

**KAUNAS UNIVERSITY OF TECHNOLOGY
SCHOOL OF ECONOMICS AND BUSINESS**

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CONTENT OF STRATEGIC THINKING OF STARTUPS

Final Master Thesis

Supervisor

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Content of Strategic Thinking of Startups

DECLARATION OF ACADEMIC INTEGRITY

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Kaunas

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SUMMARY

Strategic thinking is one of the widely-debated concepts in strategic management. Much of the debate is whether strategic thinking is creative or analytical or both creative and analytical. At first this thesis, defined strategic thinking as both creative and analytical after reviewing the literature intensively. And for the elements of strategic thinking, literature provides different set of elements even though these elements seemed different but the theme is same. For this thesis, elements of strategic thinking are systems perspective, intent focus, thinking in time, intelligent opportunity and hypothesis driven. Startups failure rate are increasing over the time, many sources suggests that one of the main reason for this failure is pre-mature scaling. Pre-mature scaling signals the lack of strategic thinking among startups. Hence for this thesis the elements of strategic thinking are related to the startups. The purpose of this thesis is to identify the content of strategic thinking of startups. This purpose is attained through defining strategic thinking and startup, then deriving the elements of strategic thinking. Based on the elements of strategic thinking a questionnaire is developed, and a method of evaluating those questions is developed. Then the questionnaire is filled by the entrepreneurs of KTU startups, the sample consists of 14 startups. The data collected through questionnaire is then qualitatively and quantitatively analyzed. The findings of the research identified that out of five elements of strategic thinking three elements showed the medium level, those are systems thinking, intent focus and hypothesis driven. The problem for this three elements are, for system thinking startups lack the organizational level understanding, this may happen due to the lack of experience. Intent focus is also medium because even though KTU startups have vision and goal, there are not moving towards it, this happened because they are always reacting to the market instead to moving towards their goal to survive. They prefer survival over ground breaking success. Hypothesis driven is another element which is low, this happens because they lack creativity. Even though two elements are high, namely thinking in time and intelligent opportunism. Over all KTU startups have medium level of strategic thinking.

Keywords: strategic thinking, identify, measure, level, startups.

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INTRODUCTION

Strategy is a word, which transcends across the boundaries of science and art. This strategy has three dimensions namely strategy process, strategy content and strategy context (Wit & Meyer, 2010). Among the three dimensions, strategy process is the dimension which can be assumed as x, then strategy content as y and strategy context as z. To reach any point in this strategic world, one must know all three dimensions.

Strategy process is a cyclic process, which consist of three stages namely strategic thinking, strategy formation and strategic change. Among these three, strategic thinking is the stage this project is going to address, it would be reasonable to think before you do. In the field of strategic management, Strategic thinking is one of the widely-debated terminology to define its perspective. Three perspectives exist in the literature, for strategic thinking namely rational, creative and, both rational and creative (Wit & Meyer, 2010). In the field of strategic thinking, most of the research carried out can be categorized into five parts. Those five categorize as follows, need for strategic thinking (Mintzberg, 1994; Heracleous, 1998; Liedtka, 1998; Sanders, 1998; Graetz, 2002; Fairholm & Card, 2009), process of strategic thinking (Liedtka, 2000), methods of strategic thinking (Weber, 1984; Senge, 1992; Crouch, 1998; Allio, 2006), to develop and improve strategic thinking (Bates & Dillard, 1993; Barnett & Berland, 1999; Abraham, 2005; Goldman & Casey, 2010; Bonn, 2001, 2005; Kabacoff, 2014) and to find inputs and outcomes of strategic thinking (Moon, 2012).

Even though the literature has plenty of researches as mentioned above, it still doesn't have a research which tries to identify the content of strategic thinking. Hence, this research will try to fill this gap strategic thinking of start-ups.

Because, according to Startup genome report (2012), more than 90% start-ups fail (forbes.com 'Neil Patel'), due primarily to self-destruction rather than competition. So, it would be interesting to identify the content of strategic thinking of start-up, instead of a MNC. When the literature of start-up is searched to find some research, about the content of strategic thinking of start-ups. These are the major themes of research found, alliance networks of start-ups and, its relationship with performance and innovation (Neyens, Faems & Sels, 2010; Belderbos, Carree & Lokshin, 2004; Baum, Calabrese & Silverman, 2000), about lean start-up, its characteristics, acceptance, familiarity and its advantages (Blank, 2013; Eisenmann, Ries & Dillard, 2012; Silva, Calado & MB Silva, 2013; Terho, Jaaksi, Mikkonen & Kazman, 2015; Edison, Wang & Abrahamsson, 2015; Lalic, Calopa & Horvat, 2012; Bjork, Ljungbald & Bosh, 2013), finance and its relationship with start-up (Chang, 2004; Davila, Foster & Mahendra, 2003; Astebro & Bernhardt, 2003; Cassar, 2004; Scherr, Sugrue & Ward, 1993; Verheul

& Thurik, 2001; Fairlie & Robb, 2009; Manigart & Struyf, 1997; Cressy, 1996). Even though, there is not enough research about the strategic thinking of start-ups.

Hence, to take a step towards the strategic thinking of start-ups, this thesis will try to identify the strategic content of thinking that goes through the start-ups.

PURPOSE OF THE RESEARCH

To identify the level of strategic content expressed in the thinking of KTU start-ups

OBJECTIVES OF THE RESEARCH

1. To theoretically define strategic thinking and its elements
2. To theoretically the specificity of strategic thinking among startups
3. To design the research methodology for investigating the level of strategic thinking among start-ups.
4. To discuss the findings of the research and relate collected data with theoretical concepts, and to draw the conclusion & recommendations.

RESEARCH METHODOLOGY

This study is done based on the primary data collected through a survey strategy, which resulted as a questionnaire. Then, the questionnaires are collected from the entrepreneurs of KTU start-ups, who are the fourteen samples used for this research. For the analysis of data, both qualitative and quantitative methodology is conducted, with the help of ATLAS and SPSS software.

STRUCTURE OF THIS THESIS

This thesis consists of four chapters. The first chapter is problem discussion, where the problems and gaps in the literature of strategic thinking and start-up is discussed and the problem to be solved in this thesis is derived with the help of literature. The second chapter deals with the theoretical aspects of strategic thinking and start-up, where the definition of strategic thinking and start-up is derived with the help of literature. Elements of strategic thinking is adapted from literature. The third chapter deals with the research methodology, where the design of research and the method of analyzing the collected data is discussed. The fourth chapter deals with the analysis of collected data, where the findings and discussion of findings is carried out to produce the conclusion and recommendation of the research.

1. PROBLEM ANALYSIS

One of the first problem identified during this project is defining what strategic thinking is. When it comes to the definition of strategic thinking, the literature provides various definitions but generally they fall into three major perspective (Shannassy, 1999; Wit & Meyer, 2010) namely art-creative, intuitive, and synthesis (Mintzberg, 1994; Hamel & Prahalad. 1994; Heracleous, 1998; Bates & Dilard, 1993; Graetz, 2002), science- rational, logical, and analysis (Porter, 1980; 1985; 1990; Andrews, 1980; Ansoff, 1965; Zabriskie & Huellmantel, 1991) and combined- both rational & creative (Ohmae, 1982; Raimond, 1996; Heracleous, 1998; Wilson, 1994, 1998; Liedtka, 1998; Hussey, 2001).

Secondly, the elements of strategic thinking, some authors tried to define strategic thinking with the help of elements, for deeper understanding. But, they are different set of elements for strategic thinking literature orderly, Liedtka (1998, 2000) proposed five elements of strategic thinking namely systems perspective, intent-focused, thinking in time, intelligent opportunity and hypothesis driven. Boon (2001, 2005) proposed three elements namely systems thinking (holistic understanding of the organization & environment), creativity and a vision (for the future of the organization). Moon (2012) followed footsteps of Bonn (2005) but he argued strategic thinking without the orientation towards market is precious for strategic thinking, hence he provided four elements namely systematic thinking, creative thinking, vision-driven thinking and market-oriented thinking. Even though Moon (2012), Boon (2001, 2005) and Liedtka (1998, 2000) provided different set of elements, but they are all on the perspective of strategic thinking of both creative and analytical process.

Apart from being argued that strategic thinking is art or science or both (which is mentioned as the first problem). The term strategic thinking itself is often used interchangeably with strategic planning. Mintzberg (1994), is one of the authors who pointed out this issue at first and tried to draw a clear differentiation between this two concepts, and concluded strategic thinking isn't strategic planning. In the same year, Wilson (1994) argued that strategic planning has changed dramatically since its inceptions, then he wrote strategic "planning has evolved into a viable system of *strategic management (or strategic thinking)*", once again confusing the two different concepts in the literature.

Later in 1998, Liedtka noticed these contradicts in literature and argued that the term strategic thinking is used to denote all thinking about strategy, rather than to denote a particular mode of thinking, with specific characteristics (Liedtka, 1998 pg. 121). Heracleous (1998), used the concept of learning to address these issues, by proposing that strategic thinking is double-loop learning and strategic planning is single-loop learning, i.e., strategic thinking can be used to change the set of alternatives from which choice is made, whereas strategic planning can be used to make a choice from the alternatives provided (Heracleous, 1998). In 2000, Liedtka proposed that strategic thinking is a design process where she

incorporated strategic thinking into the idea of design, which supports Heracleous (1998) idea of strategic thinking as a double loop learning. Until here, various approaches of strategic thinking found in the literature and conflicts between those ideas are discussed. In the next session, the gaps between some of the researches in the field of strategic thinking is discussed.

Weber (1984) proposed methods of strategic thinking with three steps namely assessment (classification and modelling of the situation), problem identification & analysis (goal formulation and strategy design) and synthesis (assumptions, dialectical analysis and reframing) (Weber, 1984). Senge (1992) in his work 'Mental models' pointed out- incubating a new business worldview through mental model, managing it throughout an organization and reflection & inquiry at personal and interpersonal levels are the methods of strategic thinking. Crouch (1998) following the approach of strategic thinking as competitive action, proposed two planes strategic thinking namely, portrayal of stable competitive behavior (concepts of purpose, market, growth and corporate interests) and plane of belligerence (thinking about action initiatives, deception, disorder and competitor intelligence). When these three methods of strategic thinking by steps, levels and planes are discussed, some question starts to emerge which method has more advantage, does following all three methods at the same time pose any conflicts, does these three methods need to be followed at the same time, does these methods work etc. when these questions are addressed individually they seem different, but all of these questions have same purpose which is to identify the result or outcome of each method of strategic thinking. When this purpose is understood, it's clear that methods are dependent to the independent variable strategic thinking, in essence to measure strategic thinking.

One of the widely researched recent theme in strategic thinking field is how to 'develop and improve' strategic thinking. Some of the important researches based on these themes are discussed in this session as follows. Abraham (2005) proposed five approaches namely being successfully different, emulating entrepreneurs, finding new opportunities, being future-oriented and being collaborative to be the ways to stretch strategic thinking. Bates & Dillard (1993) in their work 'Generating strategic thinking through multi-level teams' pointed out the drawbacks of conventional cross-functional strategic planning teams for strategic thinking and proposed inter-functional/multilevel planning (IMP) approach to solve those problems, hence generating strategic thinking. Goldman and Casey (2010), points out that culture is one of the most influencing factor which can either encourage or limit contributions for strategic thinking at multiple organizational level. Kabacoff (2014), after evaluating 60,000 managers, proposed a set of seven activities in management approach to foster strategic thinking. Bonn (2001, 2005), suggested that organizations should address strategic thinking at two different levels namely individual and organizational, to develop their core competency. All the above researches are done to develop or improve or both to develop and improve strategic thinking. But there is a gap in the literature

of measuring strategic thinking, because when the suggested ways are followed to improve strategic thinking, there is a lack of research which measures the strategic thinking after following or implementing those ways. This is similar to the issue discussed in the last paragraph.

In the literature of strategic thinking, almost all the research comes under five themes. Those themes are namely need for strategic thinking, process of strategic thinking, methods of strategic thinking and how strategic thinking can be developed and improved. Even though, there are no researches in the literature which measures level or content of strategic thinking.

