

Strategy-making in Tech SMEs and start-ups in Ireland: theory and practice.

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Submitted to the National College of Ireland, August 2019

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Acknowledgements

Firstly, I wish to thank my supervisor Nicole Gross for her patience and assistance for all the guidance and advice throughout my research.

Secondly, I would like to thank the four companies that took part in my research: Equine Medirecord, D4H, Logograb, and Tenable.

Finally, but by no means least, I wish to thank my family and my friends.

Abstract

Background: Ireland now is a place of an innovative environment that encourages and supports tech start-ups and small and medium-sized enterprises (SMEs) in the market to grow, by which makes Ireland an attraction for co-founders and other foreign tech companies to come and establish their business. As a result of such a highly competitive market means high barriers for new venture creations to enter the market. Nevertheless, this did not stop new companies from growing; and this can be seen in the latest figures from the centre of statistics in Ireland.

Objective: The objective of this study is to examine and explore in more detail how the strategy-making process works, and find out whether theories and methodologies in academia are helpful enough for chief executive officers (CEOs) of tech SMEs and start-ups in Ireland to make strategic decisions. This research works on filling the gap between what academia argue are useful methods to make strategies compared to what is really happening in practice with those companies.

Research Method: The Primary data was obtained through four interview case studies to gather information and the grounded theory mythology was implemented for the analysis of the collected data. The sample size was four tech companies comprised of two SMEs and two start-ups.

Results: It was found that SMEs enjoy a combination of organisational structure and environmental social elements that endure team collaboration, that allows for creativity, innovation and the ability to be closer to customers and react faster to change in competition in the market, where academia does not have much space in the whole process.

Key Words: strategy-making, new venture creation, tech, Ireland

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Chapter 1: Introduction

1.1 Background of the Research

Strategic management studies are filled with many tools and techniques that have been developed for businesses to find and explore opportunities in the market, sustain success and growth, while competing against other rivals in the market. Relying on these methodologies by managers making strategic decisions and to understand the business environment has not been found to be enough and this process requires more than just applying methods or techniques according to Carter et al., (2008). Afterward, researchers started to find out that the strategic decision making incline social elements due to the interaction between people in the organisation (Vaara and Whittington, 2012), this field of study resulted in studying strategy-making from practical perspective and examining the relationship between managers and strategy-making theories both effect on each other (Jarzabkowski et al., 2015). Strategic management works nowadays with both branches - the theoretical and practical, to help managers to engage in better strategy-making. Yet, a lot of managers still face a lot of challenges in finding a balance between implementing these methodologies and what the reality requires. Especially, when it comes to a newly created venture (tech SMEs and start-ups), which is a small organisation with limited capabilities which works on harnessing more resources and finding new methods to exploit opportunities to overcome the challenges of their high uncertainty innovative procedures (Xia and Liu, 2017), coupled with the challenge of competing in the market with big organisation. Tech SMEs and start-ups are regarded as a very risky investment due to their high rate of innovation (FakhrEldin, 2018), that makes thinking strategically an intensifying task for managers, in addition to the need for an entrepreneurial mind-set for creativity and problem-solving skills. This unique managerial environment that Tech SMEs and start-ups enjoy by relying on their scarce expertise to create opportunities in society by getting support from their social capital and relying on data analysis to make strategic decisions that are comprised of explicit and implicit patterns of activities.

1.2 Research Problem

This research is concerned with theoretically as well as empirically exploring whether or not it is helpful for Tech SMEs and start-ups to rely on academia in their decision making during the strategy-making process, whilst at the same time exploring in more detail the factors which influence the strategy-making process in practice.

1.3 Justification of the Study

The tech industry in Ireland is experiencing a significant level of growth of SMEs and start-ups according to the Department of business, enterprise and innovation (2017) "They generate more than 70% of all jobs in the non-financial business economy, approximately 4 percentage points more than the EU average. Conversely, they generate only 36.6 % of value added". Therefore, it will be very useful for the current companies and future entrepreneurs to figure out how the strategy-making process works, in order to help them in better understanding of the process of making strategies, and encompass the most important activities that are played by tech to new organisations in Ireland.

1.4 Research Questions

How is strategy-making practiced in the Irish tech SMEs? How do tech SMEs seek logic and certainty in times of change within the tech industry? What is the effect of the level of tech knowledge of managers on strategy-making?

Chapter 2: Literature Review

In this section, the researcher will investigate three main themes: firstly, the essence of new venture creation. Secondly, strategy-making theory versus practice, and finally, strategy-making in tech SMEs before taking any steps on forming the research questions. While much of the current body of literature highlights how new companies compete in the markets, this research intends to explore how the strategy-making manner varies in theory versus practice.

Furthermore, this chapter will also explore further theoretical aspects related to strategy-creation in SMEs, especially how managers deal with the most contemporary challenges like adjusting to change, networking, competing, and the challenge of the level of technological experience this industry requires as well as its impact on strategic decision making. This chapter critically reviews the relevant pieces of literature whilst outlining research that allow or a further exploration of the topic how strategy-making works in the tech companies of Ireland.

2.1 New venture creation

New venture creation is recognised as an imperative driver for economic growth and development around the globe, and an essential objective governments give special attention to (O’Gorman, 2003), because it is vital to strengthen the national economies (Schwartz et al., 2013), and convert ideas into feasible, innovative businesses that exploit opportunities and resources (Kannadhasan et al., 2018)

New venture creation is a multi-dimensional and complex phenomenon that is driven by entrepreneurs, who create various frameworks to achieve business opportunities in the market and transform them into sensible outcomes by making products or services that respond to the needs of the society (Gartner, 1985). Smith et al., (2019) described new venture creation as an emergence of entrepreneurs’ ideas that advances into creating opportunities in society as a result from an interaction associated with social and experience base. And this being a result from a contagious process entrepreneurs experience among themselves that leads to a combination of entrepreneurial elements that interact to fuel other new ideas (Neck et al., 2004). Entrepreneurs play a central role in the creation process of a new venture that requires sufficient amount of creativity and problem-solving skills (FakhrEldin, 2018), which inclines non-routine activities and improvisation to either change or create new businesses by cultivating operational and dynamic capabilities (Karagouni et al., 2013).

Generally, new venture creation enjoys a high level of uncertainty regarding their status of predictions and analysis they face, yet this level of uncertainty varies depending on how entrepreneurs perceive the uncertainty of their venture and deal with change in the market (Jiang and Tornikoski, 2019). Dealing with uncertainty that comes with the creation of a new venture is through focusing on harnessing more resources and finding new methods to exploit opportunities, and overcoming the challenges of the economy and the society, in order to figure out how to penetrate the market. The inner built of new ventures’ existence is all about innovation, this nature of new ventures is mostly to escape the tension of the competition in the market by diverting from the trending business lines in the market (Xia and Liu, 2017). For

instance, the tech industrial revolution of the microcomputers and internet economy in the previous century brought many challenges (on all aspects individual, environmental, organisational, and procedural), but new venture creators transformed these challenges to emerging opportunities that became the central movement of the current new venture creation. The process of exploring opportunities and discovering various options influence the creation and the assembling process of the ongoing interdependence process of technology-based new innovative ventures to be able to successfully assemble products and services that represent the opportunity identification that aims to generate comprehensive solutions to compete with established counterparts (Tian et al., 2019).

Whether entrepreneurs are creating or discovering opportunities for the pursuit of doing business, according to Smith et al., (2019) they rely on three pillars social capital, experience and prior knowledge, but this comes in different ways that suit their directions. Both prior knowledge and experience are influenced by the current global environment, like competing internationally nowadays is not a choice (Andersson and Berggren, 2016). Relying on those previous two things is not enough, because entrepreneurs will need a lot of support (like funding and resources) across the business setup in order to recognise opportunities and grow them into a feasible business plan (Bhatnagar et al., 2018), and increase the success probability of their venture (Jiang and Tornikoski, 2019). The third pillar is the social capital that allows entrepreneurs to create networks to find resources (Zhang and Wong, 2008), and forum teams to liaise work (Li and Dutta, 2018). Economists used to say relations shape the economy, yet the current era is not just about the physical interactions between individuals but also on the web nowadays (Bakhtiari, 2016) and also being part of the economy. This means new ventures must know how to embed their actions in an ongoing social relation which will play a remarkable role in the early stages of new venture creation, in order to facilitate the resources and find opportunities (Bakhtiari, 2016).

