise shareholder wealth. Thus, as suggested by Hill and Jain (2005), the new market dynamics have been changing fast, bringing a number of new opportunities for the developing countries. As certain activities are too expensive to be performed in the developed countries, the businesses which provide services in the developed world, could outsource services to developing countries at reduced rates, to enhance the total profits of their operations (Spiegel, 1991). Thus, on this basis, international business has increased at a faster rate during the last twenty-year period than at any previous time in the human history. While this has opened a number of new opportunities to the developing nations, the fact remains that the competition is fierce between these nations to seize the opportunities and if any of the se competing nations would fail to grab an opportunity, it is very likely lost forever.

The key global economic focus remains manufacturing. Sri Lanka is no exception. While traditional exports have primarily been tea, rubber and coconut, recent decades have demonstrated a significant growth in the manufacturing sector, primarily with apparel manufacturing. The companies who have had the technology and the manufacturing means have been the market leaders. According to Peters and Waterman (1984), those who cultivated innovation and employee empowerment as their key strategies, thrived. This is central, as in

manufacturing activities, where the innovation of new methods and the ability to make faster decisions, increases employee productivity. Improved productivity in manufacturing leads to higher economies of scale for the companies, resulting in higher profits and better company performance levels. Such companies have been considered to be the outstanding companies at the time by the Peters and Waterman (1984). In line with the theory of Friedman (2002), companies were supposed to continuously enhance their respective shareholders' wealth and should focus on creating shareholder wealth and nothing else. The companies who perform better and create greater shareholder wealth, were seen as the best companies and were considered as worth investing in. However, this manufacturing based thinking started slowly changing to reflect the long term realities in national and international economic conditions. For instance, short term profit margins vs long term sustainability based on concepts such as triple bottom line is not taken into account by shareholders where the focus is achieving economic, social and environmental sustainability (Elkington, 2002). Based on the findings of the thesis, the new imperative to extend this sustainability should be the learning culture based on entrepreneurial thinking to sustain the triple bottom-line constructs.

Currently, few key locations have gained significant reputations as international centres for manufacturing, due to the favourable conditions they have. The competitive advantage built by China as the global hub of manufacturing is unbeatable due to the economies of scale they enjoy and due to larger scale integrated manufacturing capabilities, along with relatively cheap labour. There are a number of other manufacturing centres such as Mexico and Eastern Europe, which have thriving industries due to their close proximity to the key global markets of Europe and the United States. As suggested by Jain and Hill (2005), these centres would enjoy high status as the manufacturing centres of the globe due to their respective competitive advantages.
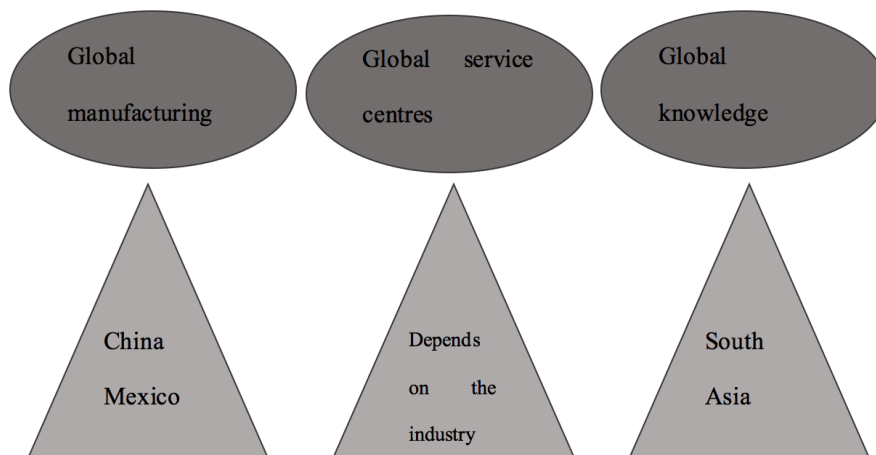
Figure 49 Concentration of various industries based on the geographical regions (author developed)