According to startup genome report (2012), almost 90% of startups fails. The report argues that startups have five core dimensions namely customer, product, team, business model and financials. 70% of failures of startups are due to the pre-mature scaling in any of the above mentioned five dimensions. Premature scaling is defined as ‘spending money beyond the essentials on growing the business (e.g., hiring scales personnel, expensive marketing, perfecting the product, leasing office, etc.) before nailing the product/market fit’. Pre-mature scaling may happen because of various reasons, but lack of strategic thinking is one of the main reasons.

In the literature of startups, there are very less number of researches about strategy exist, but there are almost no researches done directly on strategic thinking of startups. But the concept of strategic thinking exist in the startups literature indirectly in the name called ‘Lean startup’. Lean startup is one of the widely revolving the term recently around the startups literature. Blank (2013) argues this lean startup is the solution for the increasing large number of startup failure. He argues that lean startup methodology favors experimentation over elaborate planning, customer feedback over intuition, and iterative design over traditional one time big design development (Blank, 2013). This lean startup seems to be the strategic thinking startups, because many authors argue strategic thinking is an ongoing process and this ongoing process i.e. iterative design is preferred in the lean startup. Startups which approaches entrepreneurial opportunity with hypothesis-driven approach are called lean startups (Eisenmann, Ries & Dillard, 2012). Liedtka’s two elements of strategic thinking can be identified with the above definition, entrepreneurial opportunity performs as an intelligent opportunity and the hypothesis driven approach can be identified directly.

Form the above discussion, this thesis pointed out the lack of research about measuring the content of strategic thinking in business and lack of researches about strategic thinking in the literature of startups. Hence this thesis is focusing on measuring the content of strategic thinking of startups.

To summarize, the definition of strategic thinking and the elements of strategic thinking is explored. Then, the researches done in the widely expanding research field of strategic thinking, is tried

to sort under categories based on the purpose of research. The missing research to identify the content of strategic thinking is proposed and suggested it would be reasonable to identify the content of strategic thinking in start-ups, instead of big organizations by highlighting the complexity of research. Then, the definition of start-up is explored and noticed the lack of research about start-ups from the strategic thinking perspective. Finally, ended with the note to identify the content of strategic thinking of start-ups as the aim of this project.

2. THEORITICAL INSIGHTS INTO STRATEGIC THINKING

In the first part of this chapter, with the help of literature the definition of strategic thinking and its different perspectives is discussed, and a definition of strategic thinking for this project is proposed. In the second part, set of elements provided for strategic thinking by different authors is introduced. Then, a specific set of elements is adapted for this project and explored those elements deeply. In the third part, the definition of start-up is discussed, a definition of start-up for this project is proposed.

2.1 Definition of Strategic Thinking

The term Strategic thinking started to emerge in the literature around 1980's. During that period, critics like Mintzberg is already arguing that the meaning of the term *strategic planning* is confusing and used in variety of ways. After the introduction of *Strategic thinking* the situation has become even more complicated, the term strategic thinking is used to denote all thinking about strategy, rather than to denote a particular-mode of thinking, with specific characteristics. And the term is often used interchangeably with strategic planning (Liedtka, 1998; Heracleous, 1998).

Strategic thinking was widely approached from these three major perspectives, those are namely (Wit & Meyer, 2010)

1. Creative, Intuitive and Synthesis
2. Rational, Logical and Analysis
3. Both Rational and Creative

These are the widely-approached perspectives of strategic thinking from the literature. The scholars who argue strategic thinking as creative, thinks that the future may not be predictable but the future can be designed with a view, which may not conventional all the time. They give priority to thinking over acting. The scholars who argue strategic thinking as analytical, thinks that future is completely predictable because future comes from past and present, they believe if they can act now with their prediction about future with past knowledge they can be successful. They give priority to acting over thinking. The scholars who argue strategic thinking as both creative and rational thinks that future can be predictable and they can design them with both conventional and unconventional ideas. They prefer both thinking and acting at the same percentage.

Each of these perspectives are discussed below in detail.

2.1.1. Strategic thinking as Creative, Intuition and Synthesis

In 1994, Mintzberg (1994) in his work 'The fall and rise of strategic planning' stated that "Strategic planning isn't Strategic thinking", and tried to define a clear boundary between strategic thinking and strategic planning. He defined, strategic planning as an *analytical* process, involving programming already determined strategies which results as plan, and strategic thinking is about *synthesis*, it involves intuition and creativity to determine strategies which results as the 'integrated perspective' (Mintzberg, 1994) of the enterprise. He also argued, Enterprises should not solely rely on planning for making strategies by pointing out the shortcoming of strategic planning.

Hamel and Prahalad (1994), in their work "Competing for the future", joins with Mintzberg by opposing traditional approaches of using just planning for making strategy, though they use the term "crafting strategic architecture" instead of "strategic thinking". They concluded that developing a point of view i.e., strategic thinking, should be a creative and exploration process and added that it should not be a massive one-time effort, instead it should be an ongoing project sustained by continuous debate within a company.

By following the ideas of Mintzberg, Heracleous (1998), introduced types of learning to define strategic planning and strategic thinking. He argued that strategic planning is a Single-loop learning analogy, where the problems are solved by choosing existing options without critical examination of governing variables and strategic thinking is a Double-loop learning, where the options are created through innovation by critically examining and altering the governing variables. He also proposed that strategic planning and strategic thinking are interrelated in a dialectical process, where both are necessary for effective strategic management. This view of strategic thinking

With the same idea, Sanders in his book "Strategic thinking and the new science", defines strategic thinking as the synthesis of information to identify issues, connections and patterns with one's intuition, judgment, creativity rather than quantifiable measures.

Bonn (2001), states that for understanding strategic thinking, a dual-level approach is needed which investigates the characteristics of an individual thinker as well as the dynamics and processes that takes place within the organizational level in which individual operates.

2.1.2. Strategic thinking as Rational, Logical and Analytical

Michael Porter is one of the scholars who strongly believes strategic thinking is analytical (Liedtka, 1998, 2000; Bonn 2001, Heracleous, 1998). Porters five force analysis, supply chain and Diamond model of national competitive advantage all are in favor of analysis and step by step approach which are completely on the other spectrum of Mintzberg idea of strategic thinking.

Zabriskie and Huellmantel (1991) also proposed six step sequential process to guide strategic thinking among senior managers, Eden also followed the same footsteps and defined strategic thinking based on cognitive mapping.

Abraham (2005), defines strategic thinking based on the functions and outcomes, as identifying alternative viable strategies or business models that deliver customer value by exploring five approaches namely successfully different, Emulating entrepreneurs, finding new opportunities, being future-oriented and being collaborative, which falls under the rational and step by step approach of strategic thinking.

2.1.3 Strategic thinking as both Rational and Creative

Strategic thinking is both rational and creative. This is the most dominating view, scholars who supports this view often asks to think creatively and act rationally during solving a strategic problem.

In 2005, Bonn in his research paper ‘Improving strategic thinking: A multilevel approach’ defined Strategic thinking as a continuous process (acknowledging the unpredictability of future) trying to solve strategic problems that combines a rational and convergent approach with creative and divergent thought process. Here the two conflicting concepts are joined together by Bonn, where he points out that the thought process which goes into thinking should be unconventional, new from existing preconceived idea, not restricted by existing mental models and novel i.e. it should be creative. But the approach towards the strategic problem should be logical, analytical, reductionism i.e. it should be rational.

Based on this view, the importance of alternative generation to find new ways of competing and providing customer value is pointed out by Moon, and he argued that strategic thinking should result in generation of alternatives to compete (Moon, 2012). Alternative generation is one of the key ways to achieve creativity.

The idea of combination of both rational and creative for defining strategic thinking also convinced Goldman & Casey (2010), defined strategic thinking as a conceptual, system-oriented, directional and

opportunistic thinking. They argued that this type of thinking should result with a discovery of *novel imaginative* organizational strategies. Here conceptual and system-oriented thinking provides the room for rational thinking. Directional and opportunistic thinking provides the possibility of being creative.

On the same note as Bonn (2005) with additional process ideas, Gee, Thomas and Wilson in their book " Strategy Analysis and Practice" stated that strategic thinking as an intellectual activity (creative and intuitive) which usually does use a range of analytical models to make sense of current situation and it can use data-structuring methods to make sense of vast amount of data. Once again both rational and creative processes are recommended by scholars, but here the analytical process is used to understand the current situation precisely first to thinking creativity, the difference here in this definition is it strongly recommends analytical skills to interpret the present situation first which is not mentioned by other scholars.

Liedtka (1998), also follows views of Mintzberg by acknowledging that strategic thinking is different from strategic planning and it is a "particular way of thinking". But she explained strategic thinking with a model of elements namely systems perspective, intent-focused, thinking in time, hypothesis-driven and intelligent opportunism, which are then related with the alternative views of strategic planning processes to support strategic thinking rather than impede.

Wit and Meyer, (2010, p. 54) points out that defining the strategic problem is one of the important and initial stages of strategic thinking, then they argue, for defining a strategic problem managers must not simply think, they must go through a strategic reasoning process. They shed light on both rational and generative reasoning perspective, and they end their note by saying it's up to the strategist to select the rational or generative side of strategic thinking with the context in mind.

Based on the literature from strategic thinking as rational, creative and both rational and creative, in this thesis, strategic thinking is defined as a mode of thinking (Mintzberg), which should incorporate both rational and creative (Bonn; Goldman & Casey; Moon) (without emotional bias) activities throughout the ongoing process (Hamel and Prahalad) of creating integrated perspective of enterprise (Mintzberg). In this definition, mode of thinking is mentioned to highlight that strategic thinking is not 'all thinking about strategy' instead it a mode of thinking, an idea proposed by Mintzberg. This definition did not mention to use creativity for certain activities, rationality for certain activities unlike some other definitions, instead the options are kept open to facilitate both creative and rational activities throughout the process.

2.2 Elements of Strategic Thinking

In this section, elements of strategic thinking are discussed, analyzed and explained theoretically with the help of literature (Liedtka, 1998a, 1998b, 2000; Bonn, 2005).

When it comes to elements of strategic thinking. In the literature, there are three sets of elements for strategic thinking. The first set consists of five elements, namely a systems perspective, intent focused, thinking in time, intelligent opportunism and hypothesis driven (Liedtka, 1998a, 1998b, 2000). The second set consist of three elements namely systems perspective, vision and creativity (Morrisy, 1996; Mintzberg,1998; Kaufman, 2003; Bonn, 2005) and the third set consist of four elements namely systems thinking, creative thinking, vision driven thinking, and market-oriented thinking (Moon, 2013).

For this thesis, Liedtka's elements of strategic thinking is adapted, because of two main reasons. The first one is the clarity of the explanation provided is high (from the view of researcher of this thesis, maybe biased). The second one, elements provided by her is almost widely accepted and discussed by all the authors (Moon, 2013; Bonn, 2005, 2010) who researched about the elements of strategic thinking.

Elements of Strategic Thinking provided by Liedtka (1998).

1. A Systems perspective
2. Intent-focused
3. Intelligent Opportunism
4. Thinking in Time
5. Hypothesis-driven

The above-mentioned elements can be found (incorporated) in the definition of strategic thinking in the context of this thesis. The rational and intellectual activities come under the element Hypothesis-driven which rises 'what if' creative question and 'if then' analytical problem solving. Ongoing process refers to the thinking in time and intelligent opportunism, which means thinking shouldn't be bound under a certain time and should be opportunistic when opportunities emerge at all time. Integrated perspective of the enterprise, refers to the intention of the enterprise with system perspective as a whole. The definition of each elements will be individually discussed below.

2.2.1 A Systems Perspective

A System can be defined as a set of components that work together for the overall objective of the whole (Haines, 1998). A Systems perspective can be defined as seeing the whole system instead of its

individual parts. In the words of Liedtka (1998), System perspective is a mental model, which comprises the insight of how the value is created for a product or service at various stages throughout the end-to-end cycle, what are the factors influenced and involved the value creative at those stages and how those factors are interdependent within the system.

A systems perspective can be understood as seeing the whole system in which the organization positions itself both internally and externally, when it comes of strategic thinking. In other words, thinking with process, patterns and relationships (Haines, 1998) of a system when it comes to strategy, instead of focusing on the events and actions (Anderson & Johnson, 1997; Senge, 1990; Haines, 1998; Liedtka, 1998).