Knowing how to exploit opportunities and use resources effectively, especially human resources, requires an entrepreneurial mind-set with highly motivated individuals who are driven by the rapid development in society to either seek necessity or opportunity-driven as an essential income generation (FakhrEldin, 2018). This entrepreneurial mind-set is a way of thinking that pushes people to take the risk in creating new products and taking the initiative in moving away from the market's norm through looking for opportunities by solving new problems and find chances in seeking customers needs (Kriewall and Makemsom, 2010). This kind of thinking started to be taught in business schools, where students undergo a learning process that comprised of four stages, at the same trying to keep a balanced approach of learning for better results (L. Wang et al., 2014). The first stage starts with cultivating inspiration to take the risk of launching a business of innovative and new ideas, then moving to the engagement and exploitation of the surrounding environment to transform the inspiration and ideas into actions, and lastly looking for an expansion and sustainment of the business (Ndou et al., 2018). This entrepreneurial mindset has been increasingly growing to be taught in universities. Considering the benefits it might bring for the creation of the society with individuals who can create

businesses that are more as a need these days than just for-profit purposes through fostering and growing innovative methods (Wenninger, 2018), methods that differs from those that are required for ordinary business types (Teixeira and Davey, 2010).

The growing demand for teaching an entrepreneurial mind-set in action base and learning by doing, resulted in more engagement with the experiment of venture creation activities that led to increase the number of new ventures created in the economy (Wenninger, 2018). Eventually, it became the heart engine of innovation for economic growth according to Löfving et al., (2014), that drives the wealth creation of national economy development in general Fritsch (2011). In Ireland SMEs, which is one of the forums of new ventures, had contributed to almost 25% of the gross value added to the economy in 2014 (CSO Ireland, 2017). This growth in the number of created new ventures raised competition in the market, which consequently pushed the new ventures to speed up in their process of creation and take actions to protect their legitimacy and resource, beside facing the depleted entry barriers in particular countries with middle and high level (Lee and Lio, 2018). For instance, in case of the legal registration for new ventures, this has to happen in the time where the company have not settled and it is still dealing with risky opportunities in the market, and engaging in innovative products or services (Tian et al., 2019).

Nevertheless, the fact that these new ventures (whether they are start-ups or SMEs) are regarded as a solid ground for innovation in the economy (Xia and Liu, 2017), and have a high rate of failure. Means they require, according to Li et al. (2019) an entrepreneurial ecosystem so they can get support, pursue ideas, resources, and improve interconnections with other actors in the economy. That is why countries are working on increasing the number of start-up and SMEs, as well the existence of incubators, which gives new ventures access to networks and technology that allow for exchange information and learning as part of business support (Njau et al., 2019). The creation of an entrepreneurial ecosystem environment encourages the establishment of new venture creation, which is something governments and policymakers around the world are working on for the pursuit of supporting the creation of a new venture. For example, in less developed countries it was found that, new venture creations had contributed to almost 60% of employment and utilised in the creation of an equal society with a growth rate almost 70% of Ghana's GDP (Abor and Quartey, 2010). This represents how new venture can be a crucial part in fostering economic development and providing opportunities for the society to have jobs (FakhrEldin, 2018). This is why many countries are working on developing pre-conditions for entrepreneurship and understand the process that leads to new venture creation, especially for its effect as a remedy to the economic problems O'gorman (2003). For instance, the German government, according to Schwartz et al. (2013), had implemented many policies to improve the environment of SMEs and start-ups with schemes and competitions events. Alternatively, the case of the Irish government's intervention in the development of high tech ventures in Dublin, an intervention put Ireland among the counties with the most entrepreneurial activities to influence the R&D transition O'gorman (2003).

The requirement for an exceptional environment for the creation of new venture goes to their behaviours in markets by following an innovative approach. Laforet and Tann (2006) argued

that this environment is a must for the creation of new ventures because the process they follow to be created inclines loads of efforts that have to be made in order survive, succeed, and maintain increasing market shares, and most importantly due to the high level of competition with other companies they are exposed to. In addition to all that, thorough analysis and understanding will involve this process, that could extend over a significant period of time, and persistence work to keep trying to start a venture and move forward (Meek and Williams, 2018). Xia and Liu (2017) explained new ventures' behaviour in something called the dependency theory. Dependence theory explains entrepreneurs behaviour in a way that they are created by striving individuals who either imitate or make changes on the product while taking into account the institutional setting of the country they are operating in, imitations or changes can mean radical and rapid changes before the competition intensify and catch up. The purpose of this adaptation is to compete against rivals, given the new ventures' durable survivability and resilience to change and adapt in the pursuit of the creation of opportunities to shock the market or a discovery opportunity that undertakes search-driven as a response to other factors. This leads to the idea that the creation of new ventures is very crucial for the development of the economy and society, something the governments in different countries sensed and began or have already started to support. Their high uncertainty and their positive impacts on the society and the economy is questioned on different levels, and on how bringing new inventions and ideas can be transformed into businesses, and how this entrepreneurial mind-set to taking the risk and challenge the norms works. They are combined with social capital to gain support.

2.2 Strategy in practice vs theory

Strategy-making is a vast topic in management because of the many challenges managers face during the process of making strategies. This segment will explore the differences between strategies in academia (methodologies) and strategy in practice. Trying to explore each side separately and find whether the mix of two (practice and theory) can be utilised in helping strategists and consider what and how to implement them in strategy-making.

Strategic management in literature is comprehensive, with many tools and techniques that have been developed. In an interview with Porter, undertaken by Argyres and McGahan (2011) on strategy-making, Porter described the primary principles of strategies in business is majorly about knowing how to compete and succeed in the market, by saying in one of his articles "Positioning—once the heart of strategy—is rejected as too static for today's dynamic markets and changing technologies. According to the new dogma, rivals can quickly copy any market position, and competitive advantage is, at best, temporary" (Porter, 1996) p.1. However, the reason that these principles are still discussed in the literature is because they are continuously changing, since they are built through a set of relationships that mainly directed in the pursuit of profitability, and the current era encounters daily changes affecting these relationships because of technology, globalisation, and human's behavior. Reality requires more than just relying on management education; something will not be adequate. The reason these taught methods in business schools on how to compete and succeed in the market (like Swot, porter five forces, and PESTL or even using a higher level of forecasting, like regression model) are mostly used

to simplify the teaching environment. A simplification has compromised the complexity of the real environment of the market and a lot of researched questioned whether students benefit from this kind of education after moving into the real world and be able to produce better action learning in crafting strategies (Adya et al., 2009). Therefore, many kinds of literature questioned the effectiveness of management education on students in making strategies decisions and whether it should not be done through a series of simplified forecasting tasks that easy to remember and have been used before in order to figure out how to succeed in the market (Adya et al., 2009). Thus, the current managerial paradox requires managers to think in different dimensions almost in a 3D dimension where they find themselves using more than one managerial tool, in attempt to get different perspectives dealing with uncertainty, solve the complexity of the issues that comes with this paradox, and guide their thinking process. Leading to experience anxiety for the risk of a possible loss, because of management education filled with many methodologies. Wright et al., (2013) have studied 12 popular strategic tools. They found that each methodology provides a different set of perspectives and ideas, and managers mostly look for methodologies that can be easily communicated and help to conclude with others. However, Wright et al., (2013) in their paper about the usefulness of strategic methodologies, questioned whether the organisation setting affects theories in practice with a manger to validate or invalidate certain kind of methodologies and the logical aspects of using a diverse range of strategic management methodologies. On the other hand, Qehaja et al., (2017) found most managers do not usually use many of these strategic tools and methodologies, and some of them are more used than others, even after knowing these tools and methodologies have different ways of helping to understand the business environment opportunities and threats.

