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THE LEARNING CANVAS

for GUEST Methodology

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1. Introduction

1.1 Origin and Motivations

Innovation and technological development are more than ever characterizing the speed with which social and industrial structures evolve. Over the past two decades, the diffusion of new technologies such as the Internet, personal computers, smart devices, e-commerce and social networks' platforms have disrupted old paradigms by irreversibly changing everyone's life. Innovative modes of communication, purchasing products or services, researching for information, listening to music, or watching movies have shifted social habits and customs towards new attitudes and consuming decisions. This phenomenon is offering incredible business opportunities addressing key societal challenges and capturing latent people' requirements. In this fast-changing environment, industries belonging to different fields have been disrupted by the entrance of new organizations and the exclusion of powerful incumbents. Fortune 500 and Fortune 100 lists include companies that did not, even, exist twenty years ago, but which, actually, are the leaders in their business industries and influence the social and economic dynamics of the entire world. Modern literature, media and governments have identified startup organizations as the main players contributing to the innovation and technological development of society. Amazon, Netflix, Uber, Facebook, Google, Spotify are, just, few well-known examples of companies which disrupted already existing industries, or created new markets by surfing the innovative, digital and technological wave. They all started as small startups that were able to grow rapidly and scale the economy, becoming profitable business and generating benefits under both social and economic perspectives. But reality is far from these examples.

As asserted by Ash Maurya in his book Running Lean "we are building more products than ever before, but most of them fail – not because we can't complete what we set up to build, but because we waste time, money, and effort to build the wrong product"[1]. Most startups fail because they are not able to develop proper business models and enhance a fast growing and scalable business to support their product or service fitting the market, terminating financial resources before reaching market survival.

During the PhD course held by prof. Guido Perboli "Lean startup and lean business for innovation management" at Politecnico di Torino, I was introduced to GUEST Methodology aimed to support the business design, execution and monitoring focused on innovative project involving startup, SMEs, and consulting environments with the aim to solve the reasons for the failure introduced.

The methodology, described along the thesis, is composed of a standard process and material aimed to drive entrepreneurs, teams and organizations to generate business

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[1] A. Maurya (2012)

models, develop business strategies and monitor performances through sustainable and scalable growth.

Studying the methodology and applying it in a real project work called "Re-Glass" with two PhD students, I thought about the possibility to develop a formal model to support the process of learning validation, core principle of the lean business approach, to be included in the Test Phase of the GUEST Methodology in order to formalize and enhance the characterizing continuous improvement approach.

The Learning Canvas is the model developed in the thesis. It has been inspired by all the knowledge and competence gathered during the courses attended in the Engineering and Management Master Course with specialization in Innovation at Politecnico di Torino, particularly "Innovation Management and Product Development" by professor Marco Cantamessa and "Entrepreneurship" by professor Paolo Landoni.

In addition, the last six months of internship at Accenture provided me with insights and useful discussion with valuable professionals on innovative and digital topics which have been integrated in the model.

1.2 Objective and Scope

The thesis is aimed at providing a detailed description of the Learning Canvas and its implementation process. The model has been developed by applying a continuous improvement approach, undergoing though different evolutions and modifications, specified in its chapter.

The objective is to present not only its final version, including its nine building-blocks, but the idealization, design and execution process behind it, in order to inspire the reader in possible alternative solutions to be applied in the model or further adjustments. The thesis, also, provides guidelines and instructions for carrying on the Learning Meeting, designed to involve business actors in the project and generate an additional value for the model, and to support professionals with different business knowledge and competences in the correct development of the model's building blocks.

Even if the model is applicable to innovative projects associated with startups, SMEs, and consulting organizations, the thesis assumes the startups' perspective in order to be as specific as possible.

Furthermore, it describes from the same point of view the GUEST Methodology to contextualize the method in which the Learning Canvas is included, but mainly the decision has been driven by the aim for delivering to the reader a standard process with a complete set of documents supporting business model generation and development for innovative projects.

1.3 Structure

The thesis is composed by five main chapters structured at providing the basic knowledge and core principles needed by the reader to understand and perceive the value proposition offered by the Learning Canvas.

The aim of the first chapter is to contextualize startup organizations through its definition under three main perspectives: qualitative, quantitative and juridical, the core principles on which they are built, mainly innovation and technological development, and both social and economic benefits generated by their diffusion.

The second chapter illustrates the research described in the article "Startups' Roads to Failure". developed by a pool of professors of the Politecnico di Torino, underling the main failure causes affecting statups.

It was developed by applying the SHELL Model adapted to business environments with a defined taxonomy categorization and the implementation of a multi-dimensional statistical model on post-mortem reports of 214 startups to identify and prioritize the failure reasons affecting startups in their lifecycle.

The reasons described in the previous chapter justify the need for a standard methodology to support the generation and development of the startups' business. In the third chapter, it is described step-by-step the GUEST Methodology with its process and the set of documents included.

After having created the context and presented the methodology in which it is included, the Learning Canvas is described in the fourth chapter. The chapter discusses about the literature, principles and models which have influenced the canvas, the Learning Meeting - suggested to be organized in order to collect all the business actors around the model, the content and design evolution under which it has undergone, the detailed description of its nine building-blocks with the related guidelines and forecasted benefits provided to startups and the added value to the GUEST Methodology.

Finally, the fifth chapter take us the conclusion of the thesis by summarizing the main insights and features of the Learning Canvas.

2. Innovative startups – Definition and Context

2.1 The Definition of Startup

It is difficult to find in the modern literature a unique definition of startup. Its critical role fulfilled in the actual society and economy has produced a great interest over the past two decades, even if the first examples of these organizations can be traced a long time before. Indeed, just think about the phenomenon of Apple. Nowadays it is known as one of the most innovative and technological disruptive realities ever existed, but it was founded by Steve Jobs and Steve Wozniak in a garage in California in 1976.

Also, during the nineties many online companies started their business and grew very fast thanks to the Internet and emerging technologies, giving life to the dot com boom. These examples suggest that the startup starts with a small business bringing innovation and change to the existing paradigm through technological and digital inventions, but it is not enough to define startup. University researchers and professors, entrepreneurs, managers in recent history have discussed its definition and characteristics taking into consideration many points of views with the consequence of generating a wide knowledge and different opinions, not always coherent among them.

Despite these observations, the paragraph tries to define the startup by looking at it from three main point of view, in order to create a comprehensive representation of all its main properties and elements. The analysis was enriched by collecting information coming from: economic, business, statistical sources.

These perspectives can be summarized in the following points:

1. Qualitative perspective;
2. Quantitative perspective;
3. Juridical perspective.

In addition, the analysis developed assuming these perspectives supported a personal definition of a startup presented in the last part of this chapter.

2.1.1 Qualitative Perspective

The creator of the lean startup approach and Silicon Valley entrepreneur Steve Blank provided a well-known definition of startup, it is a "temporary organization designed to search for a repeatable and scalable business model"[2]. This definition takes into consideration important elements which characterize startup:

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[2] S. Blank (2010)

1. Startup does not last forever, it represents a temporary organizational structure thus recognized until it evolves into another business structure. Obviously, the scenarios can be very different, indeed, there are startups that in a few years have become companies, startups which do not survive in the market and do not reach the company status, startups which are purchased by other companies or startups that require much more time to evolve due to business or industry dynamics. Nevertheless, in the following paragraph discussing about a quantitative definition of startup, the temporal and economic conditions have been set in order to define an organization as a startup, no matter the industry, the market and the business in which it operates.

2. Startup is aimed to search, develop and pivot business models in order to grow fast and scale the economy. It operates in a high uncertain environment which brings it to continuously change and improvement process until it finds its optimum business model, defined by Steve Blank as: "how your company creates, delivers and captures value"[3], it is detailed by analysing the Alexander Osterwalder Business Model Canvas presented in the Evaluate phase of the GUEST Methodology.

   According to Steve Blank, startup can survive in the market and become competitive by exploiting a fast evolution only by testing its business model on real customers to meet their real requirements. The selection of a proper business model and its development to support the value proposition behind a certain product/service is a critical task. Its mismanagement is one of the first causes of startup failure, as it is analysed in the business application of the SHELL Method to startup, in the following chapter. For this reason, a methodology is needed to guide the business model identification process and development. GUEST Methodology was developed to support the startup network to identify and adapt its business model, based on customers' requirements, through a continuous improvement process

3. Startup is a different form of organization with respect to small businesses or corporate companies. Small businesses run fixed business models that are not adaptable for fast growth or scalability in global economies but are applicable considering strong expansion limitations. Indeed, these businesses are: small restaurants, cloths retailers, groceries, hairdressers, etc. At the same time, the corporate companies are structured based on completely different financial and human resources capabilities, as analysed in the "Quantitative Definition" sub-paragraph. In addition, despite the previous examples, startup is characterized by strong innovative and technological content. It constitutes an organizational structure that created an innovative ecosystem around it, modifying the previous paradigm taht was constituted by actors with a low degree of collaboration.

Even if Steve Blank's definition provides useful insights to understand core concepts to define startup, additional key principles need to be taken into account to enrich it:

❖ **Founders and team**: startup is connoted by the mission and vision of the founders in bringing something new to specific markets due to innovative solutions not yet implemented. Usually, the initial teams are composed by one or three people, due to jurisdictional requirements, which strongly characterize the operative business enhanced by the organization. Startup success is determined by the motivation of the team management and the founders on reaching their vision combined with the effectiveness of the value proposition, the technology offered, the business model implemented and the support of the network in which it operates. In addition, the team culture, concerning business knowledge and capabilities, influences deeply the business result achieved by the organization.

❖ **Uncertainty**: startup operates in high uncertainty conditions due to high degree of technological, process and business innovation which is willing to pursue. These conditions

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[3] S. Blank (2010)

determine a high rate of failure, the 44% of startup, indeed, die in the first three years of life, as it emerges by the research described in the following chapter. The main causes are identified in the lack or wrong business model implementation and inability in business development, key activities required to adapt the business to the risky and uncertain environments in which it operates. For these reasons, startup is required to fast growth in order to survive in the market and scale the economy, before terminating financial resources.

❖ **Registered organization**: startup is not just a theoretical organization discussed in the literature. Organizations need to be signed in the public Startup register, different for each country, to be legally recognized as a startup. They are required to respect organizational and financial specifications to obtain approval, moreover, also the business idea proposed to the organization must respect the content and form legal restrictions. Tax and fiscal benefits are gained by being recognized as a startup. Conditions and benefits are analysed in detail in the "Juridical description" section, taking as a reference the Italian jurisdiction.

The paragraph provides insights and key principles useful to describe the startup taking into consideration its common characteristics. In the next one, quantitative information enriches startup definition to generate a comprehensive view of the organization.

2.1.2 Quantitative Perspective

Over the past two decades in modern literature, many actors involved in the startup environment tried to set quantitative definitions of startup organizations by taking into consideration three main characterizing elements: number of organizational members, revenues produced from the business and the expected value of the startup sale. As it has been anticipated, it does not exist an unique worldwide recognized quantitative rule for defining a startup, due to the different approach adopted by the different national jurisdictions and the lack of a statement recognized by the entire community. Nevertheless, Alexander Wilhelm, Chief Editor of Crunchbase, provides an interesting theory to define quantitatively a startup through the 50-100-500 rule. He suggests that an organization can be defined as startup if it does not respect the following three conditions:

1. Revenues less or equal to 50 million $ per year;
2. Number of organizational employees lower or equal than 100;
3. Selling value of the business lower or equal to 500 million $.

As instance, Uber, the private automobility technological service founded in 2009 by Garett Camp with his collaborator Travis Kalanick as startup, in 2013 raised a total of 307 million $ investments, reported value of 3.5 billion $ and total revenues for 213 million $. So just after four years, it could not be considered correctly as a startup, by applying 50-100-500 rule anymore. This easy to apply and define startup rule presents some main drawbacks, such as all the alternative quantitative approaches developed, are summarized in the following two points:

❖ It does not define a time horizon in which an organization can be considered as a startup. Startup can last just for one year or decades according to the rule. For example, the Chinese company Beibei, e-commerce platform for products and materials for children, was evaluated at 2.5 billion $ in one year, being excluded of

the startup definition provided by the described rule. This approach is dangerous from an investment point of view. Setting startup definition by considering its expected value may generate overestimation with consequent large and baseless investments. Most of times, the investment does not produce the expected return from investors, capital ventures or business angels, due to weak business models, unstructured business development and lack of business experience gathered by the organization. The consequence is the slowdown in financial investments that has allowed the growth of startup ecosystem in the last decade, with further economic scepticism.

❖ Numerical limits set by Alexander Wilhelm are arbitrary, as the other approaches or rules included in modern literature. They do not present any statistical evidence to confirm if an organization can really be defined as startup or a competitive company, with the same consequences described.

Even if the rule presents huge drawbacks that must be taken into consideration, it sets a comprehensive quantitative definition of startup applicable to business operating in different countries and industries.

In the following part, the analysis takes into considerations jurisdictional constraints enhanced by Italian law to accept an organization in the Register of companies.

2.1.3 Juridical Perspective

Italian government in 2012 adopted its first organic normative target to support the emergence and growth of innovative organizations characterized by a high degree of technological value through the law decree 179/2012. It determined the juridical definition of "innovative enterprise", valid in the country, and the necessary requirements for an organization to be recognized as a startup and included in the Register of Companies.
The policy still provides a series of benefits for those organizations recognized as startup, such as: fiscal incentives, regulatory simplifications and exemptions, easy access to credit and funding programs.

It supported the development of the innovative entrepreneurial ecosystem which has been able to create new employment and collect human capital and financial investments from all over the wold in the last seven years, the ecosystem actors are presented in the following paragraph.

The law decree set formal and substantial standards that can be used to describe the startup from a juridical point of view. They were gathered from the website of the "Ministero del Lavoro" and summarized in the following points:

❖ It must assume the limited company form, it is possible to build an innovative startup through the legal forms: Srl (Società a responsabilità limitata), Sapa (Società in accomandita per azioni) and cooperative;
❖ It must be constituted no later than 60 months from the demand date;

❖ The startup headquarter must be in Italy or in a European or Eea country, as long as it has a productive quarter or branch in Italy;

❖ From the second year of the foundation, the annual production value resulting from the last balance approved six months before the closing period, must not exceed 5 million €;

❖ It must not distribute or having distributed profits among its members;

❖ The organizational purpose is mainly o exclusively the development, production and commercialization of innovative products or services with high technological level, the core concept of innovation and technological development are discussed in the following paragraph;

❖ It must not be constituted by a fusion, demergers or corporate acquisition;

❖ It must satisfy at least one of the following three requirements;

   o R&D expenditures are greater than or equal to 15% of the value resulting from the difference between the cost and the total production value generated by the innovative startup, excluding the expenditures for real estate. The expenditures can include: the pre-competitive and competitive development costs, business model experimentation, prototyping and development, incubation costs for certified incubators, HR, consulting, partners costs, registration and protection of intellectual property, licenses and legal terms;

   o The number of human resources with any PhD certification or in an academic research program in Italy or abroad, or university degree with at least with three years with certified research activity in a public or private research institution, working or collaborating with the organization, must be greater or equal the 1/3 of the total work force, or the number of employees or collaborators with university master degree must be greater or equal than 2/3 of the total work force, according to the article 3 of the law decree 270/2004;

   o It is the depositary or licensee entitled of at least one Industrial Property Right concerning an industrial invention in biotechnological, semi-conductorial or new vegetal variety industry.

The formal standards required by the Italian law to sign an organization in the Company Register as an innovative startup, provide useful insights to define it and create general knowledge concerning its structure. Nevertheless, it presents one main drawback, it is applicable only in Italy, due to the different juridical formulations and requirements enhanced by other countries.

A long the analysis developed by assuming these three different perspectives, it has been possible to gather knowledge to provide a qualitative definition of startup as: "an emerging innovative business characterized by a high degree of technological and digital development, which is looking to be disruptive and change the paradigm in uncertain and risky environments". The core concepts on which the definition is based are: innovation, technological and digital development and disruption. These principles are discussed in the following paragraph to specify the elements applied to the personal definition.