When considering organizations/start-up as a system, strategists should know it is an *open system* which accepts inputs from its environment, acts on the inputs to create outputs and releases the outputs to its environment. It has interrelationship with other components/sub-systems and interdependent with other components/sub-systems, of the system (Haines, 1998).

There are three levels, one should address for strategic thinking namely organisms (individuals), groups (teams and departments) and organizations/start-ups (companies, firms, communities). Like so, three intersections should be addressed namely one-to-one (individual to individual), between departments and organization-environment (Haines, 1998). Then the vertical and horizontal linkages within the system should be understood by the strategist to think strategically (Liedtka, 1998). For example (vertical), how the decision of the individual at a department of the organization can impact the whole business and vice versa. Horizontal linkages across departments and functions, and between suppliers and buyers (supply chain) (Liedtka, 1998; Anderson & Johnson, 1997).

External – organization and its environment, external level is the third level which exist between organizations in the industry. Strategist should incorporate the whole industry instead of ending with in its industry, because the ability to innovate can be attained through perspective beyond that of industry (Moore, 1993, p.76).

Internal – one-to-one and departments, internal levels are the first two levels- which exist inside the organizational context.

Systems perspective is the foundation of strategic thinking (Liedtka, 1998). Using systems perspective for strategic thinking without understanding the true nature, can devastate an organization (Liedtka, 1998). For example, a manager optimizing operations in his department without considering interdependencies of sub-systems, can lead to idleness of its system as a whole.

In order to, have system perspective one should solve a foundational problem, which is mental models. Because mental models of individuals are developed over long time through education, experience and interaction with others (Wit & Meyer; Senge). In this machine age, we are trained with reductionism, analysis and mechanization by our education and society (Haines, 2000, p. 6). Mental models have high level of rigidity and may consume lots of time and energy (Wit & Meyer, 2010, p. 58), hence it need to be addressed first to have a non-conflicting system perspective.

2.2.2 Intent-focused

Strategic thinking is intent driven (Liedtka, 1998). Intent in the context of strategic thinking can be defined as stretching targets beyond the resources and capabilities of an organization, to win with the sustenance of innovation (Hamel and Prahalad, 1989).

Strategic intent should be established on short term action (one to three years) with evoked long term direction, which leaves room for reinterpretation as new opportunities emerge (Hamel and Prahalad; Liedtka, 1998). Thus, strategic intent is shaping and re-shaping over the time. This shaping and reshaping increases the pace of a obsession over winning in the future, and its goal is to fold the future back into present (Hamel and Prahalad). Strategic intent doesn't stop at creating the obsession of winning in future, it goes on by 'captures the essence of winning', becomes 'stable over time' and establishes a target that 'deserves personal effort and commitment' to all levels of an organization (Hamel and Prahalad, 1989).

Direction, discovery and destiny are the three attributes of strategic intent (Hamel and Prahalad, 1994). Intent provides a certain point of view about the long-term market for an organization, which serves active and rational processes to drive the whole organization towards victory (Hamel and Prahalad, 1994). Hence it provides sense of direction. For example, the intention of a start-up is to become one of the top ten market leaders of the industry, this intention provides the direction to the strategist to focus on (Hamel and Prahalad, 1994).

Intent is an approach towards highness, it can connect the existing gap between the present resources & capabilities and future intentions (Hamel and Prahalad, 1994). Here, an organization need to stretch with the help of alternatives and innovation to close the gap. Hence, it provides a sense of discovery. For example, now that start-up should find how to become one of the top ten, it may discover that it should innovate a technology in self-driving cars which can revolutionize the industry.

Intent provides the emotional motivation for employees by providing the possibility of beating a competitor or staying the best, instead of concentrating on gratifying stakeholders. Hence it provides

sense of destiny (Hamel and Prahalad, 1994). For example, now the employees have a goal to work on, which is innovate the technology in self-driving cars instead of gratifying stakeholders. With these three attributes, strategic intents allow employees to focus, innovate and involve achieving greater success for the organization.

Liedtka (2000), points that creation of compelling intent with these sense of *direction*, *discovery* and *destiny*- heavily relies on the skill of alternative generation in all three attributes. Considering the rapidly changing environment, importance of alternative generation is also mentioned by American psychologist Simon. As already mentioned, strategic intent should shape and re-shape itself with alternate generation by exploring emerging new opportunities over time (Hamel and Prahalad, 1994; Liedtka, 2000; Simon, 1993). This alternative generation overlays the path to next element- intelligent opportunism.

2.2.3 Thinking in Time

One of the famous definition for Thinking in Time can be found in the words of Neustadt and May (1986, p. 246) “Thinking in time (has) three components. One is recognition that the future has no place to come from but the past, hence the past has predictive value. Another element is recognition that what matters for the future, the present is departures from the past, alterations, changes, which prospectively or actually, divert familiar flows from accustomed channels. A third component is continuous comparison, an almost constant oscillation from the present to future to past and back, heedful of prospective change, concerned to expedite, limit, guide, counter, or accept it as the fruits of such comparison suggest.”

As Hamel and Prahalad (1994) notes that, strategic thinking transcends time, space and resources to offer innovative solutions to complicated and perplexing issues an organization faces in its competitive arena. Here transcending time explains that, an organization’s thinking about future should integrate the insights of past such as institutions memory about product, market etc., and knowledge of present such as resources and capabilities (Hamel and Prahalad, 1994; Liedtka, 1998). Thinking in time should balance between past and future (Heracleous, 1998), and continuously oscillate between past, present and future to be successful. In addition to this, thinking in time should be precise at the execution of

There should be sense of continuity with our past and sense of direction for our future to maintain a feeling of control over the ever-changing situation (Handy, 1995) - to think in time strategically.

2.2.4 Intelligent Opportunism

Famous Roman philosopher Seneca (Ericksen, 1999) once said, "Luck is what happens when preparation meets opportunity", here preparation means intelligent opportunism. Intelligent Opportunism – once the intent with the mentioned three attributes is formed, as the time passes, new opportunities starts to emerge on the way. When opportunities emerge, it is crucial to have the three attributes of intent to be intelligently opportunistic (Liedtka, 1998).

Intelligent Opportunism can be defined as underscoring the difference between emergent strategy and deliberate strategy which leads to the selection of competent one (Burgelman, 1991). There must be an opening in the intent to receive new information and opportunities to process them intelligently (Liedtka, 1998).

Intelligent opportunism follows the blueprint of strategic intent, which provides the framework to select when it comes to options, to achieve its goals/desired leadership position in the future (Stacey, 1996). When it comes to intelligent opportunism, the process of selection not always follow collecting hard data rigorously to weigh them, instead they are often done with incomplete information's (Isenberg, 1987). A strategist should always have the general framework of long-term goal when he/she need to be intelligently opportunistic (Isenberg, 1987). When weighing the options, strategist should not concentrate only on the immediate payoff instead long run should also be incorporated (Covin & Slevin, 1989).

When it comes to opportunism, pace of selection (responsiveness) is also crucial, the idea of importance to pace can be found in the words of Hamel and Prahalad's (1994) work *Strategic Intent* competitiveness ultimately depends on the pace at which a company embeds new advantages deep within its organization'. Rigidness towards carefully prepared strategies is always an issue, but being open, opportunistic and flexible is what yields success (Isenberg, 1987). Thus, intelligent opportunism without rigidness will improve the resources and capabilities of an organization to attain success in long-term (Cliffe, 2014). To attain the maximum potential of intelligent opportunism it should sustain throughout all the stages of strategic thinking.

2.4.5 Hypothesis-driven

In the context of strategic thinking, hypothesis can be defined as a scientific method which deals two major activities (Liedtka, 2000). The first one is hypothesis generation and the second one hypothesis testing (Liedtka, 1998). There should a multiple hypothesis testing (multiple hypothesis at the same time) to be more effective and successful.

While hypothesizing, there are two stages one should address. First stage is creative process, which is generating 'what if' questions: argued as a creative process by Liedtka (1998). Second stage is analytical process which is solving 'if then' by providing answers to those questions from stage one.

Creativity: creativity is defined as a way of approaching problems and solutions, by putting existing ideas together and recombining or making new connections (which may seem unconnected) between them with new combinations (Robinson & Stern, 1997; Amabile, 1998). Creativity is defined based on the content as useful novelty- 'not novelty for its own sake', but novelty that can be applied and adds value (Oldham & Cummings, 1996).

Creativity is often interchangeably used with innovation, so it is important distinguish them to avoid future contradiction (even though they are conceptually related). In the organizational context, creative performance refers to ideas and products created at the individual level, whereas innovation relates with execution of those ideas at organizational level (Bayus, 2011).

Bilton and Cummings (2010), explained creativity with three levels, namely content, outcome and process. Content of creativity should consist both novelty and value i.e. value innovation (Bilton & Cummings, 2010).

Outcome of creativity should yield transforming context and redefine problems. It can transform the conceptual space around them and open-up new possibilities for future creativity (Bilton and Cummings, 2010). This is one of the key way of thinking pointed out by Goldman & Casey, Strategic thinking as a conceptual thinking. It can transform the conceptual space and provide a core competency to an organization through strategic thinking (Bonn, 2001&2005).

In the words of Perkins (1981), knowing the 'rules of the game' and to become skilled at applying them is crucial for creativity. Process of creativity should tolerate the contradiction and be able to move between inductive and intuitive thinking (Bilton & Cummings, 2010). Creative thinking is a way of approaching problems and solutions, by putting existing ideas together and recombining or making new connections (which may seem unconnected) between them with new combinations (Robinson & Stern, 1997; Amabile, 1998).

In 1998, Smith in his work 'Idea-Generation Techniques' provided an analysis of 172 idea-generation techniques used by organizations and consultants (Bayus, 2011), among them some of the famous methods followed among all industries to enhance creativity are brainstorming, lateral thinking, mind mapping, random stimulation.

The importance of creativity in strategic thinking – without creativity, existing information’s and experience will lock up in old structures, old patterns, old concepts, and old perceptions instead of, allowing to explore alternative solutions for future (De Bono, 1996).

For example, if a start-up wants to innovate in self-driving technology it may ask creative questions like 'what if' is AI driven, cloud computing based, machine learning etc.

The second step is hypothesis, which is testing the hypothesis 'if then' answers: argued as an analytical process by Liedtka (1998). For example, one the hypothesis is picked, data's relevant to the questions need to be collected and analyzed like if AI is the future of self-driving cars how can we improve our resources and capabilities to shine in AI research.

Liedtka (2000) argues, in an environment of ever-increasing availability of information and decreasing time to think, the ability to develop good hypothesis and to test them efficiently is crucial for a strategic thinker. Developing a good hypothesis based on the insights about the product, market etc. creatively is what lies behind the success of a strategy through strategic thinking.

Based on the above elements of strategic thinking a detailed model is provided below



Figure 1. Model of elements of strategic thinking adapted from literature (Liedtka, 1998)

2.3 Definition of a Start-up

The definition of startups evolved over time, in the early days all companies which are in the initial of business are called as startup. But the definition starts to incorporate new idea as time passed. In this section, the view of startup is provided from the beginning till now. Even though, scholars accept the evolved definition of startups, government and public sector authorities still works with the old concepts. This issue is further discussed below.

Sometimes governments, incubators, associations etc. tries to provide some criteria/characteristics, to identify as a start-up (table 1). The first and important characteristics is age, which is almost present in all. The second characteristic, is innovation in technology/business model with rapid growth. The third is revenue. The fourth one is tendency to grow rapidly: Almost accepted by everyone (Blank, 2010; Ries, 2012).

Table 1. Criteria to identify as a start-up

Country, Association etc.	Year (younger)	Highly innovative technology and/or business model	Revenue (in Euro) (*Note: '-' not mentioned)
European Startup Monitor	10	YES	-
Government of Latvia	5	YES	>200k (2 years), >5 million (5 years)
Government of India	5	YES	>360k (approx.)
Forbes	-	YES	>18 million
Europeastartups.org	5	YES	-

From the above table, there is no single set of characteristics to contain all models and concepts of start-ups. In general, start-up is an early/first stage of an enterprise which is usually five to ten years in its life cycle (europeanstartups.org; Wikipedia.com; business.com; Government of Latvia and India), and it is independent (European startups organization). It contains a highly innovative technology/business model which tends to grow rapidly by expanding its operations and it should have high growth potential (Investopedia.com; Business dictionary; europeanstartups.org; Wikipedia.com; business.com). This is the definition of startup in the beginning. The evolved definition of startups are discussed below.