All these strategies theories are methods that enable managers to engage in making strategy rather than taking the right decision. Something researched found actors play a major role in the implication of strategy tools. And it is not which methodology is correct to use or not; it is more about the way it is used and the purpose behind using it (Jarzabkowski et al., 2015). However, the limitation in the current period of huge uncertainty, where strategists find them-self in inappropriate situations where they have to use these other methods non-traditional and have not been taught in business schools. In the end, making strategy is not something managers learn for once, yet it is a development process, which encompasses continuous learning practices to cultivate and develop strategic mind-set. For example, nowadays, business schools started to formulate a way of breaching the discontinuity between theory and strategy in practice. They can do this by using new methods of teaching strategies, like a computer simulation of the environment and what scenarios might happen while changing the composition of the strategy, in order to capture managerial, strategic thinking match with what the workplace needs (Kaliappen, 2019)

Vaara and Whittington (2012) argued that strategy in practice is about bringing social theories into strategic management. This means strategies are not something the organisations own, it's more about what people do and the outcomes of the interaction between individuals in the

organisation, and relying on strategic mythologies and tools by itself do not cover how complex the real world is and due to the rapid changes in the world, using them can be rigid. Consequently, looking at the big picture of organisations' strategies, it can be seen that they are more than just implemented methodologies that are designed and aligned with the business goals, it encompasses to social activities and the influence of the cognitive capabilities of managers on the application of these strategic methodologies. Here comes the term strategy as practice according to Carter et al., (2008) that studies the role of the human touch in constructing the flow of activities through the interaction of multiple actors and actions. Wherever the benefits of strategic methodologies and frameworks are not ready made-solutions framed for designated problems or situations, their outcomes differ according to the way they were used and the circumstances that surrounded them Knott (2006). According to Carter et al., P.83 (2008), strategies are a way that leads "the organisation through changes and secures its future growth and sustains success." And we can noticeably find that Mintzberg is absent from current literature on strategy-making, the reason, according to Carter et al., (2008) is because researchers on strategy as practice stand for dealing from the bottom up with the micro activities and simple theories, while theories (like Mintzberg's theories) looks to strategy from the top, something that is almost dated and out of fashion. An explanation on how methodologies sometimes are hard to implement can be seen in the blue ocean strategy and its canvas tool still, that do not have a clear pattern on how they work, because it mostly relies on naïve concepts which are not always applicable to be implemented in every market (Agnihotri, 2016). Consequently, it can be said that methodologies on strategies are centralised around the analyses of the firm or the industry-level effects on firm performance and there was not much space for emotions, motivations, and actions to shape strategy (Jarzabkowski and Spee, 2009).

Nowadays, a lot of studies have been studying the connection between managers and strategy-making. Like Eggers and Kaplan (2013) they found different performance can be traced to the deployment of cognitive capabilities of a manager and link them with the organisation capabilities and how both are intertwined, and how managers can affect the interpretation of the environment and transform it into opportunities. Also, Powell (2017) found that strategic managers can achieve remarkable performance when they can deeply understand the behavior and the doing of activities. Because not all theories and methods are established on the premise that organisations can achieve superior performance, it only happens when managers think about how to obtain competitive advantages through attentive doing of activities. Each of Jarzabkowski et al. (2007); Cabantous and Gond (2010); Vaara and Whittington's (2012) had looked to the general overview of strategy-making and they found out that it was comprised of three elements practitioner represents the managers part, praxis the social aspect of activities, and practices that deals with behavior and cognitive capabilities and how does it affect the strategising process. Jarzabkowski et al. (2007) argued that even after discovering the three dimensions of strategising and considering the social aspect of the process; there is a missing puzzle of how do managers act outside the firms and how methodologies affect that. While strategic management is still a young science in its early stages of development, it is significant how many methods and techniques have been discussed so far concerning strategy and the

extent of their maturity to engage in day-to-day businesses in literature. Nevertheless, thinking strategically had been intensifying day by day since the challenge of the social-economic-political reality that is driven by technology (Yorks and Nicolaidis, 2012), and the majority of organisations find it hard to adapt to a highly structured approach in planning strategies, it was also found that often strategy techniques and methodologies are amended by combining their experience with theories and utilise it in the available tools when circumstances dictate according to Stonehouse and Pemberton (2002).

The added value form strategy as the practice had explained theories and deepen our understanding of strategy-making without tapping into the praxis on the ground, it is hard to explain strategic practices like planning and most of the social science aspect of it, which eventually will promote strategy innovation Whittington (2006). Therefore, the reason why teaching strategies should be more practical is that methodologies lack the messy reality of doing strategies in practice, and just to inform the students about the methodologies and theories in academia will show the sociological lens on that help them to acquire practical wisdom in doing strategies (Jarzabkowski and Whittington, 2008). But at the same time, an organisation should be careful from strategies practices becoming the formal procedures of organisations, and this will be the action that can't be changed (Carter et al., 2008). Because the interactions between people in the organisation and the way it works is another element that should be considered in the strategy-making process, and according to Paroutis and Pettigrew p.102 (2007) strategists "face a choice between recursive ways of acting that are based on routines while at the same time developing adaptive and creative approaches to strategy development and implementation" where they also emphasised the interaction between team members in strategy development.

In conclusion, having strategy in business is about the conflict between the need to change and stability, while dealing with the concurrent circumstances. The worry is when a gap between theories of what managers have to do and what the reality actually emerges, and the dilemma that strategies are not something the firm has it, but rather it is about what the firm is doing. Jarzabkowski (2004) in her research found more analysis is needed into strategies in practice to understand the strategic behavior of a firm and how the effect of the early stages of the firm's life cycle or the external environment has a significant influence of strategy process. Moving forward, Fenton and Langley (2011) talked about the cohesiveness of strategic trajectory and organisational activity – it is hard to see whether or not these are successful. Therefore communication is a valuable element to approach strategy in an organisational setting. There are two exciting viewpoints about both, strategy in practice versus strategy in theory. The first goes to Whittington (2007) who sees that both practice and academia are like cousins whereas strategy as the practice looks to things from the sociological eye and on the other hand strategy needs all other sorts of things like procedures, routine and resources. The second to Chia and MacKay (2007) who saw strategy content studies look at organisations from distance and strategy as the practice looks at how the strategy emerges.

2.3 Strategy-making in tech SMEs and start-ups

This part mostly focuses on the anatomy of strategy-making in SMEs and start-ups regarding the previous two parts of the literature which helps in understanding the dilemma that faces these organisations in the strategy-making process while dealing with innovation as a central part of their competitive strategy — highlighting the most contemporary issues in strategy creation in tech SMEs, which it is mostly crafted in relation to the research's objective in order to explore the most current studies about the nature of strategy-making in tech SMEs and start-ups.

The rate of innovation in tech SMEs and start-ups is required to be high in order to establish different sets of frameworks to compete in the market by relying on open innovation, whether this innovation dependence is coming from an inner or outer R&D, to find new ways to improve the performance (Kraus et al., (2019). The reason behind this level of innovation is because SMEs and start-ups deal with circumstantial differences like financial capabilities and technical capabilities that differentiate them from the traditional linear strategy other kinds of the organisation follows to overcome their newness and smallness. The fact that SMEs and start-up face more difficulties than big companies does not mean they are less player in the market of innovation or have lower growth rate (Enjolras et al., 2019). However, the relationship between innovation and strategy-making is not clear in tech SMEs and start-ups, and this relation puts managers in front of a wide range of options to create strategies in such innovative environment, where the strategy-making does not follow top-down planning process. It is more emergent in its creation, and managers have some freedom and space to act and not following already made recipes (Löfving et al., 2014).