2.2 Innovation and Technological Development

As introduced in the previous paragraph, innovation and technological development are core principles behind startup and its ecosystem. The objective of the thesis is to present specific information concerning these concepts in order to contextualize the environment in which startup operates, without entering in strict technical aspects. This premise is due to the fact that, nowadays, innovation and technological development are topics largely discussed by different actors: media, journalists, governments, usually with low specificity and superficiality. Innovation and technological development are wide macro-subjects which deserve to be analysed and carefully studied to consider all their characteristics.

They need the experience and knowledge to be addressed because of the many variables that can be taken into consideration in their analysis. Indeed, they can be applied to different fields, such as social and economic, involve many business, academic, institutional, industrial actors, discussed from different perspectives, produce a wide list of consequences in the entire society. In order to avoid banalities, an end in themselves, the paragraph analyses the principles by taking into consideration two main elements:

1. Definition: it contains the main insights to describe innovation and technological development with details on their relationship and innovation main categories;
2. Disruption: it is the possible consequence generated by the proper management of innovation and technological development on the established paradigm. Its description presents factors which enhanced this scenario and the stakeholders involved.

The choice is driven by the willingness to be specific and target the analysis on just the characteristics related deeply with startup.

2.2.1 Innovation and Technological Development – Key Principles

Innovation is not easy to define due to the possibility of applying it in different fields with different connotations and the large quantity of knowledge it gathers. In order to define it, it may result useful to start defining a concept very related to it, the invention. According to the Merriam-Webster, the invention is the result coming from an act or a process called inventing. This result can be developed into a concrete product or service or just remaining an idea. Indeed, it is defined by the book Management of Innovation and Product Development as: "the act—or the achievement—of devising a solution to a problem".

Technology, the term coming from the Greek word (technè) representing the intellectual and manual process implemented in the development of activity, represents the set of

skills, capabilities, processes, models implemented to translate the solution identified for a specific problem into something that works in concrete.

Technology is the operating mean by which the invention is realized and produce a positive or negative impact in the life of everybody by influencing industries, economies, markets, cultures, society. Even if it is expected that technological development is welcomed such as only a positive occurrence, it may result useful to underline that it can generate, also, side effects. As instance, a mismanagement of technological development can cause a short or medium-term technological displacement, as it occurred with the introduction of personal PC in business environments, or the product liabilities produced on society because of the presence of side effects in the emerging technology. Nevertheless, technological development is fundamental to enhance innovation. According to Roberts, innovation can be defined as the: "economic exploitation of an invention"[4], so the combination between invention and its technological development becomes innovation if the process is targeted to produce marketable products or services. Differently from inventions, innovations are aimed to produce economic value for organizations by selling a product service at a price that exceed operating cost. The economic benefit is generated if customers' utility is satisfied by the solution provided by the organization aimed to solve their pains and requirements.

Innovations need a distinguishing process compared to inventions, the diffusion. Invention can be developed just for the sake of discovering and producing new solutions for existing problems, as research centres, universities, public institutions can address, instead, innovations require that the product or service is diffused in markets to obtain the forecasted value. This business approach characterizes, indeed, innovative startup which develops innovative solutions characterized by a strong technological development content for business purposes pursued through a rapid growth and scaling the economy. The process of innovation's diffusion can be represented through two main dimensions, growth and time, addressed to understand how customers adapt to the new technological solutions, by taking into consideration the industry in which it operates. The representation of innovation and technological diffusion is the well-known s-curve. It represents the lifecycle of a technology related to a certain product, plotting it by taking into consideration its main technical performance indicator and the time invested to develop it. Figure 1 describes the progress of civil airplanes by implementing s-curve.

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[4] Roberts (1987)
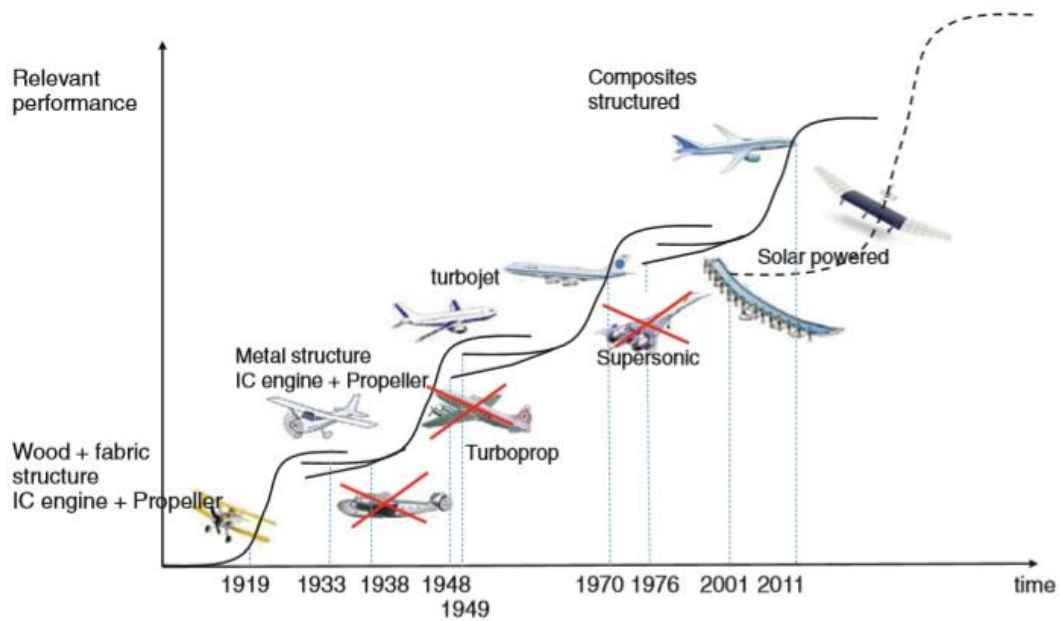
Figure 1: S-curve of the civil airplanes' progress[5]

Technology is not designed by a linear function, but it is characterized by two main phases defined as evolutionary and revolutionary progress by Tushaman and O'Reilly in 1997 and Iansiti in 2000. Evolutionary progress is obtained moving along the same s-curve by implementing improvements stacked to the same technology which bring better performances. Instead, revolutionary progress emerges when a certain technology reaches its dominant design and it is overcome by a new solution, which at the beginning is characterized by lower performances compared to the predecessor, but it reaches superior results over time. The consequence is a paradigm shift towards a new trajectory. This representation can fit perfectly also for representing startup life cycle, as shown by figure 2, by using as dimensions: growth and time. Usually, startup emerges and enters in the industry by offering to customers products or services which enhance lower technological and business performances compared to the incumbents already present. Nevertheless, if it survives at the startup phase, obtaining market validation, implements properly an expansion strategy in the scale phase, it disrupts the industry through its technological and business proposition.

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[5] M. Cantamessa, F. Montagna (2016)
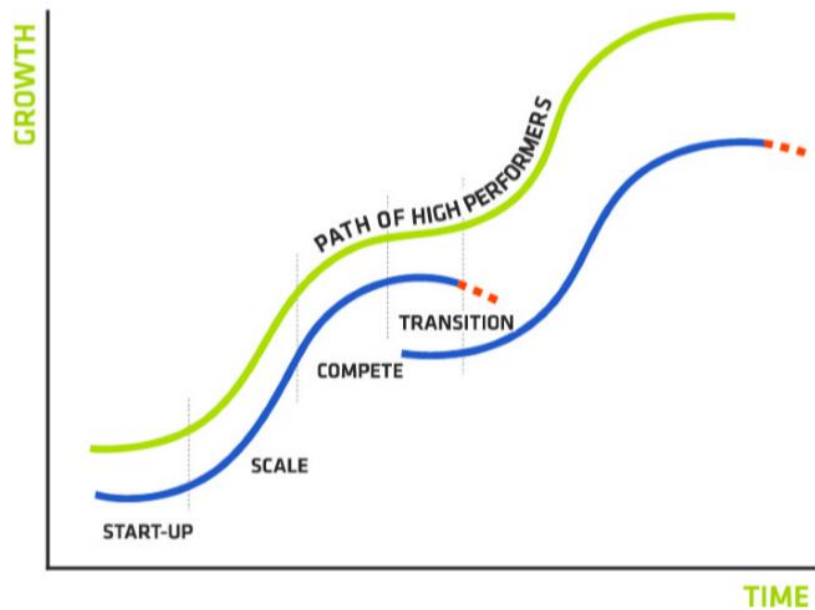
Figure 2: S-curve for startups' lifecycle[6]

S-curve representation is related to two main drawbacks. The first one is that s-curve takes into consideration just one technical performance indicator to describe products' lifecycle. Its description limits the comprehensive product analysis, and it may not result effective to describe other categories of innovation which are not based, mainly, on technical performances. The second drawback is that considering time as independent variable is not completely correct, indeed technological development and innovation are driven by the R&D investments generated by incumbents or startup. So, a certain technology may result constant over time not because it reached its technological limit but because organizations are not investing in its development. Nevertheless, data about these expenditures are difficult to be collected and forecasted, so time can be considered an approximation to represent product lifecycle.

As anticipated, organizations to be recognized as startup must contain innovation in its proposition. Innovation is not just considered at product level by implementing technological development to increase performances, but it can be declined into different categories, according to the classification proposed by Keeley et al. (1999) and by Keeley et al. (2013):

❖ **Product system**: innovation is enhanced by adding new functions both embedded in the same products or through complementary goods. This decision is driven by corporate strategy to offer an open or close product system to gain competitive advantage through vertical or horizontal integration;

❖ **Channels**: innovation can be pursued by delivering products or services by innovative channels, both to support the innovation concerning their architecture or business reasons;

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[6] G. Perboli (Slides)

- ❖ **Brand**: innovation embedded in products or services require the support of brand innovation because customers most of time cannot understand technical development at technical level, but they receive it at brand level;
- ❖ **Customer engagement and experience**: technological development is being implemented, more and more, to increase customer engagement and experience. Nowadays, customer centric approach is becoming the guideline for companies and startup to drive innovation. Technologies as Artificial Intelligence and Machine Learning enhance the elaboration of information of customer data to provide products and services which improve customer experience;
- ❖ **Business Model**: innovation can be also developed through new solutions implemented in the business model. At business level, innovation involves all the main elements which characterize the business value proposition of organizations. The lean startup methodology and the GUEST Methodology, analysed and presented in the thesis, provides a set of innovative models, methods and process to build and develop business models adaptable to fast growing and scalable organizations. The importance and the impact generated by business model and development on the success of innovative startup is studied in detailed in the next chapter.

The following paragraph discusses about the effects that the proper management of innovation and technological development can result on economic and social environments, determining disruption in the industry and paradigm shift.

2.2.2 Innovative Disruption and Paradigm Shift

In the previous paragraph, it has been analysed and described the core principles and characteristics behind innovation and technological development, without details on the consequences that can be generated by a proper management of these processes. Modern literature and business environments, nowadays, discuss about the disruptive impact on society and economy that innovation and technological development can reach. The development of economic and accessible new technologies allowed the fast emergence of many new organizations which are able to create new markets or compete with the incumbent of a certain industry, as never happened in history. Disruptive innovation is the phenomenon by which incumbents are forced to exit because of the loss of competitive advantage with respect to the new entrants, such-as startups. The loss of the competitive advantage can be caused by many reasons related to the categories of innovation analysed.

From the personal studies attended, three main reasons of disruptive innovation causes can be identified:

1. Incumbents neglect the raising of emerging markets. It is the so-called "Christensen effect". It happens when incumbents are strictly focused on improving their product or service technical features, exceeding their customer requirements, and lack in observing the emerging technologies in their own or other industries. The

consequence is that entrants, companies from other industries or startups, propose to the market a technology which is lower performant with respect the one of the incumbents, as analysed discussing about the s-curve applied to innovation, but it is able over time to meet better the existing or new customer requirement, by gathering industry and industry knowledge through R&D investments. The consequence is that because of threats of leaving the established technology, the possible cannibalization effect in proposing a new technology and strategic lack of vision, incumbents are not able to set their offer at the competitive level of the new entrants, with the consequence of failure.

2. Different goals pursued by incumbents and entrants. Incumbents set their main strategic goal in maximizing profitability by setting the expected net present value strictly greater than zero, as suggested by Swinney et al. (20019). Instead new entrants, such as startups, set their objective in surviving in the market by defining the probability of the net present value greater than zero. These different strategies determine the time of entry in the market, by selecting to be:
   a. First movers: organizations offering the product or service characterized by radical innovation;
   b. Early followers: organizations entering in the market after first movers, but in the first phase of technological diffusion;
   c. Late entrants: organizations entering in the market when the product or service has become mainstream.

Obviously, there is no a unique entry time to success in the market, because of the different performances enhanced by the technologies and the industry's peculiarities. Nevertheless, incumbents usually enter later in new markets or in adopting new technologies because of the high risk and the goal in maximizing profits. Vice versa, startups enter in the market sooner, in the case that considering the high risk they expect that the technological cost will decrease and see profitable opportunities to exploit.

3. Inability for incumbents in joining the emerging paradigm. Discussing about innovation and technological development it is important to definite the concept of technological paradigm applied to innovative environments. It is defined as a bundle between supply and demand elements which is translated in the trajectory designed by each s-curve. The supply-side of technological paradigm is composed by technology, knowledge, methods, tools and business models which support all the process from the idealization until the commercialization of the innovative product or service. The actors involved in this network can vary depending on the industry in which the business operates. Producers and suppliers represent the main actors which make possible the production and commercialization of the business value proposition to the customers. They can be sided by other actors, such as:

- Complementors;
- Universities;
- Incubators;
- Private or public institutions;
- Research centres;
- Partners;

- Distributors;

The demand-side of the technological paradigm is composed by beliefs, needs, objectives, rules and meanings embedded in society. Innovations become disruptive if the technology offered is supported by the supply-side and accepted by the demand-side. Discontinuous technologies bring disruptive innovation and paradigm shifts if both sideds agree in adopting the new solution. This scenario is the most common and dangerous for incumbents. When emerging technologies start showing better performances and market fit, they create opportunities in joining the new paradigm. By the way if the emerging technology requires competences, resources or processes which the existing one is not able to reach, consequently, incumbents are cut out from the industry. Incumbents, usually, are not able to anticipate the competences required by an emerging technology for three main reasons:

1. Managers try to apply strategies which allowed to reach success in the past, conviction correlated to a cognitive inertia in understanding that new solutions will disrupt and change the actual paradigm;
2. Incumbents do not want to adopt a new technology because the sunk costs related to the actual technology implemented, even if it may result in some extra-profit in the short-term, it will be captured by the emerging technology in the long-term;
3. Managers are threatened to lose their status quo by admitting that a new technology, characterized at the beginning of its lifecycle by lower performances, will in future overcome the incumbent one. This approach creates action inertia, and push incumbents to enter in the new paradigm when it is too late.

Blockbuster and Netflix case is a significant example of how an emerging technology is disruptive and bring paradigm shift. Blockbuster has been the incumbent of home movies and video-games rental services for more than two decades, but in 2013 it declared bankruptcy. Blockbuster committed all the mistakes described and failed to join the actual technological paradigm established by Netflix. When in 2000, Reed Hastings, founder and formal CEO of Netflix, proposed to John Antioco, former CEO of Blockbuster, to run Blockbuster online website in exchange to promote Netflix's brand in his stores, he received a strict no. John Antioco was a competitive formal manager but he, along with his team, did not understand the future opportunities which that partnership would have offered to Blockbuster 10 years later. Indeed, Netflix proposed a completely different service to the society through a digital platform supported by an appealing business model, subscription fee and sharing payment method. Netflix started with a small niche of innovator customers, as defined by the Rogers curve presented in the sixth chapter of the thesis, which helped the company to improve its value proposition and rapidly growth and scale the market.

The main principles and variables belonging to innovation and technological development, key factors of startup organizations, have been analysed and defined. The following paragraph presents the economic and social impact generated by startups to conclude the context definition.