According to Steve Blank (2010), the definition of startup is 'start-up is an organization formed to search for a repeatable and scalable business model (Alexander Osterwalder's business model is recommended by Blank)'. Eric Ries, an important contributor to the start-up field with his work 'Lean

strategy' defines 'a start-up is a human institution designed to deliver a new product or service under conditions of extreme uncertainty'. The main goal of the start-up is to find the right thing to create, i.e. what customers' want and will pay to have it, as soon as possible and without waste (Ries, 2012)

Most of the definitions argue, start-up is an early/first stage of an enterprise in its life cycle, which is independent (OECD, 2015; Investopedia.com; Business dictionary; europeanstartups.org; Wikipedia.com; business.com). It contains a highly innovative technology/business model which tends to grow rapidly (Investopedia.com; Business dictionary; europeanstart-ups.org; Wikipedia.com; business.com).

It is obvious from the literature, the definition of start-up diverges highly with keeping the core ideas, which are growth, innovation, less than 5 years and dynamic culture. For example, Small Business

Association (sba.gov) a federal agency of USA argues the term start-up is associated with a business that is typically technology oriented and has high growth potential.

European startups organization (europeanstartups.org) (2016) defines, Start-up is an independent organization, which is younger than five years and is aimed at creating, improving and expanding a scalable, innovative, technology-enabled product with high and rapid growth.

Start-up is an entrepreneurial venture which is typically a newly emerged, fast-growing business that aims to meet a marketplace need by developing or offering an innovative product, process or service (wikipedia.com).

Paul Graham head of Y combinator (2012), defines "start-up is a company designed to grow fast. Being newly founded does not in itself make a company a start-up. Nor is it necessary for a start-up to work on technology, or take venture funding, or have some sort of exit. The only essential thing is growth'.

Start-ups are distinguished as three different categories based on their connections to central players (Elfring & Hulsink, 2007), namely independent start-ups, spin-offs and incubator-driven companies.

There is also a view in literature, which mentions start-up is a model of thinking and it cannot be bounded (Robehmed, 2013 forbes.com; Shontell, 2014). Homejoy CEO Adora Cheung tells forbes, "Start-up is a state of mind. It's when people join your company and are still making the explicit decision to forgo stability in exchange for the promise of tremendous growth and the excitement of making immediate impact" (Shontell, 2014 businessinsider.com)

In the context of startup, strategic thinking should be considered as both creative and rational. Strategic thinking of startup should incorporate both rational and creative thinking at all the stages and all the time. Strategic thinking of a startup should also deal with finding the reputable and scalable business model. The elements of strategic thinking for this thesis is designed for startups and it is discussed in the table below.

Table 2. Element of strategic thinking of startups

Elements	Sub- elements	Summary
Systems perspective	Individual level	Knowledge of individual's role and understanding of one's actions influence over others in startup
	Group/department level	Knowledge of group and its relations, this may doesn't apply to some startups, which may don't have clear groups (organic)
	Organizational level	Knowledge of startups position, role and influence in the industry
Intent focus	Direction	A sense of direction startup as a hole (vision), when thinking
	Discovery	A sense of discovery startup as a hole (innovation), when thinking
	Direction	A sense of discovery startup as a hole (goal), when thinking
Thinking in time	Past	Ability to uses the insights from the past think
	Present	Ability to uses the knowledge of present to think
	Future	Ability to uses the foresight of future to think
Intelligent opportunism	Underscore deliberate and emerging strategy	Knowledge and insight of deliberate strategy, ability to identify the emerging strategy and the ability to underscore them
Hypothesis driven	Creative	Ability to generate creative ideas in startup
	Rational	Ability to provide practical solution for strategic problems in startup

The above table provides the elements which are used to identify the content of strategic thinking of startups.

For this thesis, definition of start-up: a start-up is an organization (Blank, 2010) formed to search for a repeatable and scalable business model (Blank, 2012) under condition of extreme uncertainty (Ries, 2012).

In this chapter, with the help of literature a define for strategic thinking is derived and a set of elements of strategic thinking are selected and discussed. Then, the different view about startups are discussed, the elements which are used to identify content of strategic thinking are provided and a definition for startup is derived with the help of literature. In the next chapter, the methodology of research is discussed.

3. RESEARCH METHODOLOGY

The purpose of this research is to identify the content of strategic thinking of startups. This research consists of three parts. Questionnaire design is the first part, where the questions are derived from the theory. Second part consists of developing the criteria to analyze those questions. Third part consist of qualitative and quantitative analysis of collected data. This research is need to collect necessary primary data, to identify the content (level) of elements of strategic thinking in start-ups, in other words to address the core research question of identifying the ‘content of strategic thinking of start-ups’, which can be used in the future research to improve or develop the specific element of strategic thinking lacked by the start-ups.

3.1 Sample Size and Characteristics

The sample for this thesis consist of fourteen start-ups in the KTU Start-up space. KTU start-up space consist of 17 start-ups, among them two start-ups are very recently registered (still didn’t start the process) and one is ending all its process. Hence the sample size of fourteen. The respondents for this research questionnaire are the entrepreneurs of the startups.

Short description about samples (individual start-up):

In the table below, a short description about each startup is provided. To clearly mention the role and nature of the startups.

Table 3. Short descriptions about samples

	Startup Name	Short description about the startup
1.	BREATHCOUNT	A bio-tech and software based start-up, which provides device and mobile software to monitor and manage the condition of asthma, for patients.
2.	SEARCH NODE	A software company, which provides ‘Intelligent search solutions’ to small and medium scale e-commerce websites.
3.	SWEEPEST	a marketing solutions company providing company, which promotes products to a particular
4.	DROIDLNEX	A software based start-up which provides mobile games for gamers.
5.	DALINUOSI	A rental service providing company, which uses peer to peer rental marking through online.

	Startup Name	Short description about the startup
6.	ICUBIT	A software company, which provides testing and software development solutions for medium and large scale industries.
7.	PLS	A software company, which provides software testing and deploying service solutions to all sort of technology based companies
8.	FIND	A software company, which provides search solution for individual to find games and apps
9.	TINLABA	A mobile game developing company, which provides games for all touch mobile phones
10.	EKOSTRUKURA	An auction solution and service providing company, which customers are private architecture companies
11.	HOLLIGAMES	A multi-player game developing company, which provides games for customer above 18 years old
12.	AMEXE LABS	3D printing resin providing company, which provides developed resins for local 3D printing communities.
13.	FOAMITA	A marketing based company, which provides a kit for the graduating driving school students through driving school
14.	SOLITANA	An accountant service providing company for all scale and type of industries

The KTU startup space consists of two game developing start-ups (DROIDLNEX – games for mobile, HOLLIGAMES – games for pc), nine software solution providing start-ups (PTS, FOAMITA, SOLITANA, SEARCH NODE, ICUBIT, SWEEPEST, TINLABA, DALINUOSI and FIND), one software and hardware providing start-up (BREATH COUNT), one public auction solution providing start-up (EKOSTRUKURA) and one chemical and hardware solution providing 3D printing start-up (AMEXE LABS).

3.2 Method of Data Collection

The questionnaire is prepared based on the theory, which consist of five parts based on five elements of strategic thinking discussed in the theory part. The questionnaire consist of open, category, quantity, opinion and list type of questions. The initial draft questionnaire was tested with three respondent. Then the final questionnaire is adapted based on the feedbacks provided by the initial respondents.

The questionnaires are printed on a white A4 sheets with Times New Roman font of size 12, clear spacing between questions and options along with page number are provided. The questionnaire is directly handed out to the respondent individually in a reasonably quiet environment and the researcher stayed near to the respondent to clarify or explain the questions asked by the respondent during the questionnaire is being filled. The respondent are not constrained by any time limits to increase the quality of the answers. The essence of elements of strategic thinking which is used for interpreting the questionnaire is provided below with the main questions of the research.

3.3 Summarization of each element and core questions

In this section, the elements which are discussed in the literature review part, are summarized to provide the final idea about the element in the context of this thesis.

A system perspective

Systems perspective is the foundation of strategic thinking, which is going to be divided into three parts namely individual (individual to individual), groups (between departments), and organizations (between companies, firms, communities).

Individual (Level 1) – Two characteristics need to be addressed in this level. (i)The knowledge of an entrepreneur about the role of individual's in his/her start-up (ii) the understanding of how an individual's work affects the work of others and vice versa.

Groups (Level 2) - Two characteristics need to be addressed in this level. (i)The knowledge of an entrepreneur about the role of groups/departments (if any) in his/her start-up. (ii)The understanding of how actions of one departments will affect the actions of other departments and vice versa.

Organization (Level 3) – Two characteristics need to be addressed in this level. (i)The knowledge of an entrepreneur about their and other organizations role in their business ecosystem. (ii)The understanding of, how their actions affect the actions of other organization (including suppliers, customers B-to-B) and vice versa.

The individual questions developed based on the above mentioned levels are discussed in the table (table 5). The question for the whole element is mentioned below

Q1 – What is the level (high, medium or low) of system perspective does the start-up possess?

Intent-focused

Strategic thinking is intention driven, intent is the one which gives the unique point of view about the long-term market for the start-ups. Intent can be justified as robust when it gives direction, discovery and destination to the start-up.

Direction – Intention provides a certain point of view about the long-term market for an organization which provides a framework to make active and rational decisions on the day-to-day activities to drive the whole organization towards the goal.

Discovery – To connect the gap, existing between present resources & capabilities and future intentions, an organization need to innovate with the help of alternatives to stretch. It provides a sense of discovery to an organization.

Destiny- the end goal of the start-up as a whole body. It provides the emotional motivation for the employees by providing the possibility of beating a competitor, instead of gratifying stakeholders. This emotional motivation tends to last a longer time.

The individual questions developed based on the above mentioned sub-elements are discussed in the table (table 5). The question for the whole element is mentioned below

Q2 – What is the level (high, medium or low) of intent-focused is the start-up?

Thinking in Time

Importance of time in strategic thinking is almost highlighted by all the scholars. An organization thinking about future should integrate the insights of past such as institutions memory about product, market etc., and knowledge of present such as resources and capabilities.

Strategic thinking is not only about future, instead it should acquire insights from the past and analyze the present (resources and capabilities) to think about the future. The two key components that thinking in time (past, present and future) should focus on are the product/service and the market. Thinking in time should balance between past and future, and continuously oscillate between past, present and future to be successful.

The individual questions developed based on the above mentioned parts of elements are discussed in the table (table 5). The question for the whole element is mentioned below

Q3 – What is the level (high, medium or low) of Thinking in time does the start-up possess?

Intelligent Opportunism

Intelligent opportunism is one of the important element for strategic thinking. Because it gives the lens of finding the better one, if some options are given on the way through the journey towards long term goal of the start-up. It gives the flexibility to the start-ups long term goal by opening the possibility of adapting the new strategies emerging.

Developing alternative options for a problem is what lies at the core of intelligent opportunism. Alternative generation is one of the important skill need to be intelligently opportunistic. When opportunities emerge, there will be a lot of options to utilize it. When selecting the opportunities, a strategist should not concentrate only on the immediate payoffs, instead they should concentrate on long term payoffs.

The individual questions developed based on the above mentioned parts of elements are discussed in the table (table 5). The question for the whole element is mentioned below

Q4 – What is the level (high, medium or low) of intelligent opportunism does the start-up possess?

Hypothesis-driven

Hypothesis generation and testing the hypothesis is where the logical and creative approaches of strategic thinking incorporate each other. Hypothesis is generated by asking the creative question “what if” and the testing requires the logical solution “if then”.

Creativity- Strategic thinking without creativity will almost end up in strategic planning. Creativity helps imagining multiple alternatives to explore the hidden, alternative way of doing things which will result in unique strategic thinking perspective. Creativity should be without emotional bias to attain its maximum potential. Creativity is approaching problems and solutions - putting existing ideas together and recombining or making new connections (which may seem unconnected) between them with new combinations. Process of creativity should tolerate the contradiction and be able to move between

inductive and intuitive thinking.