Sri Lanka, as a South Asian country has the potential to leverage the global trend of South Asia emerging as a global knowledge centre. Here, policy makers could focus on a different type of industry sector, with specific accelerator program in place to take forward the success and direction setting that began with the Spiralation program, which would therefore take up and build on the findings of this research. With the recent budget (see appendix E for a synopsis) Sri Lanka giving a priority for fostering entrepreneurship indicates that the state will be able to leverage the findings of this thesis. For instance, accelerators could be the conduit to operationalise new learning theories such as connectivsm (Siemens, 2014) in this digital era where the focus is not only the traditional aspects such as know-what and know-how, but also new insights such as know-where. As such, the learning ecosystem discussed in this thesis should be taken into account by the policy makers to propagate the learning models that is a priority for tomorrow that is more important than what is known today. Furthermore, as blanket policy for entrepreneurship is argued to be not in favour of governments (Shane, 2009), accelerators as an alternate policy consideration by way of supporting entrepreneurs can be recommended.

Implications for practitioners

The role of the practitioners in the context of the study should be evaluated. The entrepreneurs, as the main party involved, will significantly benefit from the outcomes. Thus the overall role that they play and the overall benefits that they achieve from these aspects are important areas that need special focus when the results are considered.

The entrepreneurs themselves, will identify the need for learning activities. The approaches towards learning as identified in this study would ensure that desired results are achieved. Thus, the overall outcomes for businesses and the state economy will provide beneficial results in the future context. Thus, entrepreneurs should ensure that they reach the needed results to benefit from the outcomes. Beneficial results will enhance the sustainability of the approach in terms of new ventures in the future. Realising that complete knowledge can not exist among the existing knowledge of entrepreneurs and understanding the challenges of marshalling the required resources is paramount. Thereafter, when the knowledge is needed and not known, the need and the ability to plug-in to the required knowledge sources, knowledge networks or knowledge ecosystems such as that of Spiralation will come into effect.

The entrepreneurs should develop the proper approaches and linkages to make sure that they benefit from the learning experiences in the most appropriate manner in order to achieve the needed long term results in a sustainable manner. For instance, the learning culture discussed in this thesis is paramount for entrepreneurs to remain competitive in the market place. Thus, attempts should also be made to associate with other successful learning ecosystems similar to the accelerators as strategies to understand and implement the same in their own entrepreneurial new ventures.

Implications for researchers

This thesis offered new insights into entrepreneurial learning. It developed a number of answers to the research question on how accelerators are influencing entrepreneurial learning. The main findings of the thesis that were derived based both on objective analysis and subjective analysis, were synthesised in order to derive the conceptual framework. The study has developed a number of important implications for researchers. The researchers will identify the importance of accelerators and indicate the need for more studies of this nature, linking disconnected theoretical constructs, and taking the practitioners' experiences into account. These research contributions will help researchers to develop accelerator programs to provide effective learning experiences in other contexts. This will result in contextual competitive advantage for any industry or at any regional level.

Researchers could work with various parties in the future and develop an elaborated framework to which the parties may have to adhere to in the future, to ensure that the desired results are reached in each instance and that the required benefits are achieved. In this thesis the researcher has been able to obtain useful datasets on the related research subject and to confirm that the importance of accelerator programs of this nature can be researched through this approach. The overall results are likely to be highly beneficial in this context and the future outcomes are likely to be positive for both researchers as well as participating parties. Most of the revolutionary ideas of today are at one time existed as a fringe element. Researchers could leverage spaces such as government accelerators that brings in policy makers, practitioners and researchers together to foster, nurture and synthesise the impact of new learning models. These models should focus on reducing the speed of "idea to implementation".

The thesis also took into account the multi-paradigm perspective for theory building. Based on the new insight that was contributed through this thesis, researchers could leverage the subjective and objective methods for theory building for research that enables the synthesising of information from multiple perspectives that results in building theory with a balanced view point.