The Social and Economic Impact of Startups

In the previous paragraph, they were presented the key principles around startup organizations, the environment in which they operate, the actors involved, and the consequences generated by the proper management of innovation and technological development.

As introduced, startup environment has acquired in the last decade more attention over time both for its organizational structure, the industries involved, but mainly for the economic and social contribution delivered to the actual society. The empirical proof is evident by just taking the Fortune 100 or Fortune 500 lists and verify that their actual members were startup few years ago, letting out well-known companies. In Italy, according to the research developed by the newspaper "Il Sole 24 ORE" in March 2019, 10.041 startups are working in the country, an average of 95, 6 startup per province, contributing to create employment and to support GDP growth. The typical profile of an Italian startup is shaped by an organization composed by up to 4 people (30,86%), forecasted productivity lower than 100.000 € and capital oscillating between 5.000 € and 10.000 € (42,17%), figure 3 represents the overall results coming from the research.
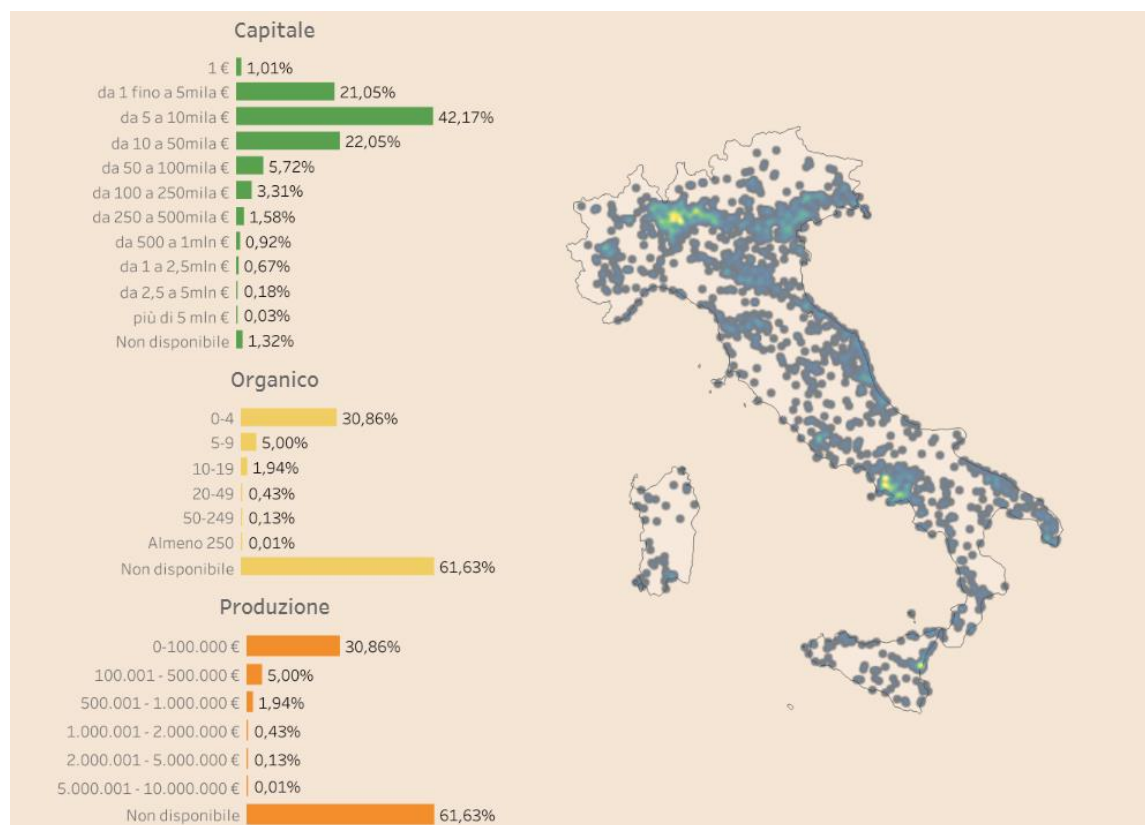
Figure 3: Capital, personnel, production distribution of startups[7]

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[7] ilsole24ore.com (2019, August 12).

The numbers introduced are far from the examples that can be found in Silicon Valley or the successful Italian companies. Anyway, startup environment must be supported economically and politically to assists innovation in fast growth and business diffusion through some measures such as the ones described while discussing about the juridical definition of startup.

Even if the correlation between GDP growth and employment creation is deep, these main benefits, generated by startup to the economy and society, are analysed separately with the aim to detail their analysis.

2.2.1 GDP Growth and Productivity

As Robert Solow asserted, the Nobel prize in economy in 1987 for its contribution to the economic growth, asserted, GDP growth has a strong correlation with innovation management and technological development, and it cannot be justified by only taking into consideration production factors.

Recent studies and researches have proven Robert Solow theory. According to the website Startup Jobs Asia already in 2013 "there are already $48.5 billion startup investment around the world. The highest investment came from the US with the total of $33,1 billion for their country development, followed by Europe, China, India, Israel, and Canada"[8]. Investments create the economic texture to enhance startup growth and its consequence impact on GDP and production growth for each country.

What emerged by many analyses is that the distribution of GDP creation in small enterprises and startups are not homogeneous. Indeed, as suggested by the US Census Bureau the average output growth in young firms is higher than the players operating in the same industry. The centralization of the GDP and production growth depends proportionally to the organizational growth in the market.

2.2.2 Employment Contribution

Kauffman Foundation has created different indicators called "Kauffman Indicators of entrepreneurship" to monitor startup lifecycle, social and economic impact. The startup early job indicator states that from 1998 to 2018 startup generated an average number of jobs in its first year of life normalized by American population equal to 5.20. According to Vivek Wadhw, member of the Labor and Worklife Program at Harvard: "From 1977 to 2005, existing companies were net job destroyers, losing 1 million net jobs per year. In contrast, new businesses in their first year added an average of 3 million

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[8]blog.startupjobs.asia

jobs annually"[9]. In addition, Bryan Ritchie and Nick Swisher, in their article "The Big Small: The Economic Benefits of Startups", point that the Bureau of Labor Statistics asserted that the number of emerging organizations, both expansions of existing companies or startup, increased by 2.5 % in 2016.

Also, Emily Fetsch in the article: "The Economic Impact of High-Growth Startups", affirm that the fast growth of organizations contributes up to the 50% of new jobs creation in USA, generating opportunities not only in the main cities but also in different geographical areas.

Startups represent nourishment for global economy and society, as it has been described in the paragraph. Nevertheless, as underlined by the working paper "High Growth Young Firms: Contribution to Job, Output and Productivity Growth", "…most startups and young firms either fail or don't create jobs"[10]. This growing context is need support coming from different fields: political, financial, business, managerial.

The next chapter analyses the reasons and the causes which brings startup failure and lack of benefits, starting from the research developed by a pool of professors of the Politecnico di Torino.

3. Analysis of the Failure Reasons for Startups

3.1 Introduction to the Analysis

The chapter analyses the main causes which bring startups to fail in the early years of their life-cycle through a statistical approach, contextualizing the need of implementing the GUEST Methodology to support startups' business model generation and its development. The research has been developed by professors Marco Cantamessa, Valentina Gatteschi, Guido Perboli, and Mariangela Rosano and it is described in the article "Startups' Roads to Failure". It is based on the analysis of 214 startups' post-mortem reports, obtained from Autopsy.io database. The report's objective is to underline the main factors determining the failure of a startup by implementing a structured model. The research, someway, goes in the opposite direction compared to the actual literature, because of the perspective adopted in analysing failure cases and the model implemented to identify, cluster and measure failure reasons.

Most of the actual models of analysis are based on financial data, which have the benefit to be potentially applicable on a large quantity of organizations' examples by collecting their annual reports, and their correlation with business competences, knowledge and psychological/behavioural aspects characterizing startups, which determine the cons of

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[9] V. Wadhwa (2010)
[10] J. Haltiwanger, R. S. Jarmin, R. B. Kulick, J. Miranda (2016)

this approach. Indeed, financial results can be considered consequences of a proper management of the business elements described by causing inconsistency to the analysis. Instead, other models take into consideration the correlation of startups' success with entrepreneurial overconfidence or lack of focus in pursuing organizational goals, subjective elements which difficulty can be standardized for an objective analysis. In addition, all these models analyse organizations by implementing a "top-down approach", setting hypothesis on casual models to be tested on cross-sectional databases or trying to understand the causes by interviewing directly the entrepreneurs. Hypothesis' definition can be driven by the aim of obtaining expected outcomes, bending the reality and generating a high bias on the statistical results, instead the interviewing approach lacks reproducibility and scalability, resulting extendible just to a restricted sample. Finally, most of researches present in literature are addressed to analyses causes determining the success of a starup, or its degree of success, just because the ease in raising quantitative data.

The following paragraphs describe the adaptation of the SHELL Model to the scope of the analysis and the results obtained by its implementation on the 214 post-mortem reports.

3.2 Methodology – SHELL Model

As it has been anticipated, the research has been developed by implementing a standard model on the available dataset in order to spot the main failures' causes affecting startups through a "bottom-up approach". The resulting model has been thought to be repeatable and updatable with the growing amount of information concerning failed organizations. It has been developed by adapting a previous model which is, still, used in the aviation industry to identify the main elements causing accidents and errors, the well-known SHELL Model, to entrepreneurship purposes.

The final version of SHELL Method has been developed in 1984 by Frank Hawkins, which modified the previous one implemented by Elwyn Edwards in 1971, with the aim to create a pattern to standardize the identification of aviation errors. SHELL's acronym collects the five main elements recognized to influence the aviation environment: Software, Hardware, Environment, LivewarePeople and LivewareEnvironment, as represented by figure 4.

As the picture shows, the aviation failure's causes are identified by connecting the human factors, LivewarePeople, with the four aviation systems which determine incidents/accidents in the industry. The framework is sketched through a "building-block" structure characterized by a strong "human centred approach", positioning the LivewarePeople's block at the centre and the remaining ones around it. Failures' reasons do not depend, only, by the human's being actions, but by its interaction

with the environmental elements, both at operational and internal level, identifying active and latent errors.

The standard framework results easy to understand, implement and adapt to different realities due to conceptual design in analysing errors by considering the human interaction with additional environmental elements.
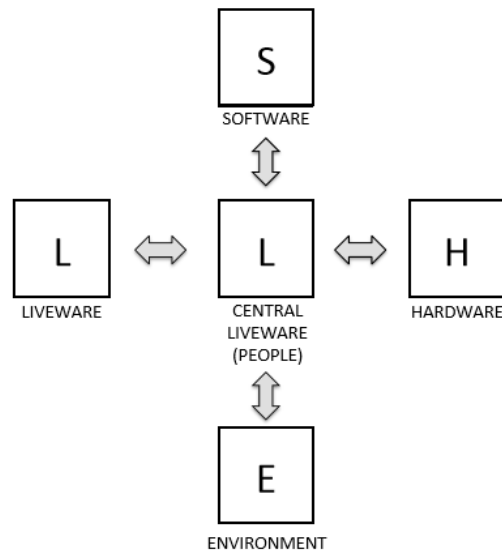
Figure 4: SHELL Model[11]

For the research's purposes, the SHELL Model has been adapted to the business and entrepreneurship environment in order to identify and categorize the main failure's causes that the organization system generates by its interaction with the main business, market and industrial elements which characterize the context in which startups operate. The adaptation has been structured by implementing three main steps:

1. Identification of a large number of failures' causes by analysing the post-mortem startups' reports and by consulting taxonomy classifications present in literature;
2. Clustering the failures' categories identified;
3. Identification of macro-categories fitting the framework generated by the SHELL Model, to standardize the reports' structure and make them comparable.

The resulting model follows the same structure of the original one with different "building-blocks".
The framework is composed by the interaction of the organization's block with the business model, the customer/user, the environment and the product's blocks, defining the context in which startups fail.

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[11] M. Cantamessa, V. Gatteschi, G. Perboli, M. Rosano (2018)
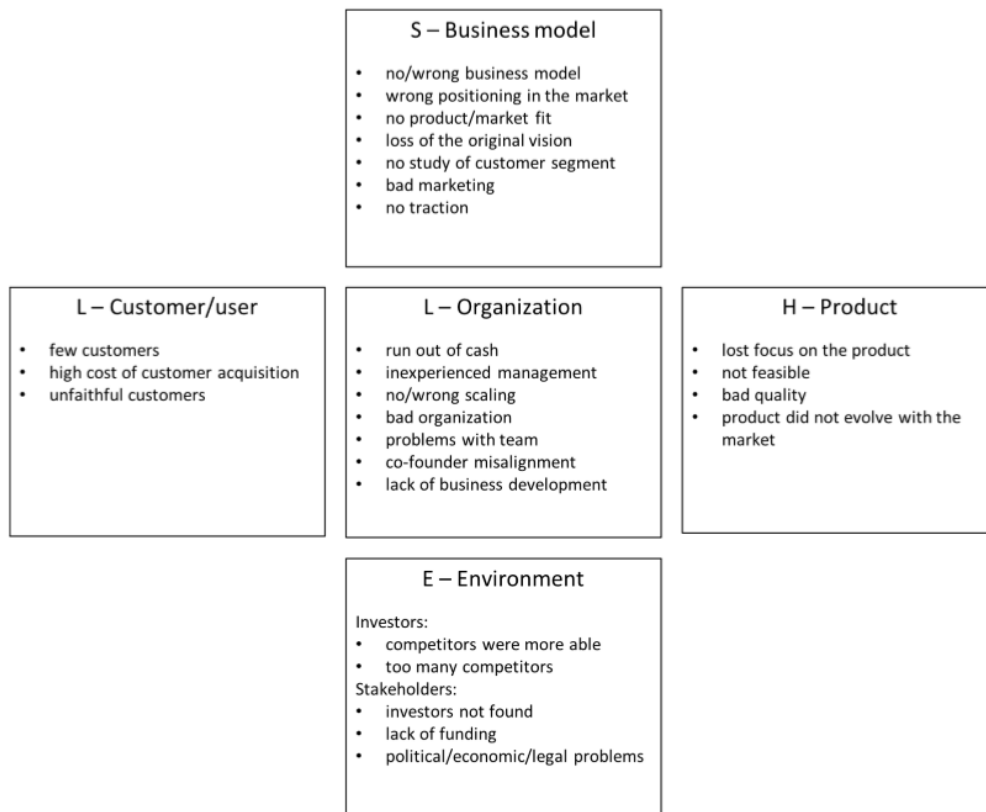
Figure 5: Business adaptation of SHELL Model[12]

The "building-blocks" defines clear and reliable categories, filled by specific subcomponents, comparable to the original model:

1. **BUSINESS MODEL** (software): it is the intangible system of the entire structure, it is the rational description of how the startup "creates, delivers and captures value"[13]. It includes all the components which determine the success of a product/service in the market, considering a commercial perspective.

2. **THE PRODUCT** (hardware): it is the tangible system, product or service, through which the organization produce value to its customers.

3. **ENVIRONMENT** (environment): it is the system describing the social and business physical context in which the organization operates. It is subdivided into external environment, described by the competitors present in the market and the competitive degree established, and internal environment, composed mainly by the stakeholders which interact directly and indirectly with the organization. The block takes into consideration, also, social and political structures which influence startups.

4. **CUSTOMERS** (livewear environment): it represents the external physical context addressed by the organization, the customers. Disruptive innovation and

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[12] M. Cantamessa, V. Gatteschi, G. Perboli, M. Rosano (2018)
[13] S. Blank (2010)

technological development, in this digital era, are pushing more and more startups and companies, in general, to target their business on customers, rather than products. The new technological assets and systems, such as machine learning, artificial intelligence, IoT, are improving the ability of analysing and understanding what the customers really want. Business models and products or services are developed by considering the customers' willingness, enhancing a strong "customer-oriented approach". This topic is deeply analysed, during the description of the GUEST Methodology and Learning Canvas because it is a core concept on which they have been developed to enhance sturtups' survival through the proper processes' management of customer identification and acquisition.

5. **ORGANIZATION** (livewear people): it concerns the internal environment characterizing the startup itself, with the relative managerial, organizational and financial elements, performances and limits. It fulfils the central role of the framework by interacting with the other categories.