Practical solutions- solving problem with the practical solutions is one of the important stage of hypothesis. The solutions must be implementable with the present technology instead of relying on the technology which may appear on one day in the future.

The individual questions developed based on the above mentioned creativity and practical solution are discussed in the table (table 5). The question for the whole element is mentioned below

Q5 – What is the level (high, medium or low) of Hypothesis driven in the start-up?

These are the core question, which are used to derive the investigative question. In the following section, the process of derivation and grounding are discussed.

Table 4. Sub-elements of elements of strategic thinking

Elements	Sub- elements	Elements	Sub- elements
Systems perspective	Individual level	Intelligent opportunism	Underscore deliberate and emerging strategy
	Group/department level		
	Organizational level		
Intent focus	Direction	Hypothesis driven	Creative
	Discovery		Rational
	Direction		
Thinking in time	Past	Hypothesis driven	Rational
	Present		
	Future		

3.4 Grounded questionnaire based on the theory

In this section, type of research, and the derivation of investigative question (question type), variable required and options for the respective questions are discussed, below.

Table 5. Methodology of grounding questionnaire

Element of Strategic thinking		Type of research: Predominantly descriptive, although wish to examine interdependencies between the elements of strategic thinking. The elements and the sub-elements used to derive the questionnaire is provided below			
Statement	When thinking about strategy...	Investigative Question	Type of question and Variable required	Detail in the data measured	
Systems Perspective	Work of individuals and their interdependencies	1. How many employees are there in your start-up? 2. What are the position/role exist, in your start-up (e.g. programmer, manager, HR)?	Quantity question and Quantitative answer form entrepreneur	Open question	
	Work of Groups and their interdependencies	3. Which position/role influences the value of your product, the most in your start-up? 4. Which position is influenced by most, during value creation in your start-up? 5. How would you describe your start-up structure?	Open question and Rational answer from entrepreneur	Open question	
	Work of Groups and their interdependencies	6. Please fill out the complete end-to-end system of value creation inside your start-up 7. The highest percentage of value is added at which stage of your product/service? (assuming no failure between stages)	Open question and Rational answer from entrepreneur	Organic Inorganic Other (explain)	

Element of Strategic thinking	Statement	When thinking about strategy...	Investigative Question	Type of question and Variable required	Detail in which the data measured
Systems Perspective	Work of Organization and their interdependencies	Entrepreneur knows the role of start-up	8. Who is your end customer and what product/service do you provide to them?	Open question and Rational answer from entrepreneur	Open question
		Entrepreneur know how start-ups work influences others and vice versa	9. Do you outsource any of your value creation stage? If yes please explain	Open question and Rational answer from entrepreneur	Open question
Intent-focused	Direction	Entrepreneur have a sense of direction	10. Do you have an image about the future of your start-up?	Rating question and Opinion of entrepreneur about the future image	Strongly agree Agree; Neither agree nor disagree; Disagree Strongly disagree
		Entrepreneur have a sense of direction	11. How many years it would take to achieve that image?	Category question and Opinion of entrepreneur about the period to achieve future image	1 to 5 5 to 10 10 to 15
		Entrepreneur have a sense of direction	12. How often did you feel that your start-up is moving towards that image?	Category question and Opinion of entrepreneur about the frequency of step towards future image	All the time Very often Sometimes Rarely Never

Element of Strategic Intent	Statement	When thinking about	Investigative Question	Type of question and Variable required	Detail in which the data measured
Intent focused	Discovery	Entrepreneur have a sense of discovery	13. Do you believe innovation can help to achieve that image/vision?	Rating question and Opinion of entrepreneur about the way to achieve that image	Strongly agree Agree; Neither agree nor disagree; Disagree Strongly disagree
			14. Do you know all the machines, technologies and intellectual properties (if any) possessed by your start-up?	Rating question and Opinion of entrepreneur about the future image	Strongly agree Agree Neither agree nor disagree Disagree
Intent focused	Destiny	Entrepreneur have a sense of destiny	15. Do you have a long-term goal for your start-up?	Rating question and Opinion of entrepreneur about the existence of long term goal	Strongly agree Agree Neither agree nor disagree; Disagree; Strongly disagree
			16. How many years it would take to achieve that goal?	Rating question and Opinion of entrepreneur about the way to achieve that image	Strongly agree; Agree Neither agree nor disagree; Disagree Strongly disagree

Element of Strategic thinking	Statement	When thinking about strategy...	Investigative Question	Type of question and Variable required	Detail in which the data measured
Thinking in time	Past	Entrepreneur think about the past	18. When making decisions for the future, I consider (you can choose more than one option)	List question and Opinion of entrepreneur about consideration of various time while making future decisions	Past
	Present	Entrepreneur think about the present			Present
	Future	Entrepreneur think about the future			Future
Intelligent Opportunism	Knowledge of deliberate strategy, ability to identify emerging strategy and underscore them	Entrepreneur know the deliberate strategy	17. Do you have an action plan to achieve that goal?	Rating question and Opinion of entrepreneur about the existence of action plan to achieve goal	Strongly agree Agree Neither agree nor disagree
		Entrepreneur are looking for emerging strategy	19. How often do you look for opportunity in the market?	Category question and Opinion of entrepreneur about the frequency of looking opportunity in start-ups market	All the time Frequently Sometimes Rarely Never Strongly disagree
		Entrepreneur can underscore the difference between deliberate and emerging strategy	20. How do you feel about the following statement? 'Action plans can be changed'. Explain why	Rating question and Opinion of entrepreneur about the flexibility of action plan	Strongly agree Agree Neither agree nor disagree Disagree Strongly

Element of Strategic thinking	Statement	When thinking about strategy...	Investigative Question	Type of question and Variable required	Detail in which the data measured
Hypothesis-driven	Creativity without emotional bias which should result in novel and valuable solution	Entrepreneur can create novel ideas	21. Imagine you are facing a problem in your product or service or in the process of making it etc. How many solutions you consider before solving that problem?	Category question and Opinion of entrepreneur about the number of solutions made before solving a problem	1 to 10 10 to 50 50 to 100
			22. While considering those solutions/ideas in general. Do you notice conflicts between them?	Rating question and Opinion of entrepreneur about the notice of conflicting ideas while problem solving	Strongly agree; Agree Neither agree nor disagree; Disagree Strongly disagree
			23. How does those conflicts make you feel?	Rating question and Likelihood of entrepreneur about the feeling of conflicting ideas	Very Good; Good Neither good nor bad Bad; Very bad
			24. Imagine you are at the end of the solution making process. You are seeing the solution. How often that solution is completely new from old models, concepts?	Category question and Opinion of entrepreneur about the frequency of novel solutions	All the time; Frequently; Sometimes; Rarely; Never
			25. How often the final solution is practical (implementable with the present technology, supply chain etc.) rather than theoretical?	Category question and Opinion of entrepreneur about the excitability of final solution	All the time; Frequently; Sometimes; Rarely, Never

3.5 Methodology of analyzing the data, to measure the level of elements of strategic thinking

The analyzing of data is divided into two sets (set 1 and set 2) and two methodologies are used, namely qualitative and quantitative respectively (for the questions from questionnaire). These methodologies are discussed below.

For Set 1 (Q1). The investigative questions from 1 to 9 are open ended questions, hence qualitative analysis is conducted for those questions, with the help of ATLAS software (version 1.5.4 (477)).

For Set 2 (Q2, Q3, Q4, and Q5). The investigative questions from 10 to 25 are either rating or category or list type of questions, hence quantitative analysis is conducted for those questions, with the help of SPSS statistics software (version 24).

The method of measuring, the above-mentioned Set 1 and Set 2 is discussed in detail below.

3.5.1 Set 1 - Qualitative analysis (Q1) and method of measuring

For the investigative question 1 to 9, the data from the questionnaire are summarized () and the data is evaluated to measure the level by the following method.

At first, the questions are categorized into their respective sub-elements namely individual, group/department and organizational level which are derived in the questionnaire grounding session. Then the scenarios mentioned below is tested.

For sub-element: -

- If the respondent provides the answer, and able to explain and justify his/her answer and it fits the context of the question, then the level of that sub-element (e.g. individual level) is high.
- If the respondent provides the answer, but unable to explain and justify his/her answer and it doesn't fit the context, then the level of that sub-element (e.g. individual level) is medium.
- If the respondent doesn't provide answer or the answer doesn't fit the context of the question, then the level of that sub-element is low.

The above mentioned same analogy is carried out for all three sub-elements (individual, group and organizational level). Then, for the whole element - 'systems perspective's' level is evaluated based on the scenario mentioned below.

For element: -

- If all the sub-elements levels are found as high, then the level of the element is measured as high.
- If all the sub-elements levels are found as low, then the level of the element is measured as low.
- All the other possible scenarios which are not mentioned in the high and low (element), are measured as medium.

3.5.2 Set 2 - Quantitative analysis (Q2, Q3, Q4 and Q5) and method of measuring

The four stages of quantitative analysis namely options and coding, logic and new coding, new coding - decoding and measuring of level, for the answered questions from 10 to 25 are discussed below.

Stage 1- Options and coding: The options for the questions, are coded with a numerical data (e.g. strongly agree-1, agree-2, etc.) for the ease of analyzing the data with SPSS software.

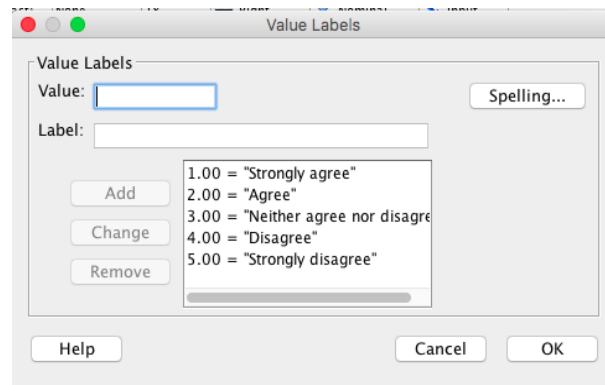


Figure 2. Value labels (used for option coding)

Stage 2- Logic and new coding: Then, the coded numerical data is categorized into three new categories for each question respectively as 1, 2 and 3 (multiple numerical data can't be categorized into single string i.e. why the next stage is added).

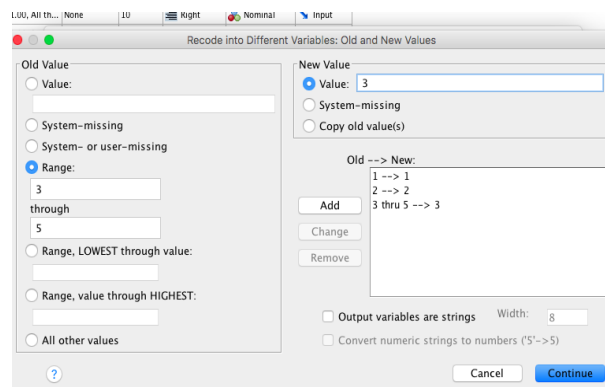


Figure 3. Recoding different variables: old and new values (used for logic and new coding)

Stage 3- New coding- decoding: Then, the coded numerical data is decoded into string as High, Medium and Low respectively for each question.

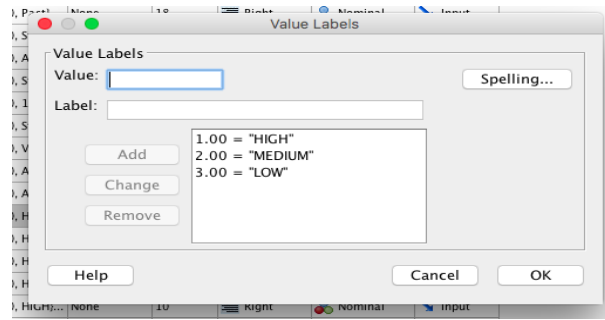


Figure 4. Value labels (used for new coding and decoding)

Stage 4 is discussed at the end of this session (Set 2), to increase ease of continuity for readers.

The above-mentioned stages for each core question (Q2, Q3, Q4 and Q5) is individually described below.