Limitations of the study

The research has many limitations inherent in a theory building research design. It is evident that new insights will have to be further tested through formulated studies that confirm the extent to which the findings can be generalised.

One of the limitations is the sample. The sample is small and the representation of the sample of the population may be less. Due to the fact that the study is a qualitative study, the margin of error may not be identified. Addressing the limitations of this study will require examining the learning experience of many different forms of accelerators in many different places. This study examined only one accelerator that was government backed and therefore less driven by a profit motive and more by the learning and culture change motive. The purposive and convenience sampling frame may also raise concerns over limitations. The sampling method was also limited to a government accelerator in a developing economy, Sri Lanka, in a particular industry sector, ICT. Clearly, studies that provide cross-referencing and comparative data from other contexts could improve the generalisability of the findings. However, again for the purposes of this study, the depth of the research was prioritised over breadth to achieve a deep, albeit the current delineated understanding of the entrepreneurial learning experience in a specific accelerator context.

One of the main weaknesses associated with this study is the self-reported nature of the data. As such the respondents may not provide a genuine and accurate account of their experience for fear that negative observations may have implications for their position in the accelerator program. Thus, although reassurances were in place and efforts were made to build trust, the respondents may have been reluctant to provide information about various areas and issues associated with the discussion.

Another limitation could be found in the data analysis methods using interpretive coding by one coder. Using different qualitative analysis software, such as Leximancer or different interpretations made by others and/or multiple coders, may result in variations on the findings. While this is a limitation, it is also the very essence of theory building research that aims to provide different views and accounts of theory that may explain the phenomenon under investigation. The use of multiple techniques within the study was designed to expose multiple views, that to some extent, counter the limitations noted here. Nevertheless, it remains that different approaches by different researchers may reveal insights that differ or oppose those found here.

The study has a limitation in the form of interpreting the new insights. Due to the fact that the study is a qualitative study, it is evident that the information provided by the study cannot be ascertained in line with the accuracy of the study findings. Thus, this remains another area that needs attention and improvements in the future context.

Thus the above mentioned aspects are some of the main issue areas that need attention and improvements in the future. It is evident that the parties will have to look into improving these areas in order to reach broader results in the future.

Recommendations for further research

The above discussion of about the study indicates the fact that entrepreneurial learning is exercised in a context specific manner as the entrepreneurs manure their journey during the new entrepreneurial venture process. It is clear that the study has provided some new insights to entrepreneurial learning and the influence towards entrepreneurial learning during a government accelerator, exposing a number of research directions that are unanswered. These future opportunities are discussed below.

The first area that could be further researched is the influence of the state on different sectors and in different geographical locations. This will enhance the understating of the study related areas in the future. For instance, sectors including agriculture and renewable energy, may have different or similar results than the ICT knowledge workers in China, India, Indonesia from the eastern world, as compared with the United States, UK and Australia in the western world. As such, how the context of accelerators changes the learning experience for participants, is still work to be done.

This research has primarily assessed the influence of learning based, self reporting strategies, with some level of assurance regarding the findings from the mentors and organisers. Studies that are able to ensure anonymity may observe variations in the results acquired through this study. This is also an area that can be considered in the future.

The other area that could be researched further in the future, is in comparing different cohorts over a longer period of time. For instance, entrepreneurs from one a set of entrepreneurial ventures taking part in the program as opposed to another set of of entrepreneurs from a

different set of entrepreneurial ventures, who are not taking part in the program, with action learning sampled as a longitudinal study. This could eventually indicate that desired results could be reached by the parties and the entrepreneurs would reach the expected benefits in the future context. This shows that other sectors remain vital areas for the research and the benefits are likely to be high in this context.

It is also important to continue to conduct studies of this nature to evaluate the continuous impact on the context of the results, and the benefits that these outcomes produce, as longitudinal research will help generalising the findings further. Studies of in this nature ensure whether the outcomes are likely to be effective in nature where the influence of accelerators towards entrepreneurial learning is concerned.