As represented by figure 5, many failure reasons, identified by subcategories of the model, have been clustered in the main categories. These elements are widely and specifically analysed in the article "Startups' Roads to Failure", describing the model adaptation and the research developed in the next paragraph.

3.3 Data, Analysis and Results of the Research

The adaptation of the SHELL Model has been applied to the available dataset in order to analyse and obtain evidences concerning the main elements influencing the failure of startups. The research has been developed through a multi-dimensional statistical approach in order to consider the mutual effects generated by the relationships between the categories identified in the model. The dataset of the analysis has been composed by collecting 214 startups' post-mortem reports, precisely 133 startups extracted from Autopsy.io and 166 from CB Insights database, with heterogeneous geographical origins. The information collected in the reports can be summarized in the following points:

- General description of the organization;
- Ending date of the activity;
- Main reasons of failure, described by an explicative list;
- Description of the lesson learned;

The implementation of the SHELL Model has standardized the subjective point of view belonging to the answers provided by the entrepreneurs, by classifying the main reasons of failure in the sub-categories and categories described in the previous chapter. The sample has been extracted based on the available information contained in each report, nevertheless, its quality would have resulted poor and not satisfying for the statistical analysis without this standardization. In addition, it has been subdivided into defined categories of startups coming from different industries, to identify the environment in which they operate. The results highlighted that the main industries present in the sample are: Social Media (12,3%), Software (9,3%), and Service (8,3%).

Before applying the multi-dimensional analysis by taking into consideration the existing relationships between the different failure causes, a higher level has been developed by

studying the independent SHELL categories and the duration of the startup's lifecycle before dying to understand which are the main causes of failure, independently from positive or negative correlation between the variables, and the critical years for an organization.

3.3.1 SHELL Classification & Multi-Dimensional Analysis

The results coming from the independent analysis related to the different failure categories in the SHELL classification are important to introduce the GUEST Methodology and why it is needed to support startup survival in the market. What emerges from the research is that, even if it is impossible to design a unique failure sub-category affecting all the cases presented in the reports, it is possible to highlight the most significant.

The first two reasons, as highlighted in the figure, are: No/Wrong Business Model and Lack of business development, with respectively the 35% and the 28%. Exactly, these causes are addressed by the GUEST Methodology. The proposal of this business methodology is to guide the entrepreneur to develop an organized structure of the business model and a strategy for the business development through its phases, described in the next chapter. The aim behind the methodology is to support the business' creation following a specific process, lean scheme, using tools, documents and models for the design thinking, business model design, strategy identification, evaluation of the operations and financials' performances. Indeed, the third main cause of failure identified by the analysis is: Run out of cash (21%). At this scope, the methodology supports the customer acquisition process, proposing systems for the customers' identification and knowledge, and for the forecast of revenues, generated by its customer base, required to balance the costs produced by the implementation of the entire business. Finally, the fourth main reason, as represented by figure 6, is the lack of product/market fit, another target purpose of the methodology.

The analysis remarks that the major failure sub-categories characterizing the sample belongs to the Organization (livewear people) and Business Model (software) categories of the SHELL model, with respect the 30% and the 37% of presence among all the five, as described by figure 7.
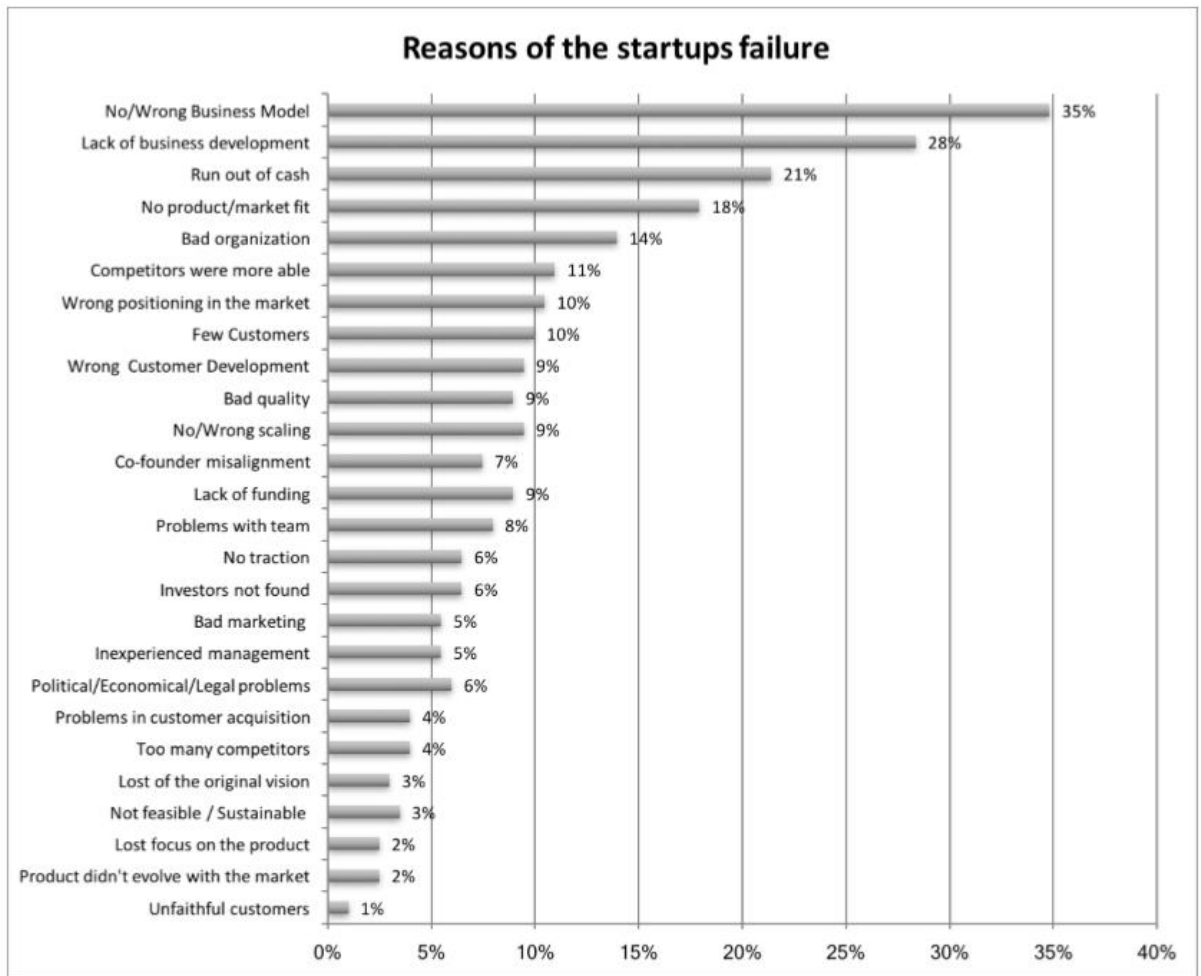
Figure 6: Reasons of failure affecting startups[14]
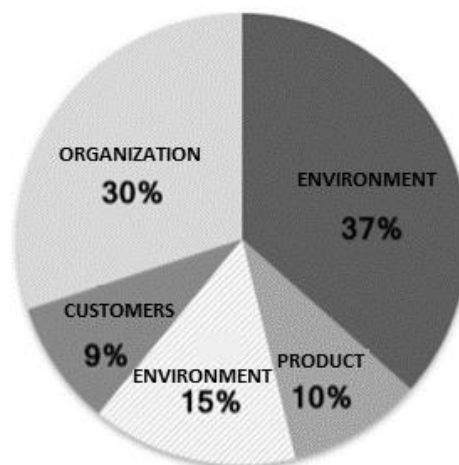
Figure 7: Distribution of SHELL failure categories

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[14] M. Cantamessa, V. Gatteschi, G. Perboli, M. Rosano (2018)

The multi-dimensional analysis carried on combining the different categories identified in the SHELL Method has been implemented to produce complete and detailed study of all the failure factors and their mutual relationships. The statistical analysis considered the correlative chain of reasons which bring the failure of the organization, due to the fact that, as said before, rarely the cause can be identified in just one single failure category, or sub-category. The process has been implemented through:

1. The development of a wide cluster analysis using as variables all the factors which matters in determining the failure of startups. In specific, k-means, Kohonem network and two-step cluster analysis have been implemented as clustering methods on the initial sample.
2. The analysis of the significance of i predictors for each cluster, generated by the best combination of methods and parameters, defined as: $Ii = -\frac{log10(sigi)}{max j \in \Omega} - log10(sigj)$, Ω is the set of predictors and sig$_i$ is defined as the significance of predictor I, as its p-value.

The method resulting with the best performances has been identified in the k-means with three clusters.
The first cluster covered the 62% of the startup in the sample used as input, the second the 24% and the last one the 13%. In addition, the most significant predictors resulted to impact these main categories have been identified in:

- Lack of business development: (I = 1.0);
- No product/marketing mix: (I = 0.54);
- Few Customers: (I = 0.41);
- No/Wrong Business Model: (I = 0.24)

The other predictors presented a significance lower than 0.05 and for this reason were considered as "complements" of the main one. These results confirm the necessity of finding business models and methodologies to support the creation and development of startups.
The value proposition needs to be formulated to target customers through a product or service which matches their requirements and fit with the market at which it is addressed. GUEST Methodology is aimed to support entrepreneurs in researching the best business elements combination through the creation of business knowledge, setting and testing hypothesis and most important learning to enhance a continuous improvement process.

3.3.2 Analysis of the Failure Reasons along the Lifecycle of the Startup

As anticipated, other important insights come from the analysis carried out concerning the startups' lifecycle, from the beginning until the fifth year of life. The 58% of the startups described in the post-mortem reports resulted to fail during the first 3 years of life and the 14% failed in the first year, as represented in figure 8. The main failure sub-

categories identified as main causes of failure before the first year of life were: no or wrong business model and lack of business model development.

In addition, the lack of business development resulted to decrease its significance during the second and the third year, instead the predictor, no/wrong business models, increased its impact. What emerges is that the lack of a proper business model has a long-term effect in startups affecting the sustainable advantage pursued by the organizations.
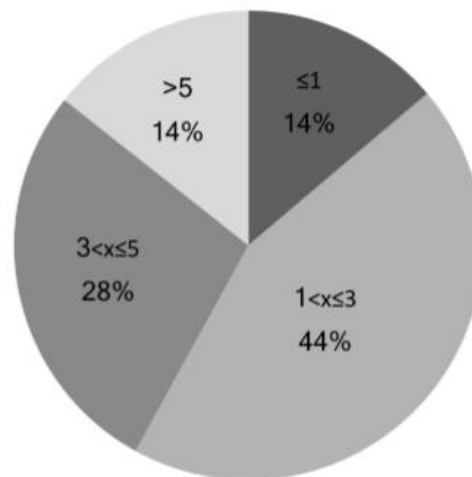
Figure 8: Failure distribution along startups' lifecycle[15]

In addition, a similar multi-dimensional statistical analysis, of the one described previously, has been developed by combining the years of life of startup before their failure with the sub-categories identified in the SHELL model.

The results are consistent with the outcomes obtained by the previous steps, indeed, also with this approach what results is that in the first year the main failure causes are:

- No/wrong business model;
- Lack of business development;

Their significances remain valuable, also, in the fifth year, during which the lack of business development grows substantially, becoming the first cause of failure for startups, as represented by figure 9.

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[15] M. Cantamessa, V. Gatteschi, G. Perboli, M. Rosano (2018)
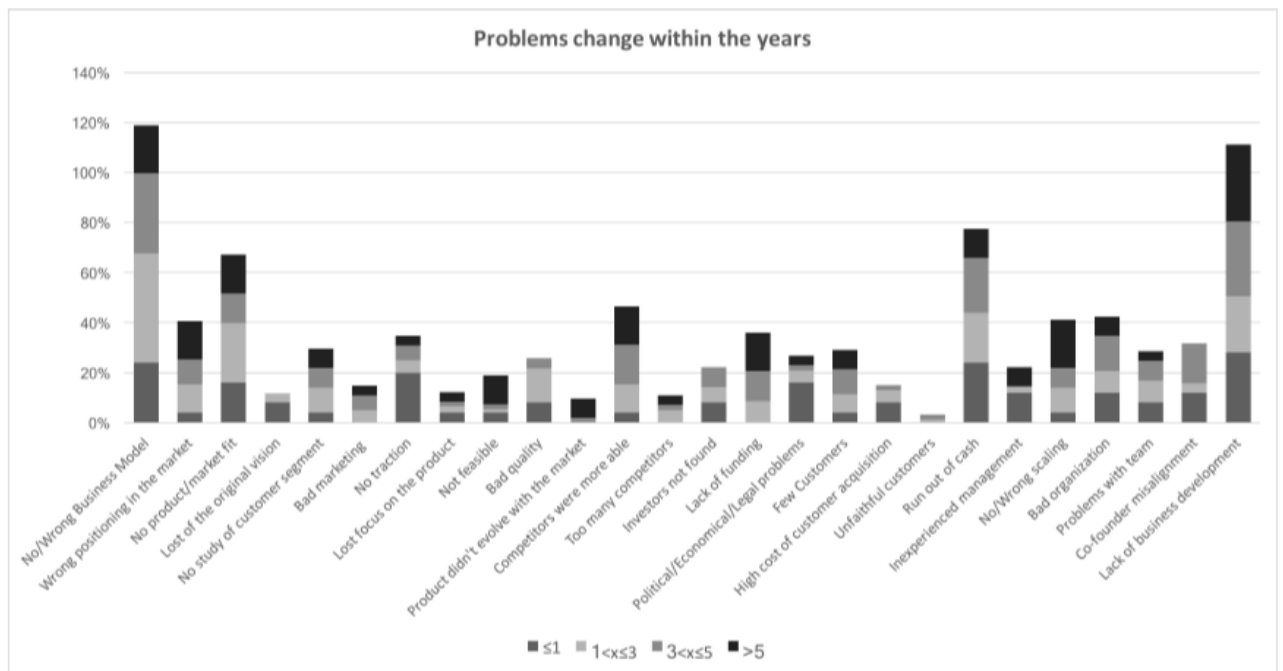
Figure 9: Distribution of failure reasons along startups' lifecycle[16]

In this chapter, the research conducted on the 214 startups' post-mortem reports by applying the adaptation of the SHELL Model and implementing different statistical analysis on specific variables highlighted the main reasons of failure for startups along their lifecycle. The significant outcome is that the lack or wrong business model, the lack of business development and run out of cash are the main factors impacting the failure process, along all the five years, even if with different proportions. The GUEST Methodology has the aim of minimizing the effect of these factors on startups by offering standard documents, tools and a pattern process to build a business model and enhance its development through a continuous improvement approach, as it has been analysed in the following chapter.

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[16] M. Cantamessa, V. Gatteschi, G. Perboli, M. Rosano (2018)

4. GUEST Methodology

4.1 Introduction to the Methodology

As analysed in the previous chapters, the main causes of failure in a startup are the lack of business model and business development which are strictly related to the third cause which is the premature running out of cash. The GUEST Methodology is aimed to solve these core issues, standardizing not only the design thinking of the business project but also its execution, through the methodology composed by models, tools, documents and steps.

The methodology has been developed by a pool of researchers from the "ICE- ICT center for Logistics and Enterprise" and the "Politecnico di Torino" to support the business management of startup and innovative projects. It has undergone through many evolutions, arriving to the last version illustrated in the thesis.

The methodology is thought to support startups and SMEs, belonging to different industries and involving actors coming from different business backgrounds. In addition, it can be applied, also, in consulting environments to enhance startups potential and measure their growth. Nevertheless, for the purpose of the thesis the methodology is analysed under a startup perspective. Its objective is to increase the efficiency in the decision-making process by reducing the business plan development time and maximize the performances generated by monitoring the business outcomes compared with the forecasted measures.