Strategy in SMEs comprises of explicit and implicit patterns of behaviour that is based on five major components as reported by Ian Burke and Jarratt (2004): first, the aspect of dealing with competitors, where intellectual capital plays a significant role in the arena, because it is regarded as the most valuable component 'that encapsulate a firm's knowledge-based intangible assets which are associated with its operational and building strategic competitive strength' (Cohen et al., 2014) p296. For instance, branding is one of the strategic critical components of intellectual capital that represent the company and distinguish it from others in the market to achieve a distinct performance over rivals, to maintain the ability to capture the influence of customer relationship (Ahani et al., 2017), with their limited resources and capabilities to leverage their strategy to present new product and deal with complex environment (Berthon et al., 2008). Second, dealing with micro and macro environment of the market in the event of emerging speed of the global economy growth by adapting a destructive creative ways that challenge the bureaucracy and other problems that imposed by the giant organisation (Acs et al.,1997), and facing the significant challenges of taking part in the foreign operations to build internal resource and identify the critical ones in a very efficient way to find more opportunities due to the limited resources SMEs experience (Kenny and Fahy, 2011; Cici Xiao et al., 2019). The other three components of SMEs' strategies include planned activities, resource deployment, and market interaction, which necessitate the usage of the inter-

organisational system in strategic decision making (Power and Gruner, 2017). SMEs and start-ups always tried to move away from the traditional way of dealing with things, for the reason of finding a way can be managed under an affordable budget that can be innovative to create strategic brand able to engage with their customers (Odoom et al., 2017). For instance, social media is becoming a key component in strategies as a communication platform with society to inform and interact with targeted customers. These five components represent a mix of both explicit and implicit patterns of behaviour, and mostly standardised by following the same rhythm they were built on in the early stage of the creation as stated by Paik et al., (2017), because this helps in reducing cost that has a direct impact on the financial performance of SMEs. In the pursuit of focusing on R&D field, how does this affect facilitating product or service development from a strategic point of view no matter whether the R&D is resourced inbound or outbound.

On the other hand, these five components have to deal with something unique in SMEs and start-ups, which is the high risk due to the high uncertainty of these organisation's innovative operations, combined with their limited resources in human and technology, which leads to more pressure on strategists when making strategic decisions (Cantonnet et al., 2019). Consequently, this means the need for higher investment to manage that risk (Parnell et al., 2015), and integrated risk management in the strategy-making process for its positive influence on the strategic successfulness of the process and getting unique competitive advantages to the business (Power and Gruner, 2019). In order to deal with high risk, the strategy has not to be just a modest strategic plan, because this will outline a lower level of satisfaction with performance, and the strategic uncertainty will be higher. Managers have to create many strategies, where they can have the opportunity to add new technology to the market whenever the chance allows for that. Adding new products is a crucial feature for this type of organisation to embed within their business and have significant advantages to their performance (Price et al., 2018). Despite that, managers' technological knowledge and their level of experience play a significant effect concerning making a coherent strategic plan. Therefore, managers are required to be aware of information and communication technology for the creation of new technology and new product or service and most crucial in knowing how to manage this knowledge within the installed system in the organisation. Something essential for the building block of making strategies and integrating different aspects at the same time (Belitski and Liversage, 2019). Otherwise, in the case a manager experiences a lack in his/her capability to track the organisation's strategic plan after taking decisions or actions, this will result in harming the organisation. That is so crucial these days for tech SMEs and start-ups to implement business intelligence (like data mining and data analysis), this helps to deal with problems and follow everyday aspects of the business strategy and implementation procedures. Still, this is not enough because many managers are not sufficiently familiar with business intelligence (Tatić et al., 2018), and do not have the time for it; they adapt to the emerging ideas where they adapt to what they get or deliberately formulated one's Ian Burke and Jarratt (2004).

Nevertheless, in the end, managers are not encyclopedias – and do not know everything. So rigorously seek advice from the outside personal relationships like family, specialist or even by making alliances to work closer with them. Seeking alliance and support from the inner or the outer social circle can be valuable to reliable managers' knowledge in finding an opportunity (burke et al., 2004). For instance, including family members on the board of SMEs could take part in providing strategic advice through building relations and improving repudiation, according to Heuvel (2006). The idea of networking is to seek help and support that comes to play part where SMEs and start-ups form linkages with the external environment that creates competitive advantages for them, these competitive implications gives them the strategic opportunity to gain access or to control scarce resources whether it is formal or informal have to be considered (George, Wood and Khan, 2001). Networking can take form of building alliances, and longing comes again from the lack of resources and skills for the SMEs' successfulness (Díaz et al., 2011), the limited resources affect SMEs in taking rational strategic actions in connection to the complexity of the real problems. Building alliance helps in getting strategic support systems, which gives SMEs the ability to manoeuvre in the market and position themselves (Surma, 2015), these alliances help in building knowledge because knowledge is not systematically targeted in strategy creation in SMEs (Beijerse, 2000).

In short, the strategy-making process in tech SMEs and start-ups does not follow a definite pattern, and it needs tremendous support that can be fostered through relationships and alliances. Additionally, it seems that the tech environment is not an easy task for managers to deal with, and it is not clear whether it is hard for them to deal with this aspect from a managerial aspect in planning. All this, in addition to the previous two segments of this chapter, will be investigated to outline any gaps or a need for further exploration, will be in much more detail in the next chapter.

2.4 Research gaps as emerging from the literature review

It is clear that the researcher has investigated the process of strategy-making, but it is still not clear how this process is managed in an environment with high risk of two layers. The first layer, is being new in the market that require a high level of innovation, and the second is working in tech industry which is the revolution of the current era. The literature explored how the social and theoretical elements are complementary, but what they did not discuss is whether there are any elements that can be attached to improve the strategy-making process for tech new ventures, and find out what are the best practices for it. Even though they explained how the three elements of strategy-as-practice with its three pillars (praxis, practitioners, and practices), but it is still not clear whether the unique atmosphere of tech new venture plays part in the strategy making and how does even managers relate to with confidence through the strategy-making process.

Chapter 3: Research Methodology

This chapter will outline the used parameters to carry out this research on understanding strategy-making in tech SMEs by justifying the research process, instruments to collect data, and analyse the data. This chapter explores different research methods, and show the researcher's suitable choice through critical evaluation. In addition, there will be a description of the research philosophy, approach, design, techniques, methods for data sampling, collection and analysis, and a discussion of the choice of semi-structured interviews, the sample as well as the type of data analysis employed to analyse the data collected and answer the research questions.

3.1 Research Questions

The previous chapter looked on the innovative characteristic of new venture creations, and gave an overview of the differences between strategy-making in practice and theory and the dilemma the managers face between both, then the literature went deeper in understanding the previous two parts combined on understanding strategy-making in tech SMEs and the process follows it. The research questions formed after studying the literature and the recommendations given for further studies to understand real-world cases.

The aim of this study is to explore the strategy-making process from a different aspect that includes managers' knowledge and their behaviour while making strategic decisions in small and medium enterprises SMEs and start-ups in the tech industry of Ireland and the process goes with it.

The research questions carried to capture the real essence of how has the strategy been made in these companies concerning what has been found in the literature review chapter, by answering the following research questions:

- 1- How is strategy-making practiced in the Irish tech SMEs?
- 2- How do tech SMEs seek logic and certainty in times of change within the tech industry?
- 3- What is the effect of the level of tech knowledge of managers on strategy-making?

3.2 Research Objectives

An exploratory study carried out to get a picture of the strategy-making process in more details of the Irish tech SMEs, The objectives of this study were divided into three parts, as follows:

Research Objective 1: to explore what processes managers in tech SMEs adapt to create strategies and to understand which, if any at all, academic methodologies they implement

Research Objective 2: to explore what obstacles do managers face by dealing with risk and change.

Research Objective 3: to explore whether technological background affects managers in making strategic decisions.

The next parts focus on the research philosophy, research design, and data collection.

3.3 Research Philosophy

According to Saunders et al., (2011) philosophy is a term relates to two things: First to the development of knowledge and second to the nature of the knowledge. By looking for a research philosophy that fits perfectly in regrade to the research problem, which explores the reality of managers' strategic decisions for better results in a dynamic tech environment that experience continuous change. Regarding the three dimensions of philosophy ontology, epistemology, and axiology (Saunders et al., 2011), the researcher chooses to adapt interpretivism philosophical perspective instead of the other philosophical perspectives for two reasons. Firstly, pragmatism and positivism does not fit the path the researcher is taking by dealing with the research problem within the time course of two and a half months regarding the limited resources and capabilities at this stage. Beside this, positivism is more suitable with a quantitative method that aims to test hypothesis and exploring of the social element of the process, where this research is mostly about qualitative method. Secondly, the study was between whether to adapt realism or interpretivism philosophy, yet after realising how complex is the phenomenon of new venture creation from the literature in the previous chapter, interpretivism was the choice because it is a philosophy pursues studying the social behaviour with it complexity (Saunders et al., 2011). The researcher chose an interpretivist philosophy to understand the nature of strategy making from the point of managers' view, despite that there is not much data to critically assess the mental process that goes with it to define laws.