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Appendix A – Systematic Literature Review (Supplement)

Search criteria

"entrepreneurial learning"

Journals

"Education And Training"

"Industry And Higher Education"

"International Journal Of Entrepreneurial Behaviour And Research"

"Journal Of Small Business And Enterprise Development"

"Journal Of Business Venturing"

"Journal Of Entrepreneurship Education"

"International Journal Of Entrepreneurship And Small Business"

"Entrepreneurship And Regional Development"

"Entrepreneurship Theory And Practice"

"International Small Business Journal"

Review analysis across 61 publications

Category	Description	Total number of papers
1	Directly related to the thesis research question	11
2	Related to the thesis research question	22
3	Not directly related to the research question	28

Review details

Authors	Title	Year	Source title	Category
Kubberød E., Pettersen I.B.	The role of peripherality in students' entrepreneurial learning	2018	Education and Training	2
Watson K., McGowan P., Cunningham J.A.	An exploration of the Business Plan Competition as a methodology for effective nascent entrepreneurial learning	2018	International Journal of Entrepreneurial Behaviour and Research	2
Kenny B., Rossiter I.	Transitioning from unemployment to self-employment for over 50s	2018	International Journal of Entrepreneurial Behaviour and Research	3
Ramsgaard M.B., Østergaard S.J.	An entrepreneurial learning approach to assessment of internships	2017	Education and Training	2
Kurczewska A., Kyrö P., Lagus K., Kohonen O., Lindh-Knuutila T.	The interplay between cognitive, conative, and affective constructs along the entrepreneurial learning process	2017	Education and Training	2
Zozimo R., Jack S., Hamilton E.	Entrepreneurial learning from observing role models	2017	Entrepreneurship and Regional Development	2
Hahn D., Minola T., Van Gils A., Huybrechts J.	Entrepreneurial education and learning at universities: exploring multilevel contingencies	2017	Entrepreneurship and Regional Development	3
Shirokova G., Osiyevskyy O., Morris M.H., Bogatyreva K.	Expertise, university infrastructure and approaches to new venture creation: assessing students who start businesses	2017	Entrepreneurship and Regional Development	3

Arpiainen R.-L., Kurczewska A.	Learning risk-taking and coping with uncertainty through experiential, team-based entrepreneurship education	2017	Industry and Higher Education	3
Preedy S., Jones P.	Student-led enterprise groups and entrepreneurial learning: A UK perspective	2017	Industry and Higher Education	2
Lockett N., Quesada-Pallarès C., Williams-Middleton K., Padilla-Meléndez A., Jack S.	'Lost in space': The role of social networking in university-based entrepreneurial learning	2017	Industry and Higher Education	2
Refai D., Higgins D.	A mystagogical view of 'withness' in entrepreneurship education	2017	Industry and Higher Education	3
Secundo G., Schiuma G., Passiante G.	Entrepreneurial learning dynamics in knowledge-intensive enterprises	2017	International Journal of Entrepreneurial Behaviour and Research	1
Kubberød E., Pettersen I.B.	Exploring situated ambiguity in students' entrepreneurial learning	2017	Education and Training	2
Scarmozzino E., Corvello V., Grimaldi M.	Entrepreneurial learning through online social networking in high-tech startups	2017	International Journal of Entrepreneurial Behaviour and Research	2
Rae D.	Entrepreneurial learning: peripherality and connectedness	2017	International Journal of Entrepreneurial Behaviour and Research	1