In addition, the methodology will enable the different stakeholders involved in the business environment, defined as network actors, to understand, analyse and evaluate the idea and the process behind the project; they will be able to share and communicate their vision through the models and tools offered by the methodology. All the material is simple to understand and easy to implement in order to be applicable by stakeholders coming from different professional background with different levels of business knowledge, competences and skills concerning the environment in which the organization operates. The success of an organization is reached only if all the members involved are able to understand each other in order to increase their cooperation and accelerate the decision-making process through a standard language.

The methodology, furthermore, is reliable for organizations owning different information technology systems, due to the fact that the tools and models contained are developed using multiple channels. Even if the degree of innovation and technological development is strong in startups, it cannot be taken for granted to all the stakeholders involved.

As anticipated, the methodology offers a standard process of implementation composed by five main steps:

1. **GO**: the word has been chosen to emphasize the starting step of the entrepreneurial innovative project. The aim of this first phase is to collect information required to understand the main actors involved, their relationship and the overall system. The creation of the initial knowledge base has the objective to start analysing the business potential behind the idea characterizing the project.

2. **UNIFORM**: the second phase is structured to standardize the information collected in the GO phase, this is the reason which names the step. The development of the business scheme and the governance structure are the key elements belonging to this phase. The phase contains a practical and easy to use tool called Business Model Canvas, developed by Alexander Osterwalder, which enables collaboration between all the business stakeholders and plays the role of a powerful communication mean.

3. **EVALUATE**: it represents the first operational phase of the methodology. The main actors and the entire project undergo to the assessment of the current state with additional considerations about the evaluation of opportunities and solutions arising from the information collected in the previous phases. Along this step the cost and revenue structures will be evaluated to understand the feasibility and profitability of the project. In addition, strategies will be planned to meet the requirements needed to actuate the business model of the startup and KPIs will be set to evaluate and measure their performances.

4. **SOLVE**: the purpose of this phase is to evaluate and analyse in depth the solutions related to the problems spotted in the previous steps. Given the action plan obtained in the EVALUATE phase, the actors are pushed to use different operational model and tools, developed from different areas: management, Operational Research and ICT.

5. **TEST**: it is the follow up of the action plan, its implementation and the evaluation of the first outcomes are developed. The results obtained will be monitored through a comparison with the forecasted values set along the previous steps.

This last step may be considered the initial one to generate a continuous improvement system, which creates pivoting and modifications to the initial business model and business development strategy to make the project grow and develop in a scalable way. The methodology works through a lean approach with the core concept of setting hypothesis, testing them and learning from the previous experience, indeed, the material included in it is easy and fast to be updated. This approach enhances startups to test their value proposition, business model, product or service on a real market and understand the real requirements of their customers, without wasting time and resources. The model proposed in this thesis, "The Learning Canvas", has been built starting from the observation of this last step. The necessity of a standard model to formalize the learning acquired, the results obtained and to communicate the fast evolution of the startup to survive in the market is the aim of the thesis.

The intention is to create a formal knowledge base to support the design of future actions,

prioritizing activities based on the strategic objectives of the startup and the continuous improvement approach. Indeed, alignment between the internal and external environment of the business network, development of new solutions and avoiding the same mistakes are the enablers to provide a valuable business proposition through a product or service which fit the market requirements and allows the startup to scale the economy.
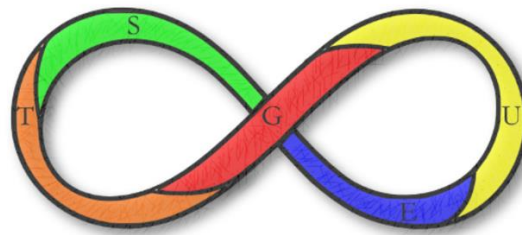
Figure 10: Logo of GUEST Methodology[17]

4.2 Kanban Process in GUEST Methodology

The standardization of models and tools fulfil a core role in supporting the creation of an effective business model and business development, as introduced in the introduction to GUEST Methodology, but it is not enough. Indeed, it results to be necessary to standardize, also, the process of application of these documents to enhance the potential of the methodology. This is the reason why the last version of the methodology proposes a tool to control and evaluate the entire process.

The process is based on monitoring activities focused on two main dimensions of the organizational system: resources and activities. The paragraph introduces the original Kanban model from which derives the implementation process suggested by the GUEST Methodology, to describe, then, its characteristics.

4.2.1 Introduction to the Kanban Method

The model used to develop the monitoring activity was generated starting from the observation of the Kanban method used in Lean Production to reduce wastes in terms of workflow and resources. Kanban comes from the Japanese word Kan (看), meaning "visual", and Ban (板), meaning "signal". The technique applied to manufacturing industry consists on physical cards which communicate and control the production, the acquisition or the movement of materials between the different production stages. The

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[17] G. Perboli (2018)

objective is to avoid overproduction which results in poor performances of the production systems and higher costs.

Kanban model is an operative method which entails in better performances of the information flow inside the company and between the organization and the supplier, depending on the horizontal or vertical integration adopted by the company, through the standardization of the communication. Indeed, the standard process works thanks to the cards containing the information needed to complete the main productive activities.

Kanban can be distinguished into two categories:

o Withdrawal Kanban which supports the motion of components or materials toward the production process.
o Production Kanban which describes production orders through a communicative chain which allows the upstream to produce the right quantity of a certain component demanded by the downstream part of the productive line.

The information contained in the cards are:

o Component's code.
o Component's supplier.
o Client who needs the component.
o Time to delivery.
o The quantity to deliver.
o The box to use.
o Some additional information.

Kanban model is based on a "pull" production approach, indeed, materials or components are acquired depending on the demand received by the customers and the consumption needs, the process goes from downstream to upstream along the productive line.

Two approaches can be followed to develop the Kanban model: the single card system and the dual card system. The first approach, as represented by figure 11, consists in attaching and detaching the Kanban card, containing the information related to the demand of a certain component t, D_t, along the production cells belonging to the different production stages, to be delivered in components' batches. This is the process which drives the information flow from downstream to upstream in the production system.
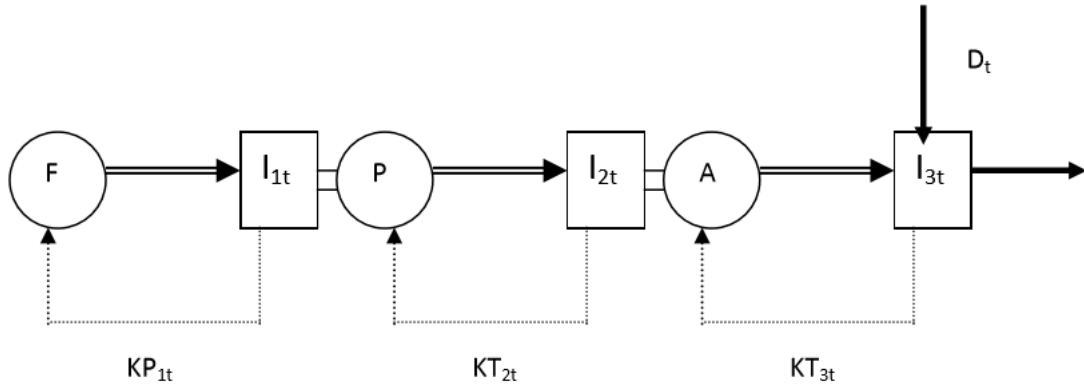
Figure 11: Single card system for the Kanban Model[18]
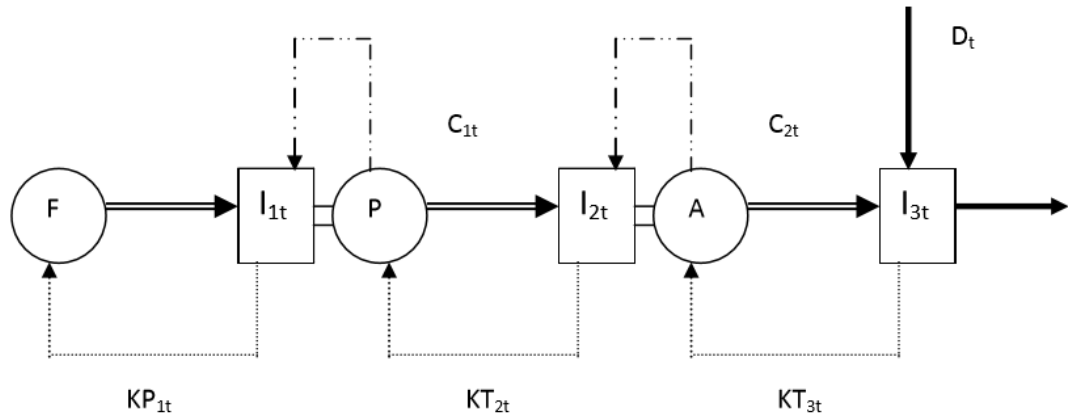
Figure 12: Dual card system for the Kanban model[19]

Instead, the dual system is driven by two different Kanban cards: the "withdrawal Kanban" at stage$_i$ for component t, KP_{it}, and "production Kanban" at stage i for component t, C_{it}, figure 12.

In detailed, the cards manage the components progress priority between the production cells. Each cell has two boxes: one for the "withdrawal Kanban" and the other for the production Kanban. The white collars understand the quantity to produce or to acquire looking to the boxes. The upstream cells have attached the "withdrawal Kanban", the operator of the cell takes the box containing the components to work, takes the Kanban card and puts it into the movement Kanban box which get the information about the quantity and kind of materials or components to acquire back. Instead, the box containing the information of the worked products have attached a "production Kanban" which is

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[18] A. Villa, A. F. De Toni, R. Panizzolo, (2013)
[19] A. Villa, A. F. De Toni, R. Panizzolo, (2013)

taken and put in the production Kanban box, until the final product' batches are sent to the client.

The process is based on two main rules:

o The operator can produce only when a Kanban card is available.
o Once the number of boxes in the Kanban area or the quantity of Kanban signals are decided, they cannot be changed.

At this point, it is understandable that it is important to define the right number of Kanban to enhance the efficiency of the production system. The number of Kanban to produce can be defined by a simple formula: $K = LTxDx\frac{1+\alpha}{C}$, where LT is the lead time, the time interval, between two orders, D, the exogenous demand planned, C, the capacity of the product's batches, and α, representing the parameter taking into consideration the fluctuation of the demand and the uncertainty of the process time.

The benefits generated by the right application of the model are numerous, these are the main ones:

o Reduction of the stock;
o Better response to the demand's change;
o Better accuracy of the storage;
o Simplification of the production plan and reduction of the MRP'S use.

4.2.2 Kanban Method in GUEST Methodology

The productive model described has been adapted to the GUEST Methodology to improve the communicational flow between the organization's members and standardize the application of the different methodological phases. Indeed, to each phase has been assigned a coloured post-it, representing the concept enhanced by Kanban cards: Red for the Guest, Yellow for the Uniform, Blue for the Evaluation, Green for the Solve and, finally, Orange for the Test. Each post-it contains specific information:

1. Description of the specific activity;
2. Start and end date of the activity;
3. Identification of the resources assigned to each activity;

The different post-it need to be inserted in the model representing the process system, the "Process Kanban", represented in figure 13. The model has been divided into five main steps, taking inspiration from the Kanban system:

1. Backlog queue: containing the activities waiting to be processed classified by priority;
2. To do: the activities next in line to be processed;
3. WIP: activities which are in processing phase;
4. Done: activities have been completed, waiting for the approval of the Project Manager or the responsible of the function;

5. Sent: activities approved;
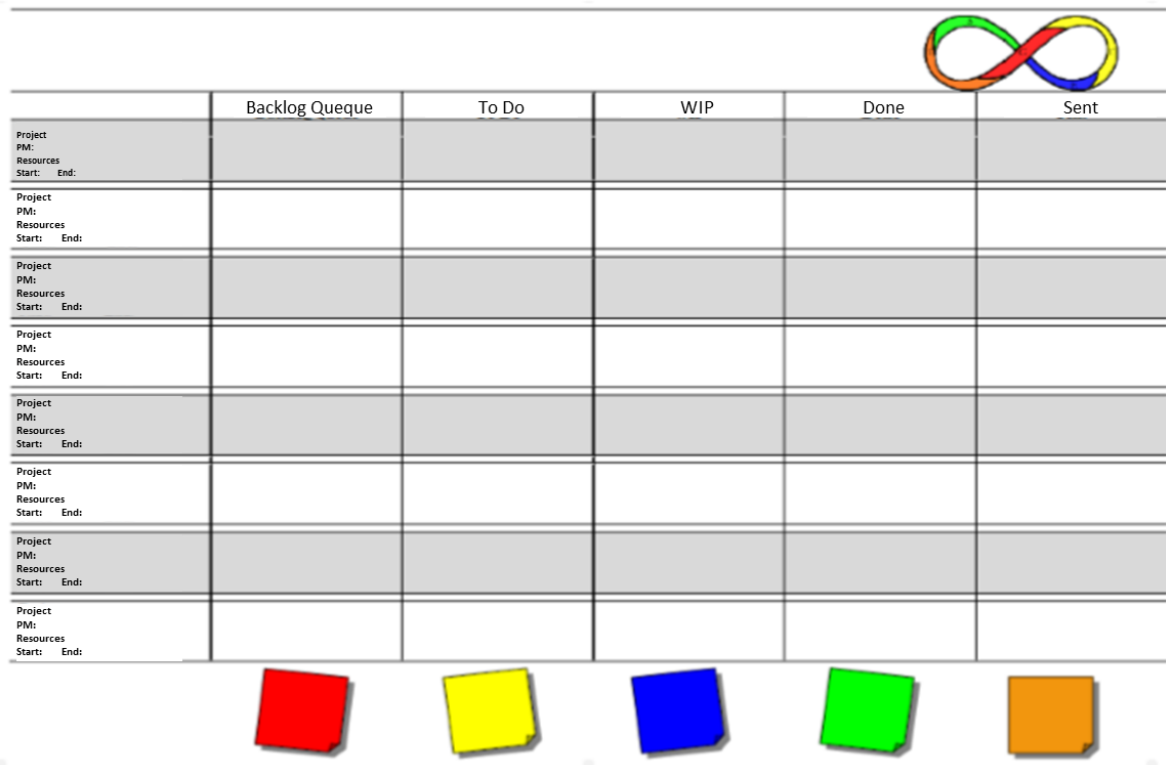
Figure 13: Process Kanban for GUEST Methodology[20]

The process Kanban is useful to generate the complete view of the entire project and share between the different actors how the phases are evolving independently or depending on previous ones, but it is not enough to standardize the application of the methodology and reach the proper business control.

Indeed, the "Project Kanban" has been thought to support the previous one, creating a deeper knowledge about the state of the single activities. It keeps the same scheme of the "Process Kanban", but post-it are assigned to the rows, figure 14.