Q2 – What is the level (high, medium or low) of intent-focused is the start-up? (Questions 10-16)

Element 2: Intent-focused

Table 6. Method of evaluating Q2 using SPSS

Question No:	Stage 1 - Options and coding	Stage 2 - Logic and new coding	Stage 3 - New coding - decoding
10. Do you have an image about the future of your start-up?	Strongly agree – 1 Agree – 2; Neither agree / disagree – 3; Disagree – 4; Strongly disagree - 5	1=1 2=2 3 or 4 or 5=3	1-High 2-Medium 3-Low
11. How many years it would take to achieve that image?	1 to 5 -1 5 to 10 -2 10 to 15 -3	1=3 2=2 3=1	1-High 2-Medium 3-Low
12. How often did you feel that your start-up is moving towards that image?	All the time -1; Very often – 2; Sometimes – 3 Rarely – 4 Never -5	1=1 2 or 3=2 4 or 5=3	1-High 2-Medium 3-Low
13. Do you believe innovation can help to achieve that image/vision?	Strongly agree – 1 Agree - 2 Neither agree nor disagree – 3; Disagree – 4; Strongly disagree - 5	1=1 2=2 3 or 4 or 5=3	1-High 2-Medium 3-Low

Question no	Stage 1	Stage 2	Stage 3
14. Do you know all the machines, technologies and intellectual properties (if any) possessed by your start-up?	Strongly agree – 1 Agree - 2 Neither agree nor disagree – 3 Disagree – 4 Strongly disagree - 5	1=1 2=2 3 or 4 or 5=3	1-High 2-Medium 3-Low
15. Do you have a long-term goal for your start-up?	Strongly agree – 1 Agree - 2 Neither agree nor disagree – 3 Disagree – 4 Strongly disagree - 5	1=1 2=2 3 or 4 or 5=3	1-High 2-Medium 3-Low
16. How many years it would take to achieve that goal?	1 to 5 – 1 5 to 10 – 2 10 to 15 - 3	1=1 2=2 3=3	1-High 2-Medium 3-Low

Q3 – What is the level (high, medium or low) of Thinking in time does the start-up possess? (Question 18)

Element 3: Thinking in Time

Table 7. Method of evaluating Q3 using SPSS

Question no	Options and coding	Logic and new coding	New coding - decoding
18. When making decisions for the future, I consider (you can choose more than one option)	Past – 1 Present - 2 Future - 3	1 or 2 or 3=3 12 or 23 or 13=2 1&2&3=1	1-High 2-Medium 3-Low

The options for the question 18 are coded in the SPSS software, for example if the respondent answered past then number 2 is coded, if the respondent selects past present and future then it is coded as 123.

Then in the next stage the coded data is categorized, for example if the respondent coded answer is 123, it is moved to the new logic and coded as 1. Then that coded data is decoded, for this case it is high. Hence the thinking in time on that startup is high

Q4 – What is the level (high, medium or low) of intelligent opportunism does the start-up possess? (Questions 17, 19 and 20)

Element 4: Intelligent opportunism

Table 8. Method of evaluating Q4 using SPSS

Question no	Options and coding	Logic and new coding	New coding - decoding
17. Do you have an action plan to achieve that goal?	Strongly agree – 1 Agree - 2 Neither agree nor disagree – 3 Disagree – 4 Strongly disagree - 5	1=1 2=2 3 or 4 or 5=3	1-High 2-Medium 3-Low
19. How often do you look for opportunity in the market?	All the time -1 Frequently – 2 Sometimes – 3 Rarely – 4 Never -5	1=1 2 or 3=2 4 or 5=3	1-High 2-Medium 3-Low
20. How do you feel about the following statement? ‘Action plans can be changed’. Explain why	Strongly agree – 1 Agree - 2 Neither agree nor disagree – 3 Disagree – 4 Strongly disagree - 5	1=1 2=2 3 or 4 or 5=3	1-High 2-Medium 3-Low

Q5 – What is the level (high, medium or low) of Hypothesis driven in the start-up? (Questions 21 to 25)

Element 5: Hypothesis driven

Table 9. Method of evaluating Q5 using SPSS

Question no	Options and coding	Logic and new coding	New coding - decoding
21. Imagine you are facing a problem in your product or service or in the process of making it etc. How many solutions you consider before solving that problem?	1 to 10 - 1 10 to 50 - 2 50 to 100 - 3 100 to 200 - 4 200 to 400 - 5	1=3 2 or 3=2 4 or 5=1	1-High 2-Medium 3-Low
22. While considering those solutions/ideas in general. Do you notice conflicts between them?	Strongly agree – 1 Agree - 2 Neither agree nor disagree – 3 Disagree – 4 Strongly disagree - 5	1=1 2=2 3 or 4 or 5=3	1-High 2-Medium 3-Low
23. How does those conflicts make you feel?	Very good – 1 Good – 2 Neither good nor bad – 3 Bad – 4; Very bad – 5; Doesn't apply to me - 6	1 or 2=1 3=2 4 or 5 or 6=3	1-High 2-Medium 3-Low
24. Imagine you are at the end of the solution making process. You are seeing the solution. How often that solution is completely new from old models, concepts?	All the time -1 Frequently – 2 Sometimes – 3 Rarely – 4 Never -5	1 or 2=1 3 or 4=2 5=3	1-High 2-Medium 3-Low
25. How often the final solution is practical (implementable with the present technology, supply chain etc.) rather than theoretical?	All the time -1 Frequently – 2 Sometimes – 3 Rarely – 4 Never -5	1 or 2=1 3 or 4=2 5=3	1-High 2-Medium 3-Low

Questionnaires are provided in the annexes

Stage 4- Measuring of level: In this stage, for each element the highest percentage of decoded data (High, Medium or Low) is found out and finalized as the level for that individual element (stage 4 is used for all question excluding question no 18, because maximum percentage test is not needed).

BREATH COUNT

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	HIGH	5	71.4	71.4	71.4
	MEDIUM	1	14.3	14.3	85.7
	LOW	1	14.3	14.3	100.0
	Total	7	100.0	100.0	

Figure 5. Example figure to explain stage 4

In the section (3.5) the methodology of analyzing the data, to identify the level of elements of strategic thinking for set 1 and set 2 is discussed in detail. The actual analysis is done in the following chapter.

3.6 Limitations of the Research

This research has two main limitations. The first one is, data collected for this thesis in the form of questionnaire may be argued as the most reliable method to identify the content of strategic thinking of start-ups, the understanding of three questions varied slightly. Even though the researcher tried to test the initial questionnaire and adapted the questionnaire, the data collected through the final questionnaire can't be argued as 100% robust and enough, due to the ratio of number of questions and their grounding theory explanation. The number of questions are reduced as much as possible, to increase the successful response ratio, since start-ups are naturally busy and intensive in their due to the various factors like human resource, work load, priority etc.

The second limitation is, both the questionnaire and interview is conduct in English language. This is considered as limitation because, even though the respondents can understand and provided answers in English perfectly, the quality of the data collection is high and unbiased, when conducted in the mother tongue of the respondents. The researcher is unable to communicate in Lithuanian; hence this is considered as a limitation.

4. ANALYSIS OF COLLECTED DATA FROM KTU START-UPS

This chapter deals with the collected primary data. This chapter is divided to three sub-chapters. In the first sub-chapter, the explanation of methodology used to identify the level of strategic thinking elements from primary data, is discussed with the help of a sample start-up (BREATH COUNT). In the second sub-chapter, the level of elements (strategic thinking) of each start-up and the overall level of strategic thinking element for KTU start-ups is produced. In the third sub-chapter, the findings from the sub-chapter two is discussed and interpreted, then the final solution for this research question is answered.

4.1 Methodology of identifying the level of elements of strategic thinking, form the collected primary data

This section is divided into three parts, first part of this section deals with the detailed explanation of “how level of each element is calculated for a start-up?” (BREATH COUNT) using software’s ATLAS and SPSS, second part consist of a table, which will display the level of each element for each start-up and the third part consist of the overall level of each elements of KTU Start-up space (all)

Example: Method of identifying level of element (BREATHCOUNT)

BREATH COUNT is a bio-tech and software based start-up which provides a device and mobile software to monitor and manage the condition of asthma, for patients.

Element 1 – A systems perspective

The summarized text of open questions 1 to 9 are used to analyze this element with the ALTAS software, questions 1 to 9 are divided into three sub-elements namely individual level (1 to 4), group level (5 to 7) and organizational level (8 and 9).

Individual level -The respondent answered the questions 1 to 4, but didn’t clearly explained his answer (for question 3 and 4 – he said, “I have engineers working for me inside and outside my start-up, because we outsource manufacturing of our asthma measuring instrument, so I can’t know their individual roles and relationships precisely”). Hence, sub-element of individual level is medium.

Group level – The respondent answered the questions 5 to 7, and explained his answer (for question 5 and 6 – he explained why he consider their start-up as organic and explained each stage of value creation very clearly and noticed the relationship between groups). Hence, sub-element of group level is high.

Organizational level – The respondent answered the question 8 and 9, explained them clearly (but the understanding about the industry is not wider). Hence, sub-element of organizational level is medium.

Now, for the level of element ‘A systems perspective’ the scenarios mentioned as tested. (all sub-elements High –then element high or all sub-elements Medium – then element low or other possible scenarios: in this case ‘medium, high and medium’). Hence, **element of systems perspective is medium.**

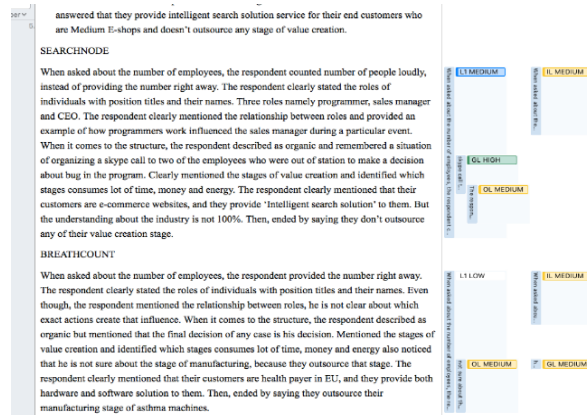


Figure 6. Depicts the qualitative analysis done for question 1 to 9 from questionnaire (ATLAS)

Element 2 – Intent focused

Using the SPSS software,

Stage 1- the answers are coded (e.g. question 10 (I3D110) coded as 1 because the selected option is strongly agree. The same method is used for all other question until 16 with respective inputs discussed under Q2 for each question. (the input below is specific to I3D110)

Coding terminology I3D1101: I3D- intent driven, 1-question 1 in sub-element, 10 –number in questionnaire and 1 – indicates the code is categorized.

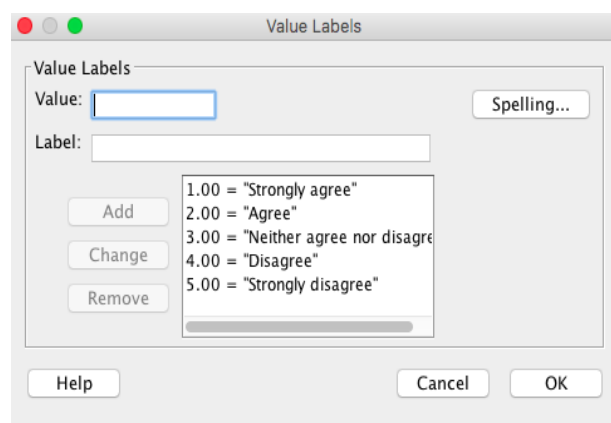


Figure 7. Depiction of coded questions and the result in SPSS (Q2)

STARTUPNAME	I3D110	I3D211	I3D312	I3D413	I3D514	I3D615	I3D716
BREATH COUNT	1.00	2.00	1.00	1.00	3.00	1.00	1.00

I3D110	I3D211	I3D312	I3D413	I3D514	I3D615	I3D716
Strongly agree	5 TO 10	All the time	Strongly agree	Neither agre...	Strongly agree	1 TO 5

Figure 8. Depiction of coded questions and the result in SPSS (Q2)

Stage 2 –Then coded 1 is categorized as 1 (1=1). The same method is used for all other question until 16 with respective inputs discussed under Q2 for each code. (the input below is specific to I3D1101)

I3D1101	I3D2111	I3D3121	I3D4131	I3D5141	I3D6151	I3D7161
1.00	2.00	1.00	1.00	3.00	1.00	1.00

Figure 9. Depiction of categorizing coded questions and the result in SPSS (Q2)

Stage 3 - Then the categorized 1 is decoded as high. The same method is used for all other question until 16 with respective inputs discussed under Q2 for each category.