El-Awad Z., Gabrielsson J., Politis D.	Entrepreneurial learning and innovation: The critical role of team-level learning for the evolution of innovation capabilities in technology-based ventures	2017	International Journal of Entrepreneurial Behaviour and Research	2
Walsh G.S., Cunningham J.A.	Regenerative failure and attribution: Examining the underlying processes affecting entrepreneurial learning	2017	International Journal of Entrepreneurial Behaviour and Research	2
Secundo G., Del Vecchio P., Schiuma G., Passiante G.	Activating entrepreneurial learning processes for transforming university students' idea into entrepreneurial practices	2017	International Journal of Entrepreneurial Behaviour and Research	2
Cannavacciuolo L., Iandoli L., Ponsiglione C., Zollo G.	Learning by failure vs learning by habits: Entrepreneurial learning micro-strategies as determinants of the emergence of co-located entrepreneurial networks	2017	International Journal of Entrepreneurial Behaviour and Research	2
Cantino V., Devalle A., Cortese D., Ricciardi F., Longo M.	Place-based network organizations and embedded entrepreneurial learning: Emerging paths to sustainability	2017	International Journal of Entrepreneurial Behaviour and Research	3
Günzel-Jensen F., Robinson S.	Effectuation in the undergraduate classroom: three barriers to entrepreneurial learning	2017	Education and Training	
Soetanto D.	Networks and entrepreneurial learning: coping with difficulties	2017	International Journal of Entrepreneurial Behaviour and Research	2

Passaro R., Quinto I., Thomas A.	Start-up competitions as learning environment to foster the entrepreneurial process	2017	International Journal of Entrepreneurial Behaviour and Research	1
Ben Mahmoud-Jouini S., Paris T., Bureau S.	Developing knowledge from entrepreneurial actions – toward a taxonomy	2017	Journal of Small Business and Enterprise Development	3
Mansoori Y.	Enacting the lean startup methodology: The role of vicarious and experiential learning processes	2017	International Journal of Entrepreneurial Behaviour and Research	1
Hoppe M., Westerberg M., Leffler E.	Educational approaches to entrepreneurship in higher education: A view from the Swedish horizon	2017	Education and Training	3
Gemmell R.M.	Learning styles of entrepreneurs in knowledge-intensive industries	2017	International Journal of Entrepreneurial Behaviour and Research	1
Robert F., El Shoubaki A., Lasch F., Dana L.-P.	Linking types of ICT entrepreneurs to new firm survival	2017	International Journal of Entrepreneurship and Small Business	2
Thrane C., Blenker P., Korsgaard S., Neergaard H.	The promise of entrepreneurship education: Reconceptualizing the individual–opportunity nexus as a conceptual framework for entrepreneurship education	2016	International Small Business Journal	2
Loi M., Castriotta M., Di Guardo M.C.	The theoretical foundations of entrepreneurship education: How co-citations are shaping the field	2016	International Small Business Journal	3

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Coad A., Frankish J.S., Roberts R.G., Storey D.J.	Why should banks provide entrepreneurship training seminars?	2016	International Small Business Journal	3
Hägg G., Kurczewska A.	Connecting the dots: A discussion on key concepts in contemporary entrepreneurship education	2016	Education and Training	3
Robinson S., Neergaard H., Tanggaard L., Krueger N.	New horizons in entrepreneurship: from teacher-led to student-centered learning	2016	Education and Training	3
Saukkonen J., Nukari J., Ballard S., Levie J.	Start-up entrepreneurs and university students in a co-learning mode: Learning effects of a collaborative entrepreneurial coaching programme	2016	Industry and Higher Education	3
Hajizadeh A., Zali M.	Prior knowledge, cognitive characteristics and opportunity recognition	2016	International Journal of Entrepreneurial Behaviour and Research	3
Mehta A., Yoon E., Kulkarni N., Finch D.	An exploratory study of entrepreneurship education in multi-disciplinary and multicultural environment	2016	Journal of Entrepreneurship Education	3
Kyrö P.	The conceptual contribution of education to research on entrepreneurship education	2015	Entrepreneurship and Regional Development	3
Harrison R.T., Mason C., Smith D.	Heuristics, learning and the business angel investment decision-making process	2015	Entrepreneurship and Regional Development	1