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[20] G. Perboli (2018)
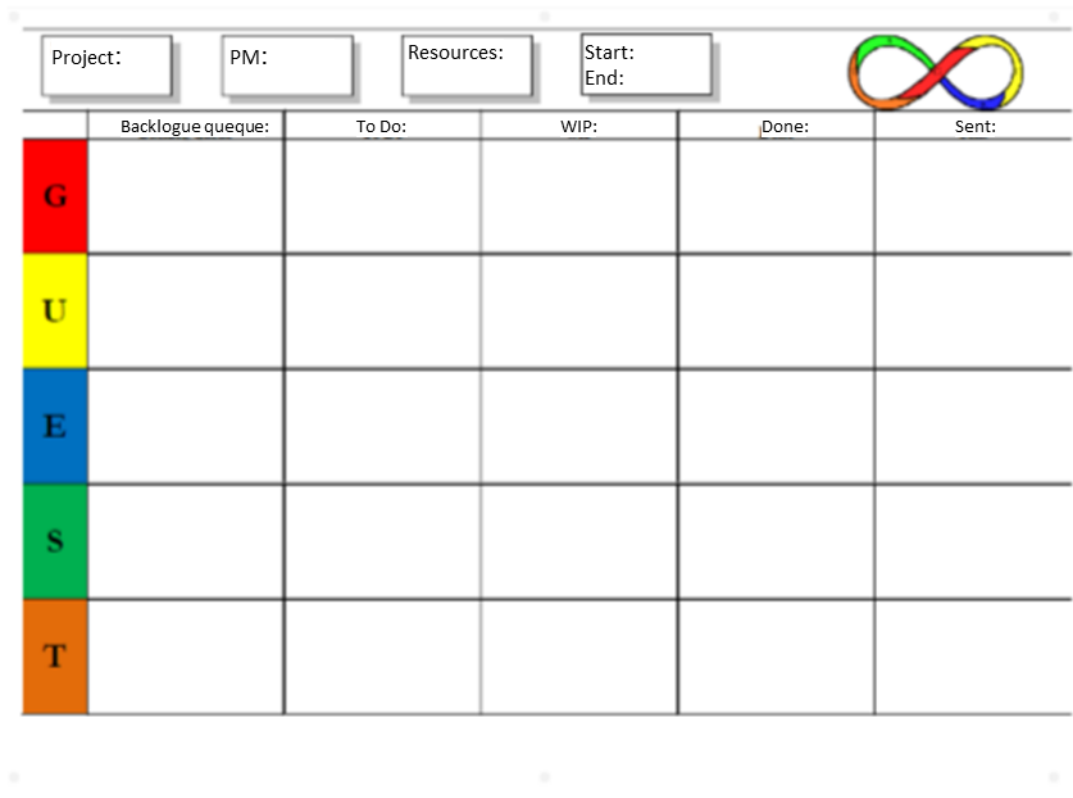
Figure 14: Project Kanban for GUEST Methodology[21]

The "Project Kanban" presents a higher level of detail focused on the single activity developed by the startup. It covers an important role, because it enables startup to coordinate and understand the prioritized activities to develop or issues to solve, to avoid slowdowns of the business development. Moreover, it allows startups to show to business actors a single portion of the developing project, letting them know that it is evolving correctly, and it is structured following an organized and standardized system which avoid time and resources' wastes.

The combination of the models supports startups to work on the different activities in parallel and independently from the others, keeping, at the same time, control on the overall business process. This approach reduces the development time generated by the waterfall approach. Nevertheless, the activities may be carried on independently, the models enhance the communication between the different resources or teams belonging to the business functions. It feeds the cross-functional discussion, analysis and proposition of solutions between the resources owning the different activities by representing graphically the state of art of the activities' progress.

The synergy is supported by the overview of the project, as anticipated, by representing

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[21] G. Perboli (2018)

the common effort towards the final goal, and the challenges produced by the business network which works as enablers of a positive competition.

The advantages are numerous in terms of time reduction and monitoring performances. This lean approach reduces the time on working on a single activity per time and avoids useless meetings because the different business actors can be updated by the current status of the entire process and the activities by sharing the models.

In addition, these models provide a common knowledge and useful insights about the fundamental KPIs needed to be monitored for the survival of the startup in the markets, such as:

- The average time required to acquire new clients;
- The average time to make an activity to be operative, internally to the organization or belonging to external business actors;
- The average number of human resources per activity;
- The evaluation of the work associated to each team or single resource;
- The achievements and the results of the entire project and the single activities.

These models fit perfectly the startup environment to enhance structure and organization of the internal activities by monitoring the current state and involve, the external business actors, in the project.

The analysis of these models has supported the creation of the Learning Canvas. Indeed, the monitoring of a single activity's performances and the test of the entire project, in general, in the market fulfil a key role in identifying failure or success causes generated by the business. In addition, the activities prioritized following a specific ranking, later described, are included in both models enhancing the continuous improvement approach and business development.

In the next paragraphs, the five methodological phases are analysed in detail to provide all the documents and tools to be implemented in the business model creation and development processes.

4.3 GO Phase

Go phase is the first step of the GUEST Methodology. It concerns in the formal description of the startup business proposition and the environment in which it operates. The objective of this step is to create a knowledge base for all the actors and stakeholders involved in the business network. The tools and documents developed in this phase are thought for professionals with different level of business knowledge and experience, as the entire methodology itself. Characteristics which allows the easy understanding and implementation of the documents in order to reduce the ideation and execution time.

As anticipated, this step can be applied from two different perspectives:

- Startup founders or teams elaborate and collect internally the information needed to build the business model and the business development strategy. The generated knowledge base creates a common starting point for all the actors involved in the business network.
- Consultant and company point of view. This perspective adds an external point of view to the entrepreneurial one, described in the previous point. Consultants evaluate the level of business knowledge of the clients involved and guides them in the following steps of the methodology based on the analysis, through an external perspective.

Even if the approaches are slightly different, they keep the same structure and main objectives. The thesis is focused on the first approach to create the efficient support to startup and to innovative projects internally. The GO phase is composed by different steps, summarized in the following points:

1. Collection of the information through a standard questionnaire and physical meetings between the actors involved.
2. Creation of the Social Business Network framework aimed to visually represent the business interactions in the environment in which the actors operate.
3. Creation of the ID card for each stakeholder involved aimed to summarize: background, behaviours, objectives, issues suffered, solutions needed by each of them.
4. Creation of the Value Ring, document representing visually the business priorities associated to the relationships existing between the stakeholders.

4.3.1 GO Questionnaire

The use of a standardize questionnaire enhances the actors to collect the business information needed to describe the project and understand which activities, resources, channels and values can be identified generate its success.

The actors are asked to organize a work table in which they answer to the questionnaire's points. The physical interaction associated to the meeting enables cooperation and communication between the different stakeholders. In addition, it is an opportunity to understand and analyse the business awareness belonging to each actor. It creates an opportunity to involve, since the beginning, all the actors through a standard and organized plan of the activities.

The questionnaire has been developed taking inspiration from the Business Model Canvas, which is integrated in the Evaluate phase, and the Manual for SMEs Basel II, an important document aimed to analyse the project structure before asking for financial contributions according to the EU normative.

The questionnaire is composed by open and closed questions structured in 8 distinct sections:

1. General Information;

2. Activities;
3. Commercial Information;
4. Knowing the customers;
5. Knowing the suppliers;
6. Knowing the competitors;
7. Substitutes and Complements;
8. Evaluation.

From the original questionnaire, it has been added one section dedicated to the analysis of the substitutes and complements in order to provide a deeper awareness of the startup on the surrounding environment. The questionnaire is a more complete solution with a higher level of detail than the well-known PEST and Michael Porter Five Force's frameworks, which have the same goal in describing the environment in which the startup or the organization operates. They could be used as substitutes of the questionnaire; the analysis obviously produces superficial outcomes compared with the one proposed by the GUEST Methodology. Nevertheless, they are described in order to present all the alternatives applicable in this phase, before describing in detail the content of each category of the GUEST questionnaire.

PEST Analysis and Michael Porter Five Forces Framework

PEST analysis provides a direct visual representation of the political, economic, social and technological factors impacting in the business in a short or long-time horizon, represented by figure 15. It is used to evaluate the opportunities and threats caused by the external environment and it provides information used by other frameworks such as: Business Model Canvas, SWOT Analysis and risk analysis. The development of the model requires: an initial brainstorming, review of the responses, rating session and sharing of the final outcome between the stakeholders.

Figure 15: PEST analysis framework[22]

Instead, the Porter Five Forces' framework supports organizations to understand the level of business competitivity compared with the external environment. It represents the level of interaction, which can be low, medium or high, between the main actors present in the industry. The five forces, as showed by figure 16, are: rivalry among the existing firms, bargain power of suppliers, bargain power of buyers, threats of new entrants, threats of substitutes, in the most recent version it has been added the threats of complements. These actors capture the possible value generable in a certain business environment, their different significance to determinate the business opportunities and profitability of the industry. The analysis is aimed to understand who captures the greatest lion share value, and which strategy can be formulated to generate the competitive advantage required to success and survive in the competitive environment.
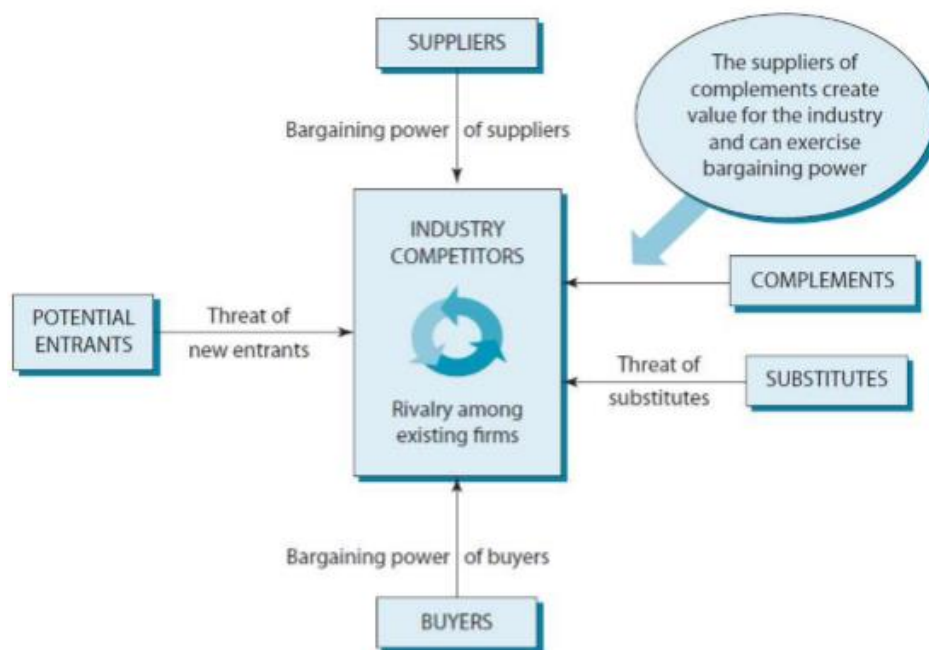
Figure 16: M. Porter Five Forces framework[23]

The framework are strong communicative documents to develop a common knowledge base on the industry in which the entire business network operates. The main limitation is produced by the few principles which guide the quantity of information collectable. For this reason, the next points analyse in detail the eight sections of the alternative proposed, the GUEST questionnaire, presenting the qualitative and quantitative information which could be gathered, and which is the knowledge base created by the overall outcome.

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[23] G. Perboli (2018)

General Information

The first section has the aim to collect general information on the startup and the environment in which it operates. The structure is composed of three open questions that give the possibility to the interlocutors to express without any constraint. The questions consist in:

- Description of the startup/company/role. This question is very general, but useful to make a clear representation of all the members of the business network.
- Description of the needs addressed by the startup/company/role. This field is the starting point to build the Value Proposition pursued by the entire business network, described in the documents which are analysed in the following steps, such as: the ID actors, the Value Ring and the Business Model Canvas. In addition, it provides information on the specificity degree characterizing the business.
- Description of the market addressed. It collects information of the different customers involved in the decision-makers process, starting to impose the constraints figured in the Social Business Network model.

GO QUESTIONNAIRE- GENERAL INFORMATION	
Describe your startup/company/role	
Describe the need fulfilled by your startup/company/role	
Describe your relevant market	

Table 1: Table 1: GO Questionnaire - General Information[24]

Activities

This step collects strategical information, showing the awareness of the startup about its strengths, weaknesses and vision. This information is going to be inserted in the Business Model Canvas to represent the operational activities and core competences which enhances the competitive advantage and produce value for the customers. During this section, founders, teams and business actors clarify the objective which they want to pursue with the business, their role and their competences. The answers support the definition and alignment process on the core competences and aims driving the different actors. In addition, it analyses the integration level which each member wants to adopt, the activities that are significant to manage internally and those can be outsourced and the contribution which can be provided by each actor to build a sustainable advantage in the industry.

Table 2 collects open and closed questions which compose the activity section.

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[24] G. Perboli (2018)

GO QUESTIONNAIRE- ACTIVITIES	
Define your objectives	
Define your core business	
Describe your opportunities	
Describe the geographic extension of your company	o Regional o National o European o Extra-European
Define which activities you outsource	
Describe your competitive advantage	o Dimensions (not startup) o Technologies o Innovations o Raw materials o Brand o Marketing/communication o Design o HR o Finance (not startup) o Leadership o Differentiation o Niche market

Table 2: Table 2: GO Questionnaire - Activities[25]

Commercial Information

The commercial information section contains questions concerning the commercial knowledge, resources, activities and channels developed. Most of time, startups do not have budget to spend in recruiting or building an office dedicated for the commercial function, which at the beginning could be supported by a supporting business actor. Indeed, commercial competences are required to deliver efficiently the value proposed in the market, acquire new customers and manage the entire network composed by the decision-makers.

The section is structured by eight questions, divided into four open-ended question and four close-ended, thought for the fulfilment of the Business Model Canvas. They are collected in table 3.

GO QUESTIONNAIRE- COMMERCIAL INFORMATION	
Which are your distribution channels?	o B2B o B2C o E-commerce o Agent
Do you have a commercial office/resource?	
Do you have a commercial network?	
What kind of commercial channel do you use?	o Direct o Short o Long
Do you have short-term/long-term commercial objectives?	
What are the main opportunities for your startup/company at this time?	
What is the degree of innovation of your product/service/process?	o 1 o 2 o 3 o 4 o 5

Table 3: GO Questionnaire - Commercial Information[26]

Knowing the Customer

Customers represent one of the most critical actors involved in the business network for the survival of startups in the industry. They represent the resources from which revenues and learn are extracted. Customer acquisition is a crucial step. Indeed nowadays, the trend characterizing different industries is moving towards a customer centric approach thanks to the development of ICT and IT infrastructures. It is easier than ever to extract information and data about the willingness and the preferences of the customers at a lower cost compared to the past, optimizing the customer acquisition revenues and costs trade-off. Most of times startup create sophisticated products/services for customers who are not interested in. For this reason, it is important to create a knowledge about the customer, test its interest and involve them in the business development process, as it is discussed along the following chapters of the thesis. Table 4 summarizes the initial knowledge belonging to potential customers.

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[26] G. Perboli (2018)

GO QUESTIONNAIRE- KNOWING THE CUSTOMER	
Define your customers in terms of number and financial turnover (actual or expected)	
Describe the geographic distribution of your customers	o Local o Regional o National o European o International
Are there any barriers for your customers which prevent them from accessing a similar product or service from a different source on a scale from 1 to 5 (1=very low, 5=very high)?	o 1 o 2 o 3 o 4 o 5
What benefits do the customers gain from your product? (Remember the need your company addresses)	
Which is your customer acquisition strategy?	
Do you use a system to enhance and control your customer retention?	
Do you have a system to control your customers' perception of quality?	
Do you have an after-sale service?	
Do you have a loyalty program?	
Who is your customer?	

Table 4: GO Questionnaire - Knowing the Customer[27]

Knowing the Suppliers, Knowing the Competitors and the Sobstitutes & Complements

Suppliers, competitors, substitutes and complements represent the last stakeholders taking part in the constitution of the business network in which startups operate. The knowledge about these two categories enables the creation of strategies to survive in the industry and provide competitive solutions to gain advantage against competitors.

It is important to understand how much value is captured by them in the industry, and which opportunities can be exploited. For this reason, it has been decided to insert the substitutes and the complements in the questionnaire, because in most of industries they capture the greatest part of the lion's share. As example can be designed from how the electric cars are substituting the fuel or diesel cars. In these evolutions, the electric battery companies are playing a crucial role in determining the paradigm shift. In addition, software companies, Apple and Google, are trying to enter in the industry through

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[27] G. Perboli (2018)

disruptive   innovation.
The decision to include the analysis of these two actors has been driven by the study of the Michael Porter Five Forces' Model in order to create a comprehensive knowledge base of the entire industry. The questionnaire's sections have been designed following the structure of the questions already presented in the GUEST Methodology.

The tables below collect the questions for each section.

GO QUESTIONNAIRE- KNOWING THE SUPPLIER	
Who are your main suppliers?	
How many suppliers do you have?	
Do you feel confident in outsourcing to suppliers on a scale from 1 to 5 (1=very low, 5=very high)?	o 1 o 2 o 3 o 4 o 5
How important is a specific supplier for the entire supply chain management on a scale from 1 to 5 (1=very low, 5=very high)?	o 1 o 2 o 3 o 4 o 5
How easily can you change suppliers on a scale from 1 to 5 (1=very low, 5=very high)?	o 1 o 2 o 3 o 4 o 5
How big are your suppliers?	o Small enterprises o Medium enterprises o Big enterprises
How often do you change suppliers on a scale from 1 to 5 (1=very low, 5=very high)?	o 1 o 2 o 3 o 4 o 5
Are there any suppliers which constitute a bottleneck for the company?	