The research adapts inductive way that follows the developments of the research 's raw data. It looks at similarities and differences among the emerging findings before looking for any dynamic relationship among these data (Joel Gehman et al., 2018). The collecting data also follows the development of a theory-based on the analysis of that data to understand the nature of the problem and identify any themes or patterns to develop and generate of theory (Saunders et al., 2011). without putting any preconceptions about what relationships the research is going to deliver to give the research the ability to explore according to Joel Gehman et al (2018), and in order to discover and develop new kind of concepts that are relevant to current experiences (Gioia et al., 2013)

3.4 Research Design and method

Using the research onion created by Saunders (Saunders et al., 2011), there is still three part of the research methodology needs to be covered methodological choice, research strategy, time horizon. The choice between quantitative, qualitative or mix of both ended with a qualitative one, since it deals with using non-numerical data and gives the chance for the researcher to be creative and generate new concepts and ideas, this helps avoiding the situation in which the evidence does not address the initial research questions (Robert K. Yin, 2014). Choosing a mono method qualitative research for this study through an interview setting within a cross-case study context is to generate and capture new concepts and ideas to develop grounded-theory-bases-interpretive. Case study method is the single most profound recognition in social and organisational study (Gehman et al., (2018), that can explore dynamic environment of the Irish tech SMEs through multiple cases study research, with its contemporary data that will be

collected to investigate in a systematic way (Robert K. Yin, 2014). The case study research is a cross-sectional time horizon through getting snapshots at a specific point in time during the research period, this technique enhances the probability that the investigator will capture novel findings which may exist in the data. (Eisenhardt, 1989), the chance to apprehend the development of prior theoretical propositions to guide data collection and analysis (Robert K. Yin, 2014), and most importantly due to the limited time available to conduct this research. The research method on the strategy-making of two SMEs and two start-ups follows the guidelines of Robert K. Yin, (2014), by collecting retrospective data of the firms and exploring their strategy-making since the time of their inception. The research's questions "how" and "what" try to explore how strategists deal with uncertainty and influences managers behaviors, an in-depth exploration of the data will take place on how managers dealt with external and internal environment and competed with their rivals in the market. This exploration will conduct a comparative process of the four tech organisation in Ireland over a phone interview over the phone to address the research questions Jiang and Tornikoski (2019). The number of cases in this study, which is 4, was for the reason that multiple cases design are more compelling and more robust than single case studies, and the ability to conduct four to ten case studies is appropriate and would provide compelling support for the initial set of propositions (Robert K. Yin, 2014).

There will be some prior specification taken in place observed from the literature to help in the theory building and measure constructs more accurately Eisenhardt et al., (1989) The aim of the research is to shape an understanding of strategy-making and dig deep in the strategic thinking of managers by conducting interpretive study that highly concerned on the managers and how do they interact and perceive the world around them in order to pursue the organisation's goal. Because the previous literature mostly went into the nature of strategies and how does it work in these small and medium enterprises and they did not show how managers seek competitive advantages in a tech environment.

3.5 Data Collection

The researcher is conducted through telephone semi-structured interviews to collect primary data, they were held with four participants asking about their experience and drawing from existing qualitative studies to form the questions for the interviews that can capture their background and perspective on many topics regarding the strategy-making process. Interviews lasted on average 25 minutes, were audio-recorded, transcribed, and checked using otter website. All participants signed consent form and understood that taking part was voluntary and that they could withdraw at any time. These interviews were non-standardised, one-to-one, and face-to-face, the reason to choose such kind of interviews is because they are useful and effective method to gather 'valid and reliable data that are relevant to the research question(s) and objectives' and help to refine ideas (Saunders et al., 2011) Semi-structured interviews according to Saunders et al.(2011) Provide the opportunity to probe answers and the great significance reside in the nature that interviews can lead the discussion into areas literature about strategy in business had not previously considered. The data collection process took into

consideration the six resources of evidence Yin has talked about and the four principles of data collection (Robert K. Yin, 2014).

From considering the access to the organisations, and taking consent from the participants to record the interview, finally ensuring that the interviewer has been in an environment where he can be fully aware of the questions. The interview included some explanation to some of the questions and observe the tone and the pitch sound of the participants. Besides, the researcher worked on asking the question in a way that can maintain an ability to the participant to speak freely and at the same time observing whether he/ she is deviating from the questions of the interview.

Table 1 – Respondent and interview information

Company Info	Respondent information	Date of Interview	Duration of Interview
Case A EquineMedirecord: founded in 2016 with 2-10 employees	Respondent-1 CEO with a master in management.	8/7/2019	25 minutes
Case B D4H: founded in 2008 with 11-50 employees	Respondent-2 CEO with long experience in the Irish coast guard for 15 years.	15/7/2019	15 minutes
Case G Logograb: founded in 2012 with 11-50 employees	Respondent-3 cofounder and entrepreneur with a master degree in economics.	16/7/2019	25 Minutes
Case D Tenable: founded in 2002 with 11-100 employees in Ireland	Respondent-4 Data scientist with a PhD in data science.	20/7/2019	20 minutes

3.6 Research Sample

The research is based on a sample of four participants recruited from tech companies working in Ireland. The Participants were CEOs of tech companies working in Ireland for at least 5 years in the market. a non-probabilistic sampling-based a convenience approach, according to Saunders et al., (2011) this choice is optimal when researching as accuracy increases and the

results are more rigorous and generalizable. However, at the time of the interview, all participants were CEOs, except for one case study the interviewee was a data scientist. The researcher's goal is to get a broad range of tech companies as possible. Ireland was chosen because of its high level of innovation and a place for one of the giant multinational tech companies around the world

The resulting sample comprised as follows:

Case A

Equine Medirecord: The only regulator- approved Digital Medicine register in Ireland, and One of three Fintech and IT finalists in the 2018 Innovation Awards, the Kildare-based founded by Pierce Dargan. That works as a platform web and phone app solution which enables proper recording of medicines administered to racehorses and other bloodstock, for both horse trainers and veterinary surgeon. Where they can control and manage medicines record administration in real-time with the ability to accurately record medication and treatment details of the racehorses under their care, which simplify medical record compliance and act as the central platform for medical record compliance data. Keeping it safe, secure, and up to date. For example, you can automatically get notifications when regulation changes, or when your vet has administered medication to a horse under your care

Case B

D4H: The number one software for the readiness, response, and re-evaluation of emergencies and incidents worldwide. It was founded in Howth 2008 by Robin Blandford, combining his background in the Coast Guard with an accomplished team of computer scientists, first responders, and emergency managers. D4H has since injected global visibility into tens of thousands of operations run on every continent in the world. The team at D4H come from a wide variety of response backgrounds from public safety through to corporate crisis and emergency management. D4H provides first responders with vital need-to-know information, as well as the ability to record data in real-time, whether it is on the rugged coasts of the Atlantic Ocean, in remote mines in the Arctic Circle or on the busy streets of Boston or Chicago.

Case C

Logograb: We build the world's highest-quality technology to identify logos in images and videos. Our technology's roots lie at Google and ETH, the Swiss Federal Institute of Technology. Albert Einstein is perhaps the most famous alumnus of this prestigious institute. In essence, LogoGrab allows consumers to take a photo on their smartphone of a company's logo and, if said company is signed up to their service, the image will provide access to all manner of information about the brand, from its nearest locations to special offers affecting our patented image recognition technology for specifically detecting logos has been extremely challenging

Case D

Tenable: The world's first Cyber Exposure platform, arms Security with the visibility to see their entire cyber-attack surface at all times (from IT to Cloud to IoT to OT) and arms the CISO, C-suite and Board of Directors with the insight to focus on the issues which matter most and make better strategic decisions. It is pioneered IT Vulnerability Management company, and the creator of Nessus, which is now the world's most widely deployed IT vulnerability assessment solution. Given the rising severity and frequency of cyberattacks, which commonly occur due to a lack of basic cyber hygiene, assessing IT devices for issues has never been more important. But now they are in a new era. They are at the forefront of innovation in this new era to help organisations of all sizes to rethink how they secure the modern digital enterprise as the pioneer of the emerging Cyber Exposure market.