Pittaway L.A., Gazzard J., Shore A., Williamson T.	Student clubs: experiences in entrepreneurial learning	2015	Entrepreneurship and Regional Development	1
Ekanem I.	Entrepreneurial learning: Gender differences	2015	International Journal of Entrepreneurial Behaviour and Research	2
Hietanen L.	Entrepreneurial learning environments: Supporting or hindering diverse learners?	2015	Education and Training	2
Brink T., Madsen S.O.	Entrepreneurial learning requires action on the meaning generated	2015	International Journal of Entrepreneurial Behaviour and Research	2
Lefebvre V., Radu Lefebvre M., Simon E.	Formal entrepreneurial networks as communities of practice: a longitudinal case study	2015	Entrepreneurship and Regional Development	3
Rahman H., Day J.	Involving the entrepreneurial role model: A possible development for entrepreneurship education	2015	Journal of Entrepreneurship Education	2
Feldmann B.D.	Dissonance in the academy: The formation of the faculty entrepreneur	2014	International Journal of Entrepreneurial Behaviour and Research	3
Wang C.L., Rafiq M., Li X., Zheng Y.	Entrepreneurial preparedness: An exploratory case study of Chinese private enterprises	2014	International Journal of Entrepreneurial Behaviour and Research	1

Lagrosen S., Lind L.	Immigrant entrepreneurship: The role of relationship marketing in learning networks	2014	International Journal of Entrepreneurship and Small Business	2
Rahman H., Day J.	Involving the entrepreneurial role model: A possible development for entrepreneurship education	2014	Journal of Entrepreneurship Education	3
Hörnqvist M.-L., Leffler E.	Fostering an entrepreneurial attitude – challenging in principal leadership	2014	Education and Training	3
Chang J.Y.C., Benamraoui A., Rieple A.	Stimulating learning about social entrepreneurship through income generation projects	2014	International Journal of Entrepreneurial Behaviour and Research	3
Rae D.	The Contribution of Momentary Perspectives to Entrepreneurial Learning and Creativity	2013	Industry and Higher Education	1
Nwankwo S., Gbadamosi A.	Faith and entrepreneurship among the British African-Caribbean: Intersections between religious and entrepreneurial values	2013	Journal of Small Business and Enterprise Development	3
Tseng C.-C.	Connecting self-directed learning with entrepreneurial learning to entrepreneurial performance	2013	International Journal of Entrepreneurial Behaviour and Research	3
Owusu-Manu D., Afrane S.K., Badu E., Edwards D.J., Brown M.	Redefining Entrepreneurial Learning Paradigms in Developing Countries: A Case Study of Ghana	2013	Industry and Higher Education	2
Pittaway L., Thorpe R.	A framework for entrepreneurial learning: A tribute to Jason Cope	2012	Entrepreneurship and Regional Development	1

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Man T.W.Y.	Developing a behaviour-centred model of entrepreneurial learning	2012	Journal of Small Business and Enterprise Development	1
Rae D.	Action learning in new creative ventures	2012	International Journal of Entrepreneurial Behaviour and Research	1

Appendix B - participant recruitment permission

Information & Communication Technology Agency of Sri Lanka

An Initiative under the Presidential Secretariat

Entrepreneurship Commercialization and Innovation Center
Level 5, Nexus 10 Building
10 Pultney Street
The University of Adelaide
SA 5005 Australia

TO WHOM IT MAY CONCERN

Recruitment of SPIRALATION participant companies for research.

We are pleased and honoured to note that the SPIRALATION program of ICTA, Sri Lanka has been considered for the research carried out at your esteemed university.

At present, Sri Lanka is fostering ways to support the economic development of the country. ICT lead entrepreneurship development has been considered to play an integral role in realizing this vision. ICTA as the Apex government body established to develop the economy of Sri Lanka through Information and Communication Technologies (ICT) is heavily investing on strategies to support the ICT entrepreneurs of the country. At the time of writing this letter, SPIRALATION is the only government supported program to facilitate start up entrepreneurs and the only program with grant funding for tech start-ups. The structure of the program is based on best practices followed in the developed and the developing countries on such initiatives. We have successfully carried out the program for the past 3 years and established strategic links with 21 external organizations to support the endeavour.