Table 5: Table 1: GO Questionnaire - Knowing the supplier[28]

GO QUESTIONNAIRE- KNOWING THE COMPETITOR	
How long does it take for a new company to enter the market?	o Very Short time (less than one month) o Short time (between 1 and 3 months) o Medium time (6 months) o Long time (1 year) o Very long time (more than 1 year)
What are the barriers a competitor has to face to enter the market?	o Investment o Brand identity o Distribution channels o Scale and learning economies

Table 6: Table 1: GO Questionnaire - Knowing the competitor[29]

GO QUESTIONNAIRE- SOBSTITUTES AND COMPLEMENTS	
Which are the main substitute products/services?	
How fierce is the competition of substitutes in the industry, on a scale from 1 to 5 (1=very low, 5=very high)?	o 1 o 2 o 3 o 4 o 5
How big are your substitutes' organizations?	o Small enterprises o Medium enterprises o Big enterprises
How is value captured by complements in the industry, on a scale from 1 to 5 (1=very low, 5=very high)?	o 1 o 2 o 3 o 4 o 5
How easily can you change suppliers on a scale from 1 to 5 (1=very low, 5=very high)?	o 1 o 2 o 3 o 4 o 5

Table 7: Table 1: GO Questionnaire - Sobstitutes and Complements[30]

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[29] G. Perboli (2018)

[30] G. Perboli (2018)

Evaluate

The last section is dedicated to extract considerations concerning the quality of the product/service and the relationships with the customers and the suppliers. This assessment would be important in the Evaluate phase, but, also, for design the initial hypothesis contained in the Learning Canvas Model.

Express your opinion about your product or service	
Express your opinion about the relationship you entertain with your customers	
Express your opinion about the relationship you entertain with your suppliers	

Table 8: Table 1: GO Questionnaire – Evaluate

The involvement of all the business actors in this assessment create a solid and complete knowledge base to support the creation and evolution of the business. In addition, it discusses elements to find a coherent alignment towards business objectives, responsibilities, competences, knowledge, activities pursued by the members of the business network.

4.3.2 Social Business Network

The Social Business Network is the graphical representation of the relationships, direct and indirect, between the stakeholders participating to the business environment. The model sets constraints between the actions accomplished by each actor, indeed, the decision-making process influences the stakeholders considered interdependent each other, the actions taken by one actor impact all the business network.

The graph represents the different actors, with the related size, through the use of nodes and the different type of relationships, with the related intensity, by using arches. Figures 17 and 18 collect the information with respect to the two elements described.

Actor	Type of node	Dimension	Information
Enterprise		Micro-enterprise	<10 employees
		Small enterprise	<50 employees
		Medium enterprise	<250 employees
		Big enterprise	>250 employees
Entity		Local	Local influence
		Regional	Regional influence
		National	National influence
		European	European influence
		Extra-European	International influence
Customer		Local	Local influence
		Regional	Regional influence
		National	National influence
		European	European influence
		Extra-European	International influence
Partner/Competitor		Micro-enterprise	<10 employees
		Small enterprise	<50 employees
		Medium enterprise	<250 employees
		Big enterprise	>250 employees

Figure 17: Social Business Network's elements (Actors)[31]

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[31] G. Perboli (Slides)

Type of link	Type of arch	Strength of influence
Commercial		1=super weak
		2=weak
		3=normal
		4=strong
		5=super strong
Legal		1=super weak
		2=weak
		3=normal
		4=strong
		5=super strong
Partnership/ Stakeholder		1=super weak
		2=weak
		3=normal
		4=strong
		5=super strong
Competitor		1=super weak
		2=weak
		3=normal
		4=strong
		5=super strong

Figure 18: Social Business Network's elements (Links)[32]

This model is a strong visual document representing in a simple way the social business environment in which the startup operates. It supports the comprehension of the environment for actors with different level of business competences. It is important to underline that the behaviour of each stakeholder is not independent but influence and is influenced by the one of the other network's members. So, the success of a startup does not depend uniquely by the management of its own activities, but by the integration and cooperation of all the actors involved in the business., In addition, the environment described at the beginning is not static but evolve and change along the business development, actors change and can be substituted and new ones can enter in the network. At the same time, relationships vary in type and intensity. For these reasons, it is important to gather this information and represent these evolutions using a visual tool which can be adapted easily with respect to dynamic environment.

It is remarkable to underline that the position of the nodes in the graph does not matter. Figure 19 is an example of Social Business Network, in detail the intermodal freight transportation system's network.
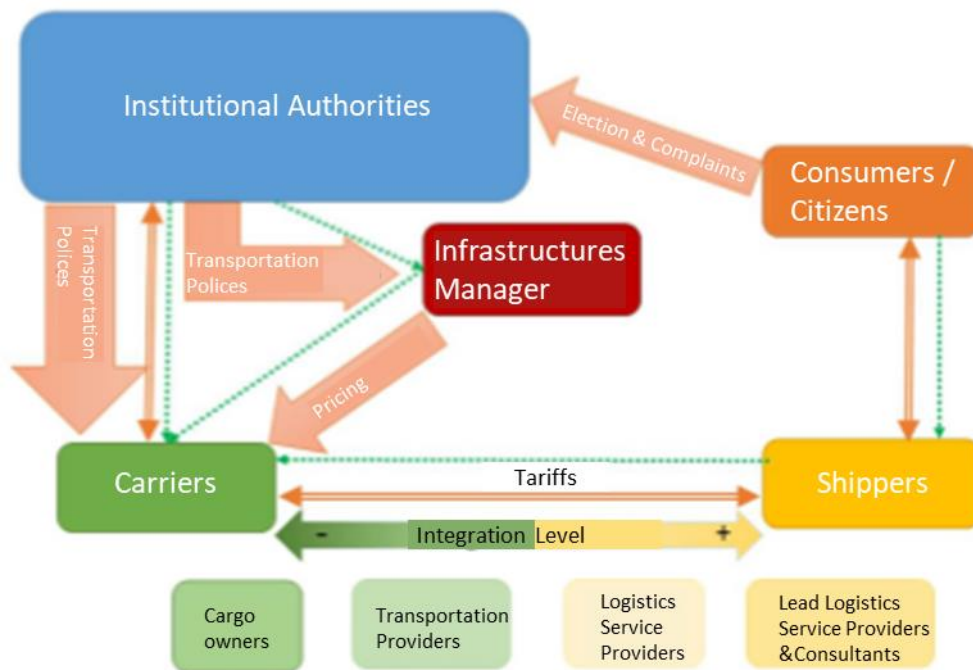
Figure 19: Intermodal freight transportation system's network[33]

4.3.3 Actor ID Card and Value Proposition

The Social Business Network represents the relationships between the actors taking part to the business environment. At the same time, it is principal for each actor to know the main requirements and needs of the other actors and align each of them toward a common value proposition for specific customers. Social and economic descriptions of the stakeholders (enterprises, educational or business entities, customers, partners, suppliers) and the analysis of the pains/gains affecting them are the aim of the Actor ID card.

This document takes inspiration from the Value Proposition Canvas developed by Alex Osterwalder and Yves Pigneur. Each startup wants to offer products/services which customers are willing to pay. In order to realize this condition, the Value Proposition Canvas support the process of identifications of customers' pains and gains. It has been developed starting from two main voices contained in the Business Model Canvas: the value proposition and the customer segments building-blocks. The model supports the design of the value proposition to match effectively the customers' needs and jobs-to-be-done, as represented in figure 20.

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[33] G. Perboli (Slides)
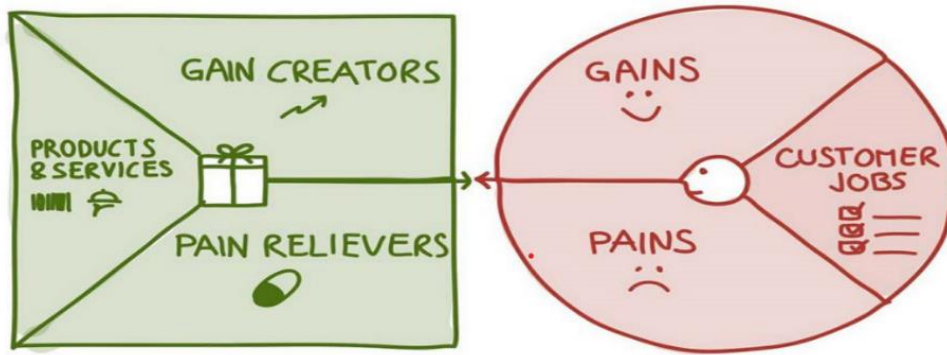
Figure 20: Value Proposition framework[34]

From this starting point, the Actor ID Card model applies the same process not only to the customers involved in the business but to each actor connected to the network, creating a deeper business analysis of the environment, as represented by figure 21. Indeed, a startup can survive in the market, not only providing the best value proposition to its customers but operating in a solid and efficient business network. The Actor ID card is composed by:

1. Description of the actor type, social-economic stratification, how the relationship with the actor is established, definition of the Actor Profile;
2. Description of the information contained in the Value Proposition Canvas for Customers, defining the Actor Situation.
3. Description of the information contained in the Value Proposition Canvas for Value Proposition, defining the Providers.

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[34] G. Perboli (Slides)

Figure 21: Actor ID Card[35]

The Actor Situation and the Providers gather useful information which can be employed to develop successful products/services, so it results useful to provide a detailed explanation of each voice.

Actor Situation

o Job: description of what the target actor is trying to develop. It can be the issues trying to solve, the needs trying to fulfil or the tasks trying to perform. The jobs are classified into:

- Functional jobs;
- Social jobs;
- Personal/emotional jobs.

o Pains: description of negative emotions, heavy costs, functional difficulties which the actors face before, during or after getting the job done. Pains are not always clear and defined, most of times are latent and not expressed by the actors, they require deep analysis and high degree of embodiment. They can be classified into:

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- Undesired outcomes, problems and characteristics;
- Obstacles;
- Risks

o Gains: description of benefits which the actors pursue, forecast or would be surprised to obtain. They are classified into:
- Required gains;
- Expected gains;
- Desired gains;
- Unexpected gains.

They can be related to money saving, better functional features, aesthetics upgrades, etc…

Providers

o Pain relievers: description of actions which minimize the pain for the actors. It is important to focus on the most critical pains and most efficient propositions.

o Gain Creator: description of the gains generated by the product/service offered by the startup and supported by the business network. It is important to focus on the main ones which really produce an added value for the actors.

o Product/service: description of the different solutions proposed by the startup to generate the benefits and pain relievers needed to match the actors' primary needs. They can be classified into:
- Physical/tangible;
- Intangible;
- Digital;
- Financial;

In developing the bundle of products/services is important to understand which are the must-to-have and nice-to-have for the actor.

o Value Proposition: summary of the produced values by each actor.

4.3.4 Value Ring

The last document included in the GO phase is the Value Ring. The model consists in the validation and prioritization of the information gathered through the previous documents, starting from the GUEST questionnaire until the Actor ID Card. The visual representation is used to avoid possible errors in understanding the degree of interest, competence and necessity disclosed by the stakeholders. In addition, it highlights the relevant factors which relate the startup with the actors, simplifying the huge quantity of information collected in the previous step.

The Value Ring is composed by:

o Three layers, representing the temporal priority: today, tomorrow, next future. This decision supports the roadmap of strategic actions planned in the time horizon of the project;

o   Portions associated to the stakeholders identified with the Social Business Network Model and the Actor ID Card.

The model highlights visually the main Actor Situation and Provider identified through the ID Card implementation, making easy to read and communicate the information related to the Actors ID Cards. Figure 22 is an example how the value ring can be filled.
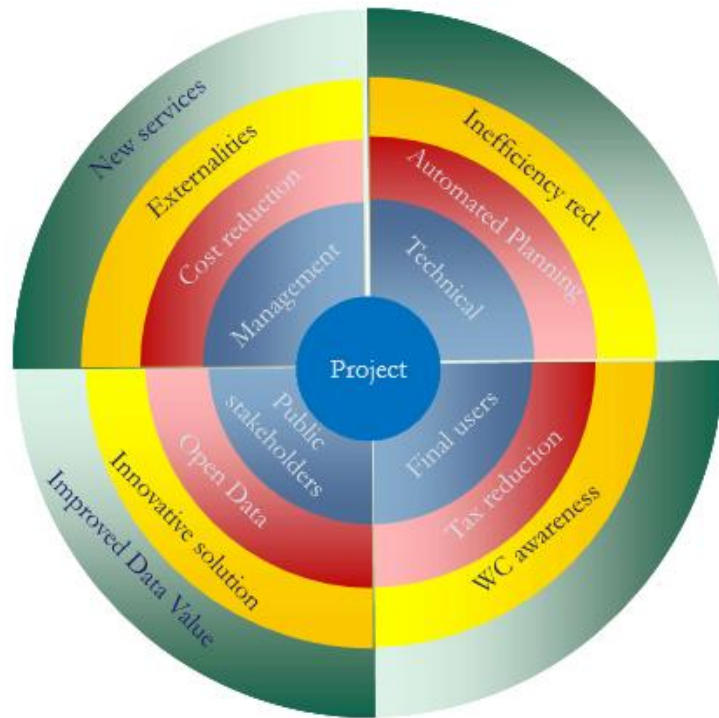
Figure 22: Value Ring example[36]

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[36] G. Perboli (2018)

4.4 Uniform Phase

The Uniform phase is aimed to:

- validate and consolidate the information gathered in the GO phase through the documents presented;

- design a comparable, editable and easy-to-implement business model.

The model used to satisfy these objectives is the Business Model Canvas developed by Alexander Osterwalder and analysed in detailed in his book "Business Model Generation". The Business Model Canvas is a visual representation of the business model characterizing a business, easy to understand and to apply.

Business plans are useful to structure a detailed plan of the business, but it requires many time and effort to be completed. The main issue is that Business Plans require many changes after the first contact with the different stakeholders, in a high uncertain environment as the one in which startups, usually, operate.

In addition, it employs many pages to communicate and represent the business model of an organization, resulting time wasting to be updated and presented. The Business Model Canvas summarizes the core information contained in the Business Plan and plots them in a single document.