3.7 Data analysis methods

The data analysis was designed a step by step process mainly following Gioia et al., (2013) guidelines and notes to seek qualitative rigor analysis that involves what it is called grounded theory. Before moving on to some basic steps, it is good to mention that grounded theory is regarded as the single most profound recognition in social and organisational studies (Gehman et al., 2018), which it is about exploring prior interests and preconceptions in order to capture the organisational experience in terms that have meaning to the people living that experience. However, even though grounded theory follows inductive research, a lot of data analysis methods did not get a lot of support as being regarded a rigorous enough to demonstrate scientific advancement. that is why the grounded theory is important, because it allows for a method that conducts a systematic presentation that derived from informant centric terms and codes to form research-centric concept themes and dimension system(Gehman et al., 2018), which is viewed as the result of the researcher and the participants' mutually constructed interpretations

Coding is the basic analytic process engaged in by the researcher in grounded theory, there are three basic types of coding: open, axial and selective (Corbin and Strauss, 1990); also called first-order codes, second-order theoretical themes, and aggregate dimensions (Gioia et al., (2013). Firstly, open coding starts with looking for similarities and differences among emerging categories to give those categories labels. Secondly, axial coding inclines writing categories labels or phrasal descriptors and considers the array 2nd-order theoretical level of themes, dimensions, and the larger narrative answers the important question "What's going on here?). In this 2nd-order analysis, "in the theoretical realm asking whether the emerging themes suggest concepts that might help us describe and explain the phenomena we are observing. Once a workable set of themes and concepts is in hand, we investigate whether it is possible to distil the emergent 2nd-order themes even further into 2nd-order "aggregate dimensions".

When we have the full set of 1st-order terms and 2nd-order themes and aggregate dimensions, then the basis for building a data structure. The data structure not only allows us to configure our data into a sensible visual aid, but it also provides a graphic representation of how we progressed from raw data to terms and themes in conducting the analyses—a key component of demonstrating rigor in qualitative research (Pratt, 2008; Tracy, 2010). In this way, the act of constructing a data structure compels us to begin. thinking about the data theoretically, and this

forced “stepping-up” in abstractness does lay the foundation for balancing the deep embeddedness of the informant’s view in living the phenomenon between emergent data, themes, concepts, and dimensions and the relevant literature, not only to see whether what we are finding has precedents, but also whether we have discovered new concepts.

3.8 Research limitation

According to Saunders et al. (2011) purposive samples are not generalisable or statistically representative for the target population. Since all participants worked in CEO roles, the researcher also acknowledges that the focus of the current study would have been better if it included the other members of each company to get different perspectives on the strategy-making process. Since the limitations were disclosed, future researchers should be able to evaluate the scope of this study with regards to its limitations well.

Chapter 4: Analysis of Findings

This section introduces the key concepts behind the theory of strategy-making in tech SMEs and start-ups. The goal is to provide the background to key concepts in the theory to promote discussion. The theory is still under development. All key concepts will be explored in the following sections. The analysis will start with outlining what it is meant to make strategic decisions for CEOs in these small organisations.

Aggregate Dimensions	2nd Order Themes	1st Order Concepts
Outsourcing strategy	Advisory board	we would have an advisory board
	Academia Approaches	we try to apply some of the academic type theoretical how things should be done
	Consultants	find somebody that wants to be responsible to guide that Good
Playing small	Customer Satisfaction	when you should be everything is customer driven, gave customers very good feedback.
	Nich Market	deploying resources a way to what you think is an opportunity strategies in the market apart from being unique
	Perosnal Relationships	we have very powerful people who have endorsed us
Nuclear family	Collaboration	Again, it's easy for us because it's a very small company, collaboration, we need to be able to collaborate
	Family Envrionnement	everyone close to each other
	Teams	There is no big bureaucracy
	Trust	I have very trusted advisors on the subject
Risk-free	Practical Experience	I didn't look very much at their academic experience
	Data mining	it is quite simple in a way, you gather enough data you try to gather as much data as possible

Figure 1. Data structure

4.1 Outsourcing strategy:

- Luca: if we see that there is something that we need to achieve within their organisation, then we would try to either, you know, find somebody that wants to be responsible to guide that Good that we're looking to reach, and maybe they would use some manager and approach or maybe we hire somebody that has that.

When Luca was asked about what kind of activities his company is engaged with, he described a process of mixture of advisors and experts setting to gather and discuss the possibilities in the market and the practical aspects of it. Also he insisted on the idea of having consultants and meetings with people who are aware of the market. The other thing the CEOs emphasised on is the advisory board that included very knowledgeable individuals on a seasonal basis, in order to understand how the company manage when it finds any opportunity in the market and deal with challenges.

- Pierce: we would have an advisory board, made up of very seasoned professionals, from all different sides of businesses, obviously, from the first side, threatening side, as well as finance and marketing. And we would basically sit down and make a kind of quarterly strategies and goals that we'd like to achieve. And we basically do this, with liaising with those advisors, as well as our partners.

Despite relying on the consultants and advisors, the CEOs have mentioned that there are some kind of academia approaches have been practiced by the companies (but they did not say specifically what kind of approaches), in the pursuit of getting some kind of clear picture of the market and bring innovation.

- Luca: we try to apply some of the academic type of approach practices to understand where we need to make strategy to bring innovation and to be successful going forward. And then we just, you know, distribute the outcomes of those thoughts to the rest of the company.

This usage of theoretical practices is all about getting general knowledge of the market.

- Liliya: theoretical how things should be done, how things should go with
- Pierce: I'm not writing off or education goes wrong. It is important, it is important, because it does give you the general knowledge needed. And you know, and also the business vocabulary, I like to call us where you go in and your understanding of what, you know, even what quarterly reports are, and what kind of strategies are, you know, if you didn't study, you know, business and call it, you wouldn't understand that looking at accounts, looking at various marketing strategies. Now, I'm not saying that we go back and look at the best academic way to doing it. But I have a general knowledge from studying business of understanding what they're talking about, which I wouldn't have, if I hadn't. But you could learn that, doing it practically as well. It seems the four cases were similar in dealing with the idea of getting support from the outside and relying on the expertise of consultants and advisors

4.2 Playing small:

- Luca: when you should be everything is customer driven, because you build something that is great, but it doesn't bring any value, or you simply don't even build something that is good. And you know, it doesn't bring but you as a starting point, it's not going to have a life by definition. So usually everything that we do is client driven. So we try to, we like to have relationships with customers as much as possible, rather than just delivering them a product. And through that relationship, they would tell us what would bring value to them. And when we see that enough clients, you know, are repeating that idea what it would be bring value to them, then we would start building it. And it is our job, of course to make sure that we put together something that actually does bring them value. And if it doesn't, Well, no. Market law will get us out.

It seems that a different sets of advantages comes with companies that are small, and the first of being you are in a closer position with your customer. you don't have big business that distracted you by the huge loads of operation and the wide spectrum of your market. This means SMEs and start-ups are less sophisticated in their approach, even though with their limited resources they are more determined about investing the best of what is available .

- Pierce: if you have a very large business, and you're deploying resources a way to what you think is an opportunity, that is a high risk, when you're a small business, and you don't have many resources that are probably, I need to go to your limited resources over to an opportunity, - So it depends. I think it really depends on the size of the organisation really does dictate a lot of time how innovative it can be. And you see the big companies us have remained innovate and have some sort of element within them, that are specifically geared towards innovation and work separately from the actual company.

Liliya from Tenable and Robin from D4H stressed on the idea of understanding their customers which have led their companies to a higher level of trust with the customers

- Liliya: gave customers very good feedback.
- Robin we usually partner with other clients and they trust out product and then recommend it - take customer step by step and through other people- thorough understanding what the customer needs

Which Eventually, will make it easier for these companies to apply change and pursue customer satisfaction and this will lead to better understanding and certainty while making strategic decisions and allow managers to grasp what their customer really needs and wants.