We are certainly interested in collaborating with ECIC, University of Adelaide, in publishing the research findings in journals and through its learnings improving our program further.

Please consider this as the formal acceptance of your invitation to recruit the participants of ICTA SPIRALATION program for the research carried out by Mr. Manjula Dissanayake on entrepreneurial learning. Let me know if you have any clarifications and look forward to establishing a long term relationship with your university.

Thank you.

Your's sincerely,
ICT Agency Of Sri Lanka

Riyaz Hudah
Programme Head - Private Sector Development

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Appendix C – interview protocol

Participants were asked additional questions not addressed in this dissertation.

Category	Question	Rationale
INITIAL INTERVIEW		
Basic business/entrepreneur understanding	What was the motivation to start your business? What is your business? What is your role as a co-founder?	To gather the life story of the entrepreneur and understand their business
Unbiased learning needs	Did you perceive a need for learning? If Yes, what sort of learning support did you need for your business? What does entrepreneurial learning mean?	To determine the challenges they are hoping to overcome through learning and to understand the benefits/value they are expecting through learning
Unbiased learning expectations	What do you anticipate from the accelerator for you your team and your new venture from a learning perspective?	To establish the anticipated role of an entrepreneur support program
Coverage of the program	What learning needs have been covered from the program so far?	To identify the areas covered under the program
Expectations of the programs	What learning's do you expect to achieve in the future?	To identify the areas that are being expected to be covered through the program

DURING LEARNING JOURNAL		
Learning moments	Have you had any aha moments since we spoke last?	To understand the learning moments
Reflect on the previous learning moments	What happened to the previous aha moments?	To understand the life cycle of the previously occurred learning moments
Means of learning	What were the means of learning that you experienced from the program such as seminars, workshops, networking events?	To determine the means that have been covered through the program
Application of learning	What learning's have you been able to apply for your business?	To determine how the application of learning has been applicable to business strategy and development
Application of learning	How has the learning shaped the way you do your business?	To validate the application of the learning to business strategy and development.

Appendix D – script on participant briefing

At a cohort level, the entrepreneurs were briefed on the research objectives. Following script is based on the amendments that were made after the 3 pilot participants through initial interviews and subsequent learning journal oriented conversations. Following issues of the pilot interviews were addressed to derive the final participant briefing script;

Issue during the pilot with interviewees	Resolution actions taken by the researcher
During the pilot interviews, all the interviewees associated learning to their formal qualifications.	Incorporated a preamble to explain the learning phenomenon in the context of the research. Used the description of "ways in which you overcome the challenges" as a strategy to help them relate to the interested construct – entrepreneurial learning, in a manner that is relevant to the entrepreneurs.
Explaining the learning journey regularly without repeating themselves was found to be a challenge for the participants.	Included the "aha moment" construct to carryout an on-going dialog with the participants. "Did you have any aha moments since we touch-based last? What happened to the previous aha moments that we discussed last?"
Interviewees had their own interpretations on the journey of their new venture based on their own circumstance.	Included Osterwalders' business model canvas (as it is a part of the accelerator syllabus) as a blue print during the participant briefing for the entrepreneurial journey for the venture.

Initial research briefing (Group presentation)

I am Manjula Dissanayake a researcher at University of Adelaide. Together with Dr Allan O'Connor and Dr Barrey Elsey of University of Adelaide – Entrepreneurship Commercialisation and Innovation Centre (ECIC), I am carrying out a research to understand the influence of this one and only government accelerator in Sri Lanka – Spiralation on the entrepreneurial learning that you are experiencing.

An entrepreneur is someone who learns a lot from different sources. As an incorporated startup in the Spiralation program, you are no more an individual thinking of an idea. All of you work in a team with your co-founders, based on the mandate of Spiralation.