 I3D1101	 I3D2111	 I3D3121	 I3D4131	 I3D5141	 I3D6151	 I3D7161
HIGH	MEDIUM	HIGH	HIGH	LOW	HIGH	HIGH

Figure 10. Depiction of decoding, categorized coded questions and the result in SPSS (Q2)

Stage 4 – the percentage of High is approximately 71 percentage, which is maximum then other options.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	HIGH	5	71.4	71.4	71.4
	MEDIUM	1	14.3	14.3	85.7
	LOW	1	14.3	14.3	100.0
	Total	7	100.0	100.0	

Figure 11. Depiction of descriptive analysis which resulted in level distribution percentage in SPSS (Q2)

Hence, the element of intent focused is high.

Element 3 – Thinking in time

	 TIT118	 TIT1181
1	Future	LOW

Figure 11. Depiction of coded questions and the result in SPSS (Q3)

Stage 1 – the answer is coded as 3 for question 18, because the selected option is future.

Stage 2 – then coded 1 is categorized as 3 (1=3)

Stage 3 – then the categorized 3 is decoded as low. Hence, the element of Thinking in time is low.

Element 4 – Intelligent opportunism

Stage 1 – the answer is coded as 1 for question 17 (IOP117), because the selection option is strongly agree. The same method is used for questions 17, 19 and 20 with respective inputs discussed under Q4 for each question. (the input below is specific to IOP117)

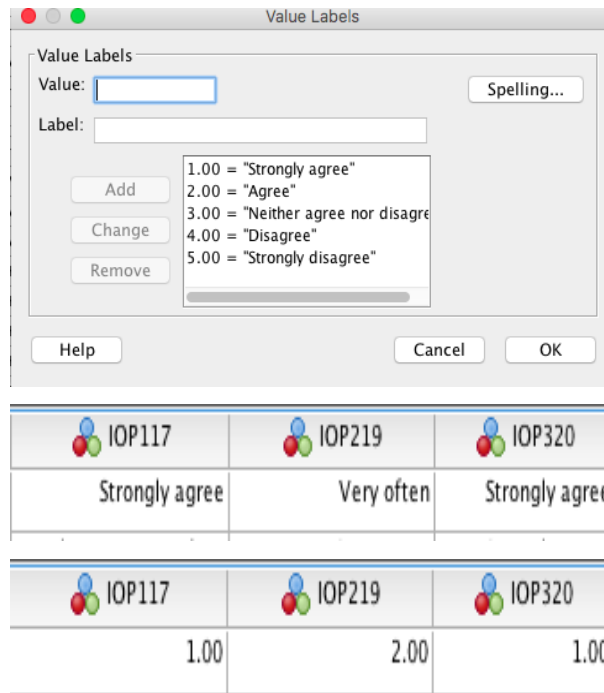


Figure 12. Depiction of coded questions and the result in SPSS (Q4)

Stage 2 – the coded 1 is categorized as 1 (1=1). The same method is used for questions 17, 19 and 20 with respective inputs discussed under Q4 for each code. (the input below is specific to IOP1171)

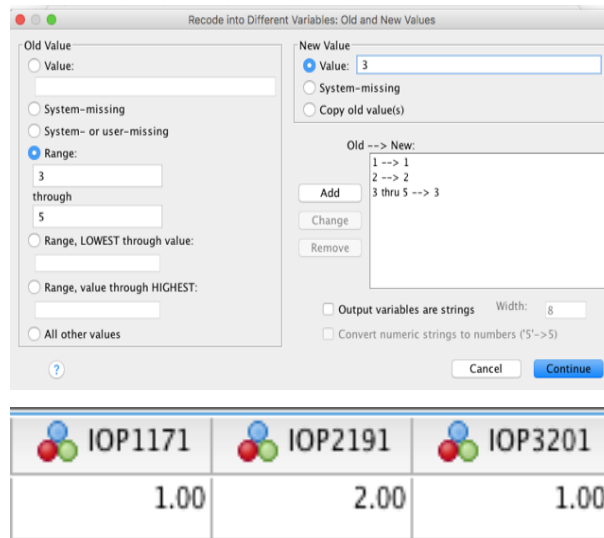


Figure 13. Depiction of categorizing coded questions and the result in SPSS (Q4)

Stage 3 – then the categorized 1 is decoded as high. The same method is used for questions 17, 19 and 20 with respective inputs discussed under Q4 for each category.

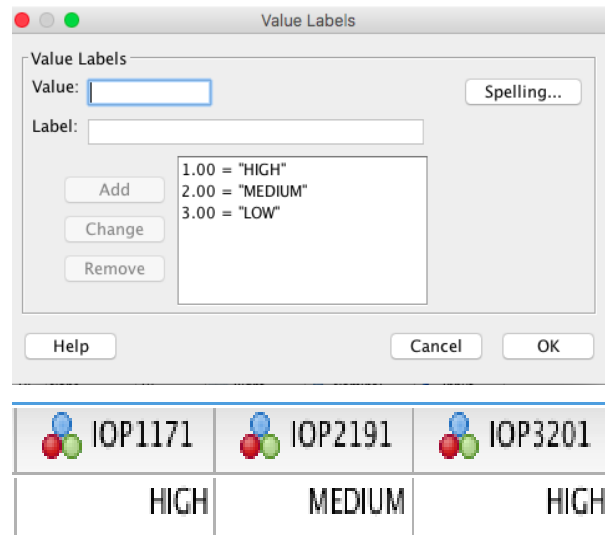


Figure 14. Depiction of decoding, categorized coded questions and the result in SPSS (Q4)

Stage 4 – the percentage of high is approximately 67 percentage.

BREATH COUNT

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	HIGH	2	66.7	66.7	66.7
	MEDIUM	1	33.3	33.3	100.0
Total		3	100.0	100.0	

Figure 15. Depiction of descriptive analysis which resulted in level distribution percentage in SPSS (Q4)

Hence, the element of intelligent opportunism is high.

Element 5 – Hypothesis driven

Stage 1 – the answer is coded as 3 for the question 21(HPD121), because the selected option is 50 to 100. The same method is used for questions 21 to 25 with respective inputs discussed under Q5 for each question.

(this input is specific to HPD1211)

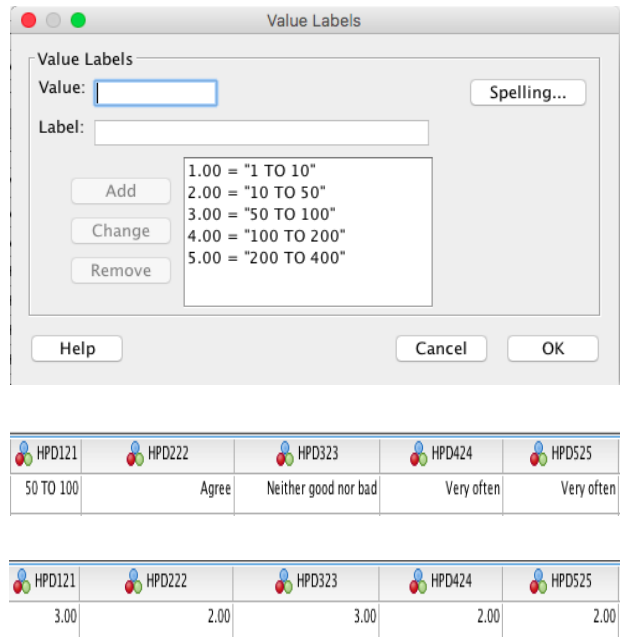


Figure 16. Depiction of coded questions and the result in SPSS (Q5)

Stage 2 – then coded 3 is categorized as 2(2 or 3=2) (HPD1211). The same method is used for questions 21 to 25 with respective inputs discussed under Q5 for each code.

(This input is specific to HPD1211)

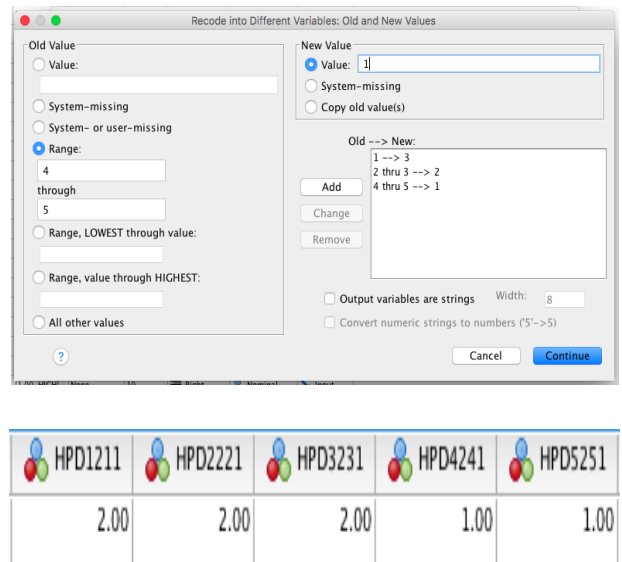


Figure 17. Depiction of categorizing coded questions and the result in SPSS (Q5)

Stage 3 – then the categorized 2 is decoded as medium (HPD1211). The same method is used for questions 21 to 25 with respective inputs discussed under Q5 for each category.

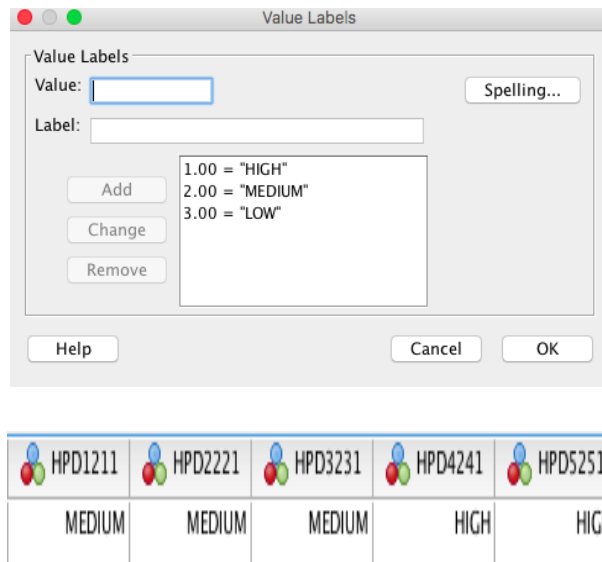


Figure 18. Depiction of decoding, categorized coded questions and the result in SPSS (Q5)

Stage 4 – the percentage of medium is 60 percentage.

BREATH COUNT

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	HIGH	2	40.0	40.0	40.0
	MEDIUM	3	60.0	60.0	100.0
Total		5	100.0	100.0	

Figure 19. Depiction of descriptive analysis which resulted in level distribution percentage in SPSS (Q5)

Hence, the element of Hypothesis driven is medium.

4.2 Level of elements of strategic thinking of each start-up

In this section, the level of strategic thinking elements in each start-up is measured based on the method followed in the last section.

Table 10. Level of elements of strategic thinking for all 14 start-ups

Start-up Name Element	Systems perspective	Intent focused	Thinking in Time	Intelligent opportunism	Hypothesis driven
BREATH COUNT	Low	High	Low	High	Medium
SEARCH NODE	Medium	Medium	High	Low	Low
SWEEPEST	Medium	High	High	High	Low
DROIDLNEX	Low	Medium	High	Low	Low
DALINUOSI	Medium	High	High	High	Low
ICUBIT	Medium	High	High	Medium	Medium
PLS	Medium	High	Medium	Medium	Medium
FIND	Medium	Medium	Low	High	Medium
TINLABA	Medium	Medium	High	High	High
EKOSTRUKURA	Medium	Medium	High	High	Medium
HOOLIGAMES	Medium	Medium	High	High	Low
AMEXE LABS	Medium	Medium	High	Medium	High
FOAMITA	Medium	Medium	Low	High	High
SOLITANA	Low	Medium	Low	Medium	Medium

The above table is the representation of level for each elements of strategic thinking of each start-up.