- Pierce: it's easy to apply change and for Marks perspective, we definitely do make multiple strategies,- You know, so, yeah, it is it is. It is always a game of trying, trying to get people to trust you. And I really think that's any business, you know, when you go to buy food, you want to trust that the food is good food, and it's not. Exactly. So it's always about getting that trust in cases and credibility that the consumer can go.

On the other hand. The limited resources had enforced the mentality of finding the many ways for high profit and where big companies are not aware of by though making new products

- Luca: We're more in the business of building things that were not possible before, rather than optimising existing things, and For us, it's the product, you know, the product speak for itself. So and, you know, it's easy to benchmark us, - more about what's happening. And it links also to what we were saying before that we are more into DNA were more about building new things, rather than optimising existing things.
- Pierce: Oh, no, we make new products. So we're the first. the first software system to begin compliant anywhere in the world to replace f1 threaten the regulatory documentation. So we're the first ones to do this in the world. So we're very much new project, new product oriented, we wouldn't, we wouldn't be looking to copy anyone, we're kind of, we see ourselves as leading the market in our small little niche industry

Attracting those customers requires the companies to be specialised of understanding their niche market, and this gives managers the ability to focus on specific things instead of trying to understand everything. The four companies are specialised in a specific area and they do not have either big portfolio of products or the idea of common product. They mostly focusing on small part of the whole market to have a unique value proposition and selling point, this gives these companies the chance to craft strategies that are not easy to imitate or compete with easily, because only these companies understand what really happens in their small market where not a lot of players are in it.

- Robin: strategies in the market apart from being unique, it is one element of our competitiveness, and it is a very small niche market I strategy selling, revenue and selling in very small components to the client.
- Liliya: it's a software. we're developing what they're doing on the market, vulnerability management software. And this Yeah, this is a very unique.

The other thing that came under that light in the way is that these companies get access to the market and get the attention of customers by relying on personal relationships of every individual who is working for the company, which gives the company much more powerful position in the market against its rivals in their strategy-making practice because this gives them the advantages to recruit resources in much better way.

- Pierce: we have very powerful people who have endorsed us, for the fact that we have endorsements, say where it's tomorrow, actually, we're launching an endorsement video from Gordon, as you know, back to back, Grand National winning trainer from last year, and this year, he has over 5.5 hundred horses, you want the US Grand National, he runs horses, family Australia development cup, he is someone who is known all over the world, and even your strike system. So that's how you you basically you have to get those kind of those those people in a position of power, who have credibility, to give credibility to what you are doing

4.3 Nuclear family:

- Luca: Again, it's easy for us because it's a very small company, so that we can all act accordingly

This relationship with the outside melted with the unique organisational environment, that was formed inside these companies that allowed for the decision making process to get another level of where everyone is helping everyone and collaborating with each other and for strategy-making this is a source for innovation and ideas that can be liaised and shared in a very healthy environment where everyone can speak and be heard. This thing is very helpful for the employees of the company to learn from each other and not being afraid of making mistakes

- Pierce: collaboration, we need to be able to collaborate with people you need to be able to communicate? and listen, you know, I think the key to making strategy is kind of listening to various people's point of views and listening to the various people who are experts in their field. So from my own personal experience.

This nature of collaborations has created a sense of family bonding between employees, which created a network that seemed that had resulted in new mechanism of strategic thinking, where emotions played a part in it and seems compassion is an essential role of the performance of the company in the market. This can be seen from the way those CEOs where talking about their colleagues in the company that lead to everyone to understand each other and know how to reach help and conclusions together and seek help

- Luca: I love to understand how things work. Now, I because of the way I am personally, in terms of personality and genetics, I stay at a higher level. So or a conceptual level rather than a technical or hands on level, let's say more a philosophical level. But I absolutely love to understand how things work. And I spend a lot of time with the, with the college, you know, the engineering part of the business, you know, just enjoy understanding how things work. But for me, persona would be rather higher. He goes off you can live in rather than a very Exactly. Yeah.

In addition, Liliya has insisted that everyone is close to everyone and she feels like it is her second family

- Liliya: we are quite we are quite small and everyone close to each other.

Being in such a family environment with high level of collaboration leads to high performance of teams, which is the special characteristics of these kind of organisations and this allows for a deeper thinking and give a chance for better innovation and creating ideas

- Luca: because we are a very small company, so it is easy to apply change, you know, very tiny company, only 10 of us here. So, you know, there is no big bureaucracy or structures that are difficult to modify. So for us, it's very simple.

And specially to encounter change and penetrate the market and compete with rivals

- Pierce : But it's also a relatively small team. I think the key is, for innovation is, you know, being able, as you said, to react quickly to opportunities and to think of solutions when problems arise. You can't do that if you're a massive company, you can't do that if you're small, a small kind of innovative business startup. So you're you're always doing this balancing act between growing, growing business and spreading worldwide it versus how quick Can you react to a marketplace.

All that lead to trust between employees, something is highly seen in the way those managers talk and make the business much more stronger which is not just about making a profit, it is more about the work and how it should be done

- Luca: you do want to have somebody that has the technique and know how their we do so you can ask them what is feasible to do or not do based on what the market needs. But I have no technical background, for example, I don't know how to code, absolutely nothing. But you know, the business seems to be doing fine. So I don't think there's a fundamental need, of course, we're a technology company. So we have some very strong technology minds in the business that gives me the inputs. So to help me understand what is. what is achievable, and not.

Three out of the four people interviewed were not familiar with the technical background i.e. they knew what technology their companies were selling but did not know much about the technology itself, e.g. processes and specifications. They replied to the question whether this could affect their decisions making, they replied with total confidence that their colleagues were capable of doing the job, and this an indicator that strategy-making process enjoy a level of confidence given to managers so they can act accordingly without being afraid of taking decision with the support of their colleagues in the company.

- Pierce: So I don't need to be an expert in this, if I have very trusted advisors on the subject. Who could do that. Because no man can do everything, there are very few, you know, must be walking around the place, you know. So you need to be able to know what your area of expertise is. Mine definitely be on the business and the next one, and so on. Whereas my business partner, and my main co-founder, he would definitely be more on the technology and software side. And that's fine, we complement each other very well. So when you're making these strategies, you have to be able to listen, and take the advice of people who are experts in their various fields, and then come together to formulate a strategy to move the business forward

4.3 Risk Free:

It seems these companies rely heavily on three things practical experience data mining and analysing these data. All three together helps with taking strategic decision and at the same time reducing the taken risk.

Practical experience is very valuable in regard to CEOs when it comes to compete and making strategies and it seems the academia are quite disconnected from reality in regard to strategy making

- Pierce: You know, if I'm like, we just hired someone recently. And I didn't look very much at their academic experience, I looked at their actual business experience and what they don't you know, it's just, there is a disconnect between academia, and what actually happens in the real business world. - So I think all you can do is look at all the various factors and the various potential decisions you can make with a very experienced people to have been in business for a long time, and then hope that you have made the right decision.

It is all about practical experience.

- Robin: there's no use for theories or practices we are very small company

Even though practical experience is vital in the decision making process the data analysis and data mining was mentioned many times and it was described as a risk buffer tools that protect the company from taking risky investment or decision and give the space for the strategies to act accordingly without taking risk decision and also the ability to figure out what is actually happening in the market

- Luca: For strategy purposes, you are meaning So it's all about looking at, you know, where you want to go with the business. And, and, and when you look at that, you try to gather as much data as possible. - I wouldn't say that it's very risky to work with new products, as long as you have enough data that you know, gives you a decent level of certainty that what you're doing does make sense brings value in there is a market wide enough tool to generate enough value for the business as well. And you have some differentiating points that will allow you to win in the market, I don't see it as a, as a risky thing, necessarily

It seems that data is the breaking deal when it comes which strategy-decision should the company follow cause it give them the indication and the prediction signs of where things are going and what is the right decision because it shows you the way and explain how things work and predict its behaviour.

- Pierce: it is quite simple in a way, you know, you gather enough data? And then of course, you're not sure but then you just pick a choice, because at least you take a decision and you move forward. And you know, taking a decision is a decision by itself, you know, or not taking a decision is also a decision. So what I try to do, again, is I try to gather as much data as possible from directly or indirectly. And, and then I just, you know, pick what I think makes the most sense to me in that instance, and then I see how it works.