During your learning experiences you would have linked from different ways whether some of these ways are contrasting or not.

You would have already discussed the business model canvas, if not you will discuss about it during the Spiralation program itself. Essentially during the startup journey, you may explore all or most of the elements of the business model canvas as you progress your startup.

I will be talking to you to understand your learning journey during your time at Spiralation to carryout this important research on the influence of Spiralation towards your learning experience.

All your interview data will be treated with strict confidence and your identity will not be revealed during any research publications. You will also be receiving the research ethics guidelines we are following as a mandatory requirement of the university. Feel free to get in touch with myself or the university should you have any clarifications. Thank you for being present today and accepting the invitation to participate in this research study.

Appendix E – ethics approval

THE UNIVERSITY
of ADELAIDE

RESEARCH BRANCH
OFFICE OF RESEARCH ETHICS, COMPLIANCE AND
INTEGRITY

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CRICOS Provider Number 00123M

Applicant: Dr A O'Connor

School: Entrepreneurship, Commercialisation and Innovation Centre

Project Title: *Exploratory study of entrepreneurial learning and the influence on*
entrepreneurial strategy development - Case of Sri Lankan ICT Start-up
entrepreneurs

THE UNIVERSITY OF ADELAIDE HUMAN RESEARCH ETHICS COMMITTEE

Project No: H-2013-079   RM No: 0000017357

APPROVED for the period until: **30 September 2016**

It is noted that this study will be conducted by Mr Manjula Dissanayake, PhD student.

Refer also to the accompanying letter setting out requirements applying to approval.

Dr John Semmler   Date: 25 SEP 2013
Convenor
Human Research Ethics Committee

Appendix F - Sri Lankan budget summary 2017

Extract from the budget summary indicating the government priority of fostering entrepreneurship.

1. Enterprise Sri Lanka

- Social safety nets mechanism introduce to protect small business.

- Establish a Development Bank to access financing for SMEs.

- Government will bear the interest subsidy on finance facility provides to SMEs under Enterprise Sri Lanka Credit Scheme. Interest subsidy for women entrepreneurs is 10% more relative to others. And, differently abled will also be eligible interest subsidy of 15% more relative to others.

- During 2018-2020, Government will support for;
  - formation of 50 agro and fishery companies
  - 25 majority women owned companies, and
  - 150 youth centric startups.

  These companies will have at least 10 equity shareholders and each shareholder, will have invested at least Rs. 10,000.

- "Erambuma Credit Scheme" will introduce to supports the startups with a credit facility of Rs. 1.5 million per annum per idea per person with a Government Guarantee

- "Tuk Tuk" entrepreneurs: Since "tuk tuk" increasingly become a tourist attraction, Government planning to provide hospitality training to support the creation of "tuk tuk" entrepreneurs. And, Three Wheeler Regulatory Authority will established to monitor their conducts.

2. Information technology

➢ SME Guarantee Fund will be extended to the "IT Initiative" and the exporters who require support.

➢ Finance 50% of the Rent expenditure for 24 months of tech-startups.

➢ The Government will finance the "IT Initiative" by providing Rs. 3 billion over a period of 3 years.

➢ Provide both financial and non-financial support by way of grants, equity investments, credit facilities, mentoring, technical support etc. to:
  ♣ Local startups
  ♣ Attract foreign startups
  ♣ Small and medium IT companies with a turnover around USD 2-3 million per annum to at least double their revenue in 3 years.
  ♣ Create the enabling environment by supporting establishment of Incubators, the acquisition and augmentation of skills and know-how in collaboration with the local universities etc.

➢ Mechatronic Enabled Economic Development Initiative (MEDI) to support Product Design Engineering.

➢ Introduce Genomics, Coding, Robotics and Nanosceince into our school curricula.

➢ Smart Class Room" concept will be strengthened.

➢ Colombo University will introduce new streams such as Data Science, Big Data analytics, Actuarial studies, Business analytics etc.