4.3 Overall level of elements of strategic thinking of KTU start-up space

In this section, the level of elements of strategic thinking of all start-ups are used to create a frequency table. This frequency table represents, the frequency and percentage of each level for that individual element, in the overall context of KTU start-up space. Then, a visual representation is provided in the form of bar-chart in the next section.

Table 11. Level of elements of strategic thinking with respective to percentage and frequency for KTU start-ups (overall)

Percentage & frequency of level of elements in the sample population										
Level	Systems Perspective		Intent Focused		Thinking In Time		Intelligent Opportunity		Hypothesis Driven	
	%	f	%	f	%	f	%	f	%	f
HIGH	NILL	-	35.7	5	64.3	9	57.1	8	21.4	3
MEDIUM	78.6	11	64.3	9	7.1	1	28.6	4	42.9	6
LOW	21.4	3	NILL	-	28.6	4	14.3	2	35.7	5
TOTAL	100	14	100	14	100	14	100	14	100	14

The above table represents the level of each elements in both percentage and frequency

4.4 Discussion of findings from primary data and interpretation

In this section, discussion of this projects finding is divided into five segments respective to the elements. Then, the percentage distribution of level of strategic thinking elements and the interpretation of finding and some general concerns about the relationship between factors of elements are discussed.

Element- Systems thinking (in the sample)

When it comes to systems thinking, almost 78% of the start-ups has medium level and rest of the 22% has low level. But, the interesting scenario is that none of the start-ups out of 14 has high level of systems perspective. When tried to find the reason behind this interesting phenomenon- almost all the start-ups have low level in organizational level, which is a sub-element of system perspective. This phenomenon is further explored below.

Organizational level of systems perspective- This level consists of two main characteristics. One is the position of a start-up in its business ecosystem. Second the understanding of how its actions influences the actions of other organizations. While answering those two questions, the respondents limit themselves within the direct supply chain of their start-up. When asked about the relationship between your supplier and their suppliers, and how it influences your start-ups, they said “we never think about it”. This may be due to the, fact that start-ups don’t have enough history (spent time in that business ecosystem) to trace or understand this relationship, which is different for a big organization with lot of history in its business ecosystem.

The number of employees in our sample start-ups range from 1 to 11, the individual and group level systems perspective is almost high in most of the start-ups. This two issues can be understood as, the lesser number of employees, the higher the individual and group level systems perspective. But, this may not be robust relationship to assume, because of the small number of, sample population researched in this thesis.

The relationship between the numbers of employees and the understanding of value creation stage is quite mysterious. In most of the start-ups from our sample, the lesser the employees – blurrier the boundaries between the roles, which is considered as a good environment for a start-up by many scholars, due to the fact it widens the understanding of individual, it may result in innovation. But, this idea is not supported by our results. The blurrier the boundaries, the lesser the understanding of value creation, this is what our results shows. The relationships found in this project can’t be argued as enough to support these relationships for overall industry, when considering the possibility of this may be specific to our projects samples.

Element- Intent focused (in the sample)

When it comes to the element of intent, almost 65% of the start-ups has medium level and rest of the 35% has high level. But, this time the interesting scenario is that none of the start-up out of 14 has low level of intent. The reason behind this interesting phenomenon is that almost all the start-up has some sort of intent when thinking about the future. But the quality and robustness of their intent is a different issue. This is further discussed below.

The two important factors concerned with the robustness of intent is vision and the goal. When it comes to vision almost all the start-ups have a vision, but in most of the cases those vision is all about the scalability of the business or simply growth in revenue and human resource. It’s not based on the industry or technology or innovation all the time. This may be happening, since start-ups are organization which

searches for repeatable and scalable business model (Blank, 2012), hence its vision is about scalability or growth, most of time instead of technology, innovation etc.

When it comes to goal, some start-ups boldly state that they have a goal. But their action plans is not focused toward that goal, instead it ends up as action plan to solve the immediate problems or reacting to the market, which may end on the cycle of cause and effect trap. This situation is widely common in our sample, which may be due to start-ups prioritizing of, ground-breaking success over survival.

In our sample, outsourcing the value creation stage often limits, the respondent to understand the inputs provided to create a value for their product/service. This may lead to decreased sensitivity to identify opportunities in market and innovation in the process of value creation. This insensitivity can devastate one of the core and competitive advantage of being a start-up over market leader, which is often complex to mimic. Hence, insensitivity is lethal to start-up. But this outsourcing and insensitivity relationship can't be true for all start-ups, maybe this is specific to our sample. Even though, the failure of (market giant once) Xerox, Blockbuster, and Nokia because of insensitivity over emerging market opportunities makes the researcher skeptic.

Element- Thinking in Time (in the sample)

When it comes to Thinking in time, almost 64% of the start-ups have high level, 7% of the start-ups have medium level and the rest of 28% have low level. Some of the key reasons for this percentage distribution is discussed below.

64% of start-ups consider past, present and future insights and experiences, when making decisions and thinking strategically.

7% of start-ups consider either, past and future or present and future instead of considering all three. An interesting discussion happened during the questionnaire filling duration, about thinking in time element, in which the respondent asked the researcher, “so what’s your opinion about thinking in time”, researcher replied “past, present and future all are important, so all of them should be considered”. In this rapidly changing technology why anyone should think about the past, was the idea proposed by respondent, then the discussion continued, at last the respondent agreed maybe just for understanding the pattern one should consider past. This showed the researcher, the other realm of thinking about past as unworthy.

28% of start-ups consider future or present or past alone when thinking strategically, which is quite interesting. This maybe because of the way the question is designed in the questionnaire, where the respondents are asked to pick, which they consider when making decisions for the future with options of past, present and future (mentioned clearly that they can choose more than one option). This type of

framing that question with the word future may, made them select one. But, some of the respondents argued past has no intrinsic value, may be the problem is not with the question design.

Element- Intelligent opportunism (in the sample)

When it comes to intelligent opportunism, almost 57% of the start-ups have high level, 28% have medium level and the rest of 14% have low level.

Almost every start-up believes that action plans can be changed, which is good for the intelligent opportunism. But, forgets to address continuous ‘searching’ looking for the opportunity. One of the key reason for this behavior is, some of the start-ups believe they found their final product or service once and for all. They lack the important characteristic of a start-up which is, ‘searching for repeatable product/service’, hence they don’t look for opportunity.

The other important issue in our start-ups sample is, the start-up who outsource some of their value stages are picking this outsourcing decision just to reduce the complexity of stages or for the advantage of production cost or because to access some technology or machines they lack. But some of them seemed to, select their supplier without being intelligently opportunistic, which may increase market penetration and many supply chain network advantage.

Element- Hypothesis driven (in the sample)

When it comes of the element of hypothesis driven, almost 21% of the start-ups have high level, 42% have medium level and the rest of 35% have low level. Some of the key reasons for this percentage distribution is discussed below.

Hypothesis driven strategic thinking- consist of two main stages namely creative and analytical. Most of the start-up lack creativity when developing the creative ‘what if’ question. Alternative generation is one of the key ways to foster creativity, but the number of alternatives generated during strategic thinking is very low in start-ups, which is why just 20% of start-ups have high level in this element. The other interesting key factor is, most of the start-ups with low level creativity argue that, in their field of industry creativity and innovation is not necessary. Most of them who argue this view point are software based start-ups, it is very confusing to understand why they believe creativity is not necessary for them. But this is specific for our sample software start-ups. It would very interesting to find, why this happens.

The second stage, which is alternative generation ‘if then’, the issue with our sample start-ups are most of them lack the creative stage, so it’s quite hard to measure their capability, of providing analytical solution for robust creative situations. But, almost all our sample start-ups can find analytical solution for their problems.

Generalized Level of strategic thinking of KTU start-ups

The elements level of individual start-ups are used to identify the overall level of elements of KTU start-ups. The percentage of each level of elements for all start-ups is calculated using SPSS software. Then the level with the maximum percentage is considered as its concluded level.

Table 12. Level of elements of strategic thinking for KTU start-ups (overall)

Element	Systems perspective	Intent focused	Thinking in Time	Intelligent opportunism	Hypothesis driven
Level	Medium	Medium	High	High	Medium

The table above is the answer for the core question of this thesis. Which follows

Table 13. Core questions of this thesis and answers (overall)

Q1	What is the level (high, medium or low) of system perspective does the start-up possess?	Medium
Q2	What is the level (high, medium or low) of intent-focused is the start-up?	Medium
Q3	What is the level (high, medium or low) of Thinking in time does the start-up possess?	High
Q4	What is the level (high, medium or low) of intelligent opportunism does the start-up possess?	High
Q5	What is the level (high, medium or low) of Hypothesis driven in the start-up?	Medium

The qualitative and quantitative data collected from questionnaire and interview, are analyzed with ATLAS and SPSS software's respectively. The generalized level of strategic thinking of KTU startups of each elements are depicted in the above table. Discussion of the levels are provided below.

Systems perspective of KTU startups are medium. The individual level systems perspective of KTU startups are high, the number of employees or individual in KTU startups varies from 1 to 11. The entrepreneurs are aware of the role of individual's in the startup and understands how one individuals work influence the work of others. The group level systems perspective of KTU startups are medium, because some startups has clear groups/departments in them and the entrepreneurs know what exactly they do but the influence of groups over others are not understood completely, one startup has no group at all so it is not included in this analysis. The organizational level systems perspective of KTU startup are low, the entrepreneurs have very low understanding of how the whole systems works, their understanding of systems doesn't go beyond their suppliers.

KTU startups possess medium level intent focus, almost all the startups have a vision of their future and moving towards that image, but the innovation and the interest towards innovation is medium among startups, because some startups believe innovation is already achieved by them in the form of their product/service. When it comes to goal, most of the startups have one, but they are not moving towards that goal, because they are reacting to the market demands all the time instead of focusing on goals. KTU startups have high thinking in time, because most of the startups uses past, present and future when making decisions. KTU startups have high intelligent opportunism, because they know their deliberate strategy and they inform it to their employees very quickly. They look for emerging opportunities in the market very often and they underscore the deliberate strategy and emerging strategy all the time to select the best one. KTU startups are medially hypothesis driven, because they lack the creativity which is the important, one of the reasons they lack creativity is because the number of alternatives generate by them are very low for a strategic problem. But almost all the startups can solve all problem practically, which shows KTU startups have strong rational thinking but they lack creativity.

Conclusion

The overall aim of this thesis is to identify the content of strategic thinking of startups, the sample taken for this thesis is KTU startups. With this thesis, literature can take a step towards the process of identifying the content of strategic thinking of startups.

This thesis researched the content of strategic thinking in KTU startups.

The main finding of this thesis is content of strategic thinking of KTU startups in the elements level. Those finding are depicted in the table below.

Table 14. Leve of strategic thinking elements (overall)

Element	Systems perspective	Intent focused	Thinking in Time	Intelligent opportunism	Hypothesis driven
Level	Medium	Medium	High	High	Medium

During this research, the definition of strategic thinking is derived and argued that strategic thinking is both creative and rational at the same time and strategic thinking should be an ongoing process instead of a onetime process and it should generate an integrated perspective of enterprise/startup. Then the elements of strategic thinking are proposed as systems perspective, intent focus, thinking in time, intelligent opportunism and hypothesis driven. The definition of startup is derived and the elements of strategic thinking is adapted for the startup. A questionnaire is developed based on the elements of strategic thinking and these questionnaire are provided to 14 startups at KTU startup space. The returned questionnaire is both qualitatively and quantitatively analyzed to find the result mentioned in the above table.

The finding represents that out of five elements of strategic thinking of KTU startups three were identified as medium. Hence to provide an overall conclusion, the content of strategic thinking of KTU startups is identified as medium

Recommendations to the future research

In this research, the questionnaire is derived with the help of theory from the literature. Based on the experience from this research, the survey methodology for collecting primary data is fine, but if a structured or semi-structured interview is added with a questionnaire, the overall understanding quality and robustness of the research can be increased drastically. Instead of ending with, identifying the content of strategic thinking, the relationship and interdependencies between various elements of strategic thinking can be explored. Based on this same element, an individual organization or startup can be selected, and an in-depth analysis about the content of each element can be explored individually and maybe a methodology can be developed to improve the elements they lack.

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