Chapter 5: Discussion

The study sought to explore the strategy-making nature in tech SMEs and start-ups, from the perspective of CEOs of these companies who managed to found their companies and succeed in maintaining their business and compete in the market. While a high volume of research had been carried out in about the strategy-making tools and practices, very little looks in specific on tech new ventures. Given the attracting top talent in the software industry in Ireland, the topic of this research is considered highly important for future tech SMES and start-ups in especially in Ireland. The researcher decided to focus on key findings related to the conceptual framework (Figure 1. Data structure, p. 21), including external drivers, organisational policies, individual factors and mediators. The researcher will discuss the work setting at the end of the discussion by answering the research questions

How is strategy-making practiced in the Irish tech SMEs?

Tracing the successfulness of effective strategic decision making, to the deployment of cognitive capabilities of a manager (Eggers and Kaplan, 2013), and entrepreneurs relying on prior knowledge and experience (Andersson and Berggren, 2016). In this research strategy-making did not quiet match exactly what have been discussed in the literature, according to the data the strategy-making process was centralised around two ideas. First, working with others effectively in the company (team-work), and the second is cooperating with wide range of experts (relying on experts and advisors). However, even the twelve popular strategic tools Wright et al., (2013) talked about, the managers in this study did not use, and they doubted whether academia works anymore, according to the gathered data using them was much of just for getting general knowledge about strategy-making. The strategy-making in the data appeared to be more about the product, not even whether theories or methodologies tells how they works, like dependency theory (Xia and Liu, 2017) to either imitate or make changes on previous product in the market. Doing this seemed to be out of the four companies' agenda to build a totally new product that fills a gap no one had regarded to deal with before. Nowadays it is more about practical knowledge, which gives the company the ability to manoeuvre in the market and figure out what to do. Basically practical knowledge were imported from outside, and It can be seen that the literature did not talk much about the idea of getting strategic vision from the outside because they were focusing on using tools and how do managers deal with strategy-making to get access to resources from the inside.

The data found some kind of patter between being creative and small at the same time. Neck et al., (2004) discussed how entrepreneurs looks for ideas and opportunities, yet the data showed that it is not just because of the entrepreneurs' ideas. It also goes to the environment and characteristics these kinds of companies enjoy from within, the reason goes to the idea of being small gave these companies the strength to focus more on harnessing more resources and finding new methods to exploit opportunities and overcoming the challenges. This gave these companies the ability to understand their customers and build trust. This relation goes to the thing Burke and Jarratt (2004) and (Cohen et al., 2014) had talked about on dealing with competitors, which is intellectual capital like branding and loyalty played a significant role in

maintaining the business. The data shows that interviewees were much more embracing the idea of being closer to the customer and fulfilling his needs to escape the tension of the competition in the market by diverting from the trending business lines in the market (Xia and Liu, 2017)

How do tech SMEs seek logic and certainty in times of change within the tech industry?

Jiang and Tornikoski, (2019) argued that depending on how entrepreneurs perceive the uncertainty of their venture and deal with change in the market. the data showed that tech SMEs and start-ups in Ireland did not see their business risky much. Their risky nature is controlled or managed in an environment, where the data flow is overwhelming. and this data gives managers the ability be sure of their strategy-making, and that they are not going in the wrong direction and this does help in getting the right one.

What is the effect of the level of tech knowledge of managers on strategy-making?

The literature discussed the role of entrepreneurs and it explained that the whole idea of new venture creations goes to someone's effort to make a product or a service and create a team and nurture it. The data analysis agreed with Vaara and Whittington (2012) on bringing social theories under the light with the idea of successful new venture and that it goes to the inner environment of these companies of team working and collaborations. Even though, the social part of the strategy-making were discussed by strategy as practice manager perspective but the current research showed how small companies can create an atmosphere that more productive to create new ideas. And it gives managers the strategic opportunity to gain access or to control scarce resources whether it is formal or informal have to be considered (George, Wood and Khan, 2001) due to the interactions between people in the organisation and the way it works is, as Paroutis and Pettigrew (2007) said it is another element that should be considered in the strategy-making process. This social elements gives managers the ability to take strategic decision even in the case of low level of tech knowledge, due to the atmosphere in these companies where managers can get help from other members in the company.

Chapter 6: Conclusion and Suggestions for future research

This research set out to investigate in an exploratory manner the strategy-making nature and whether it follows academic path. This study was prompted by growing levels of created tech software companies in Ireland. Particularly, and it was found that the management theories does not apply much nowadays in tech business world and small companies have this nature that allow them to be closer to their customers and build better relationship under the light of using data. Future research suggestion it would be recommend to look whether there are any difference between big companies and SMEs regarding collaboration and teamwork, because it was found in this research this element is very crucial for strategic-making process.

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Appendices

Appendix 1: Interview questions

A list of the questions that are prepared in advance of the interviews in the table below:

Ref	Question	Relates back to which Research Question?	Source of Question
Q1	What actions and activities does your company engage in to create and practice strategy?	Objective 1	Adya et al (2009)
Q2	Are you more academic or practical in strategy-making, and why?	Objective 1	Wright et al, (2013), Adya et al (2009)
Q3	In particular, what theories or models do you rely on?	Objective 1	Wright et al, (2013), Adya et al (2009)
Q4	What has worked particularly well in strategy-making and what has not worked out well??	Objective 1	Wright et al, (2013), Adya et al (2009)
Q5	How can you ensure that your company's innovation level is maintained through strategy-making?	Objective 1	Wright et al, (2013), Adya et al (2009)
Q6	How does the tech environment influence your strategy practices?	Objective 1	(Njau et al., 2019).
Q7	How does your company create new products or it makes new version of old models with remarkable changes?	Objective 1	(Kriewall and Makemsom, 2010).
Q8	How much risk do you take in strategy-making?	Objective 1	(Tian et al., 2019).
Q9	What is your competitive position?	Objective 1	Argyres and McGahan (2011)
Q10	How do you evaluate if you have made sound strategic decisions and how do you do that?	Objective 2	Jarzabkowski et al (2007)
Q11	How many strategies does the company have usually at any one time?	Objective 2	Paik et al., (2017)
Q12	How do you adapt your plans or strategy to changes?	Objective 2	Jarzabkowski et al (2007)

Q13	What is your background?	Objective 3	Jarzabkowski et al (2007)
Q14	How much management background do you have?	Objective 3	Jarzabkowski et al (2007)
Q15	How would you describe your key capabilities?	Objective 3	Jarzabkowski et al (2007)
Q17	Do you think there is a significant difference between managers with an educational back ground in strategy-making in comparison and managers who do strategy through learning from practice only? Education – versus experience: In what way would this be different?	Objective 3	(Kaliappen, 2019)

[Strategy making in Tech SMEs and start-ups in Ireland: theory and practice]

Consent to take part in research

- I voluntarily agree to participate in this research study.
- I understand that even if I agree to participate now, I can withdraw at any time or refuse to answer any question without any consequences of any kind.
- I understand that I can withdraw permission to use data from my interview within two weeks after the interview, in which case the material will be deleted.
- I have had the purpose and nature of the study explained to me in writing and I have had the opportunity to ask questions about the study.
- I understand that participation involves a phone interview where I will be asked about my experience in regard to strategy making.
- I understand that I will not benefit directly from participating in this research.
- I agree to my interview being audio-recorded.
- I understand that all information I provide for this study will be treated confidentially.
- I understand that disguised extracts from my interview may be quoted in the thesis.
- I understand that if I inform the researcher that myself or someone else is at risk of harm they may have to report this to the relevant authorities - they will discuss this with me first but may be required to report with or without my permission.
- I understand that signed consent forms and original audio recordings will be retained on the researcher personal laptop until the exam board confirms the results of their dissertation.

- I understand that under freedom of information legislation I am entitled to access the information I have provided at any time while it is in storage as specified above.
- I understand that I am free to contact any of the people involved in the research to seek further clarification and information.

Signature of research participant

Signature of participant

Date

Signature of researcher

I believe the participant is giving informed consent to participate in this study

Signature of researcher

Date

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