Each business considers different factors as the core principles for its business model. Alexander Osterwalder proposed a building-blocks visual representation for standardize the same concept characterizing different business models, defined by specific elements. The Business Model Canvas sketches the actual business model, or the future one that the startup is willing to build, using nine principle building blocks:

1. Customer segments;

2. Value proposition;

3. Channels;

4. Customer relationship;

5. Flows of revenues;

6. Key resources;

7. Key activities;

8. Key partnership;

9. Cost structure.
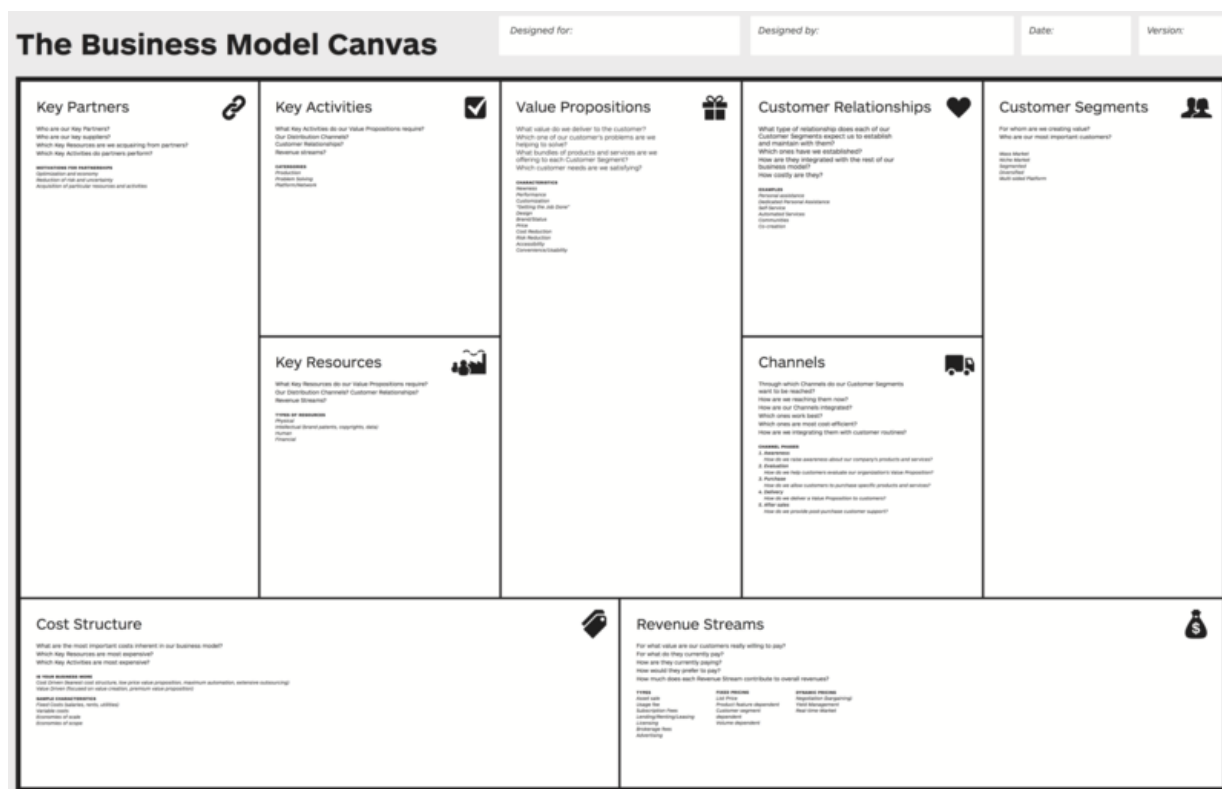
Figure 23: The Business Model Canvas[37]

The Business Model Canvas requires a standard fulfilment process. It starts from the identification of the customers segments, the related value proposition, the channels through which the value is delivered, the customer relationships implemented, the revenues model to extract economic resources from the customers, the activities developed, the key resources needed to put in action the activities, the key partners required and, finally, the cost structure on which the business is based.

The Business Model Canvas enhances the business model description, design, discussion, innovation and pivot decisions affecting the entire business network. The effective combination and management of the building blocks generates successful businesses, according to Alexander Osterwalder. The implementation process described, is suggested to be developed using post-it, as represented by figure 23.

It is a document which can be applied by business actors with different levels of technological infrastructures and knowledge, for those with a higher degree of digital knowledge several apps have been developed. Figure 24 shows the process' implementation for an influencer marketing's platform, developed during the "Entrepreneurship" course of the Engineering and Management course at the "Politecnico di Torino". Moreover, this approach supports cooperation and collaboration between the members of the startup, and, in general, between all the actors belonging to the business network.
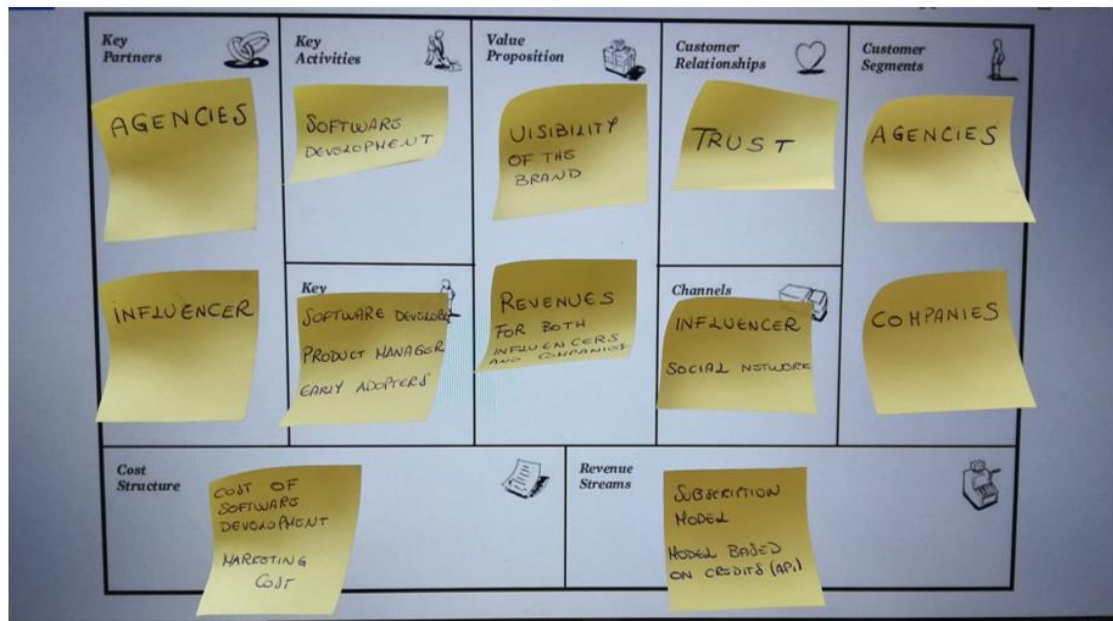
Figure 24: Example of the Business Model Canvas

The role of the business model, enhanced by a business, is important as the offered product/service. Startups fail most of times because they do not meet the right business model's implementation, as analysed in the research accomplished in the third chapter. Nespresso is a significant example of this case, even if it is an incumbent of its industry, indeed, it almost failed in 1987, even if, it was proposing the same successful product and the same technology of the modern-days. The cause was the use of an inefficient business model. It started selling to offices, first of all, through the sale force of the joint venture established with machine manufacturers. The problem was that offices were not interested in acquiring these machines and sale force was not interested in selling its small machines. The critical factors were the customer segment addressed and the channel through which the product was delivered.

The lesson received from the Nespresso's example, it is that the Business Model need to be tested to understand if the hypothesis set actually work in the market and are supported by the business environment. Indeed, the Business Model Canvas is, nothing else than, a set of untested hypotheses characterizing the business enhanced by startup, developed in a reality full of risk and uncertainty. These hypotheses must be tested with a rigorous process in order to build a successful business. The optimal solution is to find the best set of building blocks which generate the expected results and profits, before running out of cash. This goal can be reached only through a trial and error approach, testing concretely which hypotheses are correct and which are errors to avoid in future. On the basis of this process the Learning Canvas, which is discussed in detailed in the next chapter, has been implemented. The aim is to formalize and validate the learning received during the tests, the necessary changes and the definition of the priorities of the actions necessary to enhance this continuous improvement approach.

The following paragraphs analyse the building blocks designed by Alexander Osterwalder to explain how the information collected in the GO phase can be standardized and employed in the Uniform phase efficiently.

Customer Segments

Customer segments block describes the different customers' groups address by the startup. Customers represent the most important profitability's resource allowing startup to survive, grow and scale the economy. The analysis of the different customer segments enables the generation of specific product/service bundles to meet the needs and requirements of the clusters. The segments can be realized taking into consideration different customers' features: behaviours, needs, requirements, willingness to pay, profitability generated and more.

The criteria, explained by Alexander Osterwalder in his book to identify and subdivide the different segments, are the following:

- Customer segments requiring a specific value proposition to satisfy their different needs;

- Customer segments require that their expected value is provided through specific distribution channels;

- Customer segments expect the development of specific relationship (as instance, the relationships implemented by coffee companies with B2C and B2B customers are completely separated);

- Customer segments are willing to pay for different product/service's characteristics (as instance technological experts and basic users are willing to pay for different performances and features belonging to a PC);

- Customers generate different profitability's levels;

Customer knowledge base has been collected during the Go phase; nevertheless, it is required to test the hypothesis generated on the different customer segments. Human resources with social and anthropological base provide an important added value in this project's phase for the organization, to enrich the previous data. In addition, the specific customer segments selected in the business model canvas identify the market addressed by the company, which can be defined in:

- mass market;

- niche market;

- segmented market;

- diversified market;

- multi-selected market;

The awareness of the market undressed allow organizations to forecast the width of the customer base and the revenues expected based on its population.

Value Proposition

Value proposition block collects the reasons why the customer decides to purchase a certain product/service over its similar. Value proposition is a bundle of benefits generated by the various features of the product/service for a specific customer segment. It represents how the product/service generates gains, solves pains and does the job for customers.

Benefits delivered to customer segments can be categorized between quantitative (price, speed of the service, performances of the product) and qualitative (design, user experience, innovation). The benefits included in the value proposition can be developed by different elements; it is a list of some of them:

- Novelty;

- Higher quality;

- Performance;

- Customization;

- Design;

- Brand / status;

- Price;

- Costs reduction;

- Risks reduction;

- Accessibility;

- Convenience / usability;

After the description of the value proposition and its elements, the awareness of how the value proposed is perceived by customer segments results to be fundamental to create a successful business. Perceived value can be calculated by a basic formula: *Perceived value= benefits- purchasing cost.*

The balance between these two elements drives the strategy of an organization, such as cost leadership, differentiation or hybrid strategies. In addition, it shapes the bundle of product/service to offer to a specific customer segment.

Channels

Channels describe how startups deliver the Value Proposition to its Customer Segments. They represent the touchpoints between the organization and its customers. Channels can be categorized between:

- Direct: direct channels belong to the organization. They can be directly controlled and monitored, such as: point of sales, sale force, e-commerce web page.

- Indirect: indirect channels belong to organization's partners which manage the delivery of the product/service to the customer segments, as instance: distributors, partners' shops, wholesalers.

The choice in adopting direct and indirect channels depends on two elements: the knowledge/competence to develop the business efficiently using the channel and the costs related. The choice of outsource the management of the channel is driven by lower cost due to the partner's economy of scale and fast brand diffusion. Instead, direct channels result in higher costs but a more efficient employment and appropriability, which can result in a competitive advantage. Nespresso is a successful example of the latest case, it decided to open own stores not only to sell its products, but to provide to customers a complete experience in its coffee boutiques.

Channels can be employed for different purposes, as represented in the Nespresso' example:

- Deliver detailed knowledge concerning products and services;

- Support customers in understanding the value proposition;

- Support customers in buying the specific product/service to fulfil their needs;

- Deliver the value proposition to customers;

- Provide after sales assistance;

- Deliver an experience to customers;

- Build brand awareness and reputation;

Some additional questions can be useful to support the fulfilment of the channel building-block:

- Which are the channels preferred to the customer segments to be reached;

- Which are the currently channels used to reach the customer segments;

- How the integration of the different channels is developed;

- Which are the channels including the best cost-efficiency trade-off;

- How the integration of the channels with the customer segments' behaviour and habits is developed;

Integration of the different channels is a challenging task to deliver efficiently the value proposed to the customer segments, through a right balance between them strategic objectives characterizing startups can be reached by: the creation of the largest contacts' number with potential customers and simplifying the access to the offer.

Customer Relationship

Customer relationships can be summarized into three main activities by which the startup interacts with the customer segments:

1. Customers acquisition;

2. Customer retention;

3. Sales increase.

This block contains some collapsed information developed during the Go phase with some enrichment. The elements generating customer relationships are several, this is the list containing some of them:

- Personal assistance: it consists in a human resource available to support and help customers when they face issues with the related product/service. For example, the airport office of the flight companies;

- Personal dedicated assistance: it consists in the assignment of a specific resource to the customer, such as a financial consultant. This relationship enables customers' trust;

- Self-service: the customer relationship is indirect and allow the customer to solve his/her issues alone through a dedicated structure;

- Automatic services: it is the evolution of the self-service relationship, it has been developed by many environments thanks to the technological and digital evolution. It offers to customers different infrastructures' types to solve their problems. The online bank service is a significant example, it gives the possibility to customers to complete some actions which could be performed at physical offices;

- Community: it is a relationship created directly by the interaction of users. It allows customers to communicate, share and solve issues through the knowledge collected by their personal experience. It can be a great source of information to understand the needs, and the value perceived by customers but under which aspects the product/service can perform more efficiently;

- Co-creation: the user is involved in the product/service development. It becomes an active participant of the value creation. Social networks play an important role, they extract the information described in community at a low cost.

The combination of the different types of relationships established with customer segments supports and enables the customer experience, which can be considered an added value generated by the product/service. At the operational level, it is required to decide which relationships can be integrated in the strategy and which ones are best suited to the variety of customer segments.

Flows of Revenues

Revenues represent the fuel for startups, representing the financial value produced by the sales of the product/service to the previous identified customer segments. Two elements are significant to determine efficient revenue streams: the price and payment method. They make the business sustainable and allow the organization to grow, which is why many times the description of revenue streams become the strategic building-block which determine the success of the startup.

Price variable can be structured in two different ways:

- Fixed prices: determined based on: price lists, characteristics of the product, customer segment, turnover.

- Dynamic prices: determined based on: negotiations between partners, profitability management, trends of the market in the real time, auctions.

Payment methods complete the revenues process design and add important information to the business model. Two macro-categories of payment methods can be summarized:

1. Lump sum: the sale of the product/service generates one-time cash in revenue stream, for example; the sale of a clothing product;

2. Recurrent payments: series of payments subdividing the entire amount, as instance: the sale of a car bought with payment by instalments, subscriptions or rental payments;

The combination of these two variables establish the strategy by which startup are addressing the market. The innovation of payment scheme is an interesting topic, largely discussed in modern literature, and developed by digital startups. Moreover, revenues stream can be generated by different sources:

- Product/service sale, it relates efficiently with specific consumer goods such as: food, clothing, beverage;

- Usage fee for a particular service;

- Membership fee to access a continuous service;

- Loan/rental/lease. Optimal formula when the product/service can be used by the customer for a limited amount of time;

- Licenses: permission to use the intellectual property or the patent in exchange for a fee from one organization to another;

- Brokerage commissions: manage and control the intermediation between two parties by a third one in exchange of a fee;

- Advertising: the revenue stream is generated by advertising a product/service;

There are components which must be taken into consideration while structuring the business model and the process design of a startup:

- What customer segments have to pay for;

- How customer segments have to pay:

- How much customer segments have to pay;

The strategic choice of price and payment scheme shapes the financial part of the business model as well as the future sustainability of the project.

Key Resources

The key resources building-block contains the strategic assets necessary for a startup to build and operationally support the business. It represents what is required by a business in order to function.

Each activity operates thanks to a specific key resource. The resources can be categorized into:

- Physical: tangible assets such as: shops, instalments, infrastructures, machineries, technologies. All the physical resources needed to sell or produce products/services;

- Intellectual: know-how of an organization, patents, brands, copyright, projects, partnerships, customer database and processes;

- Human: collecting a part of the know-how of an organization, representing strategic resources. They result critical in specific in services industries;

- Financial: financial assets such as: credit lines, cash or stock option bundle allowing the organization, for example, to hire skilled employees or to gain supplies, generating a competitive advantage over competitors;

The right identification of which is the most efficient key resource to generate the specific value proposition to the customer segment supports the sustainability of the business. The error to avoid is to consider the key resources as value proposition, they are the means to produce that value.

Key Activities

The key activities building-block describes the strategic activities which must be accomplished to create and support the value proposition, to reach the customer segments, to maintain the relationships with them and generate revenues. It represents the prioritized activities required to make the business work. As the previous key resources, key activities are specific for different business models.

Key activities can be categorized into three main kinds:

1. Productive: characterizing the manufacturing industry, they represent how a product/service is designed, produced and distributed to the customer segments;

2. Problem Solving: characterizing the service industry, such as consulting companies. They have the aim to do the job for the customer segments;

3. Maintenance/platform development/networks: characterising digital industries, such as Google and Facebook for which the platform development represents great part of the business;

The combination of key resources, key activities and key partnerships determines the sustainable competitive advantage of a company, but at the same time builds its cost structure which is analysed in the last block.

Key Partnership

The key partners building-block collects the information gathered in the entire Go phase, in specific in the Social Business Network. It represents the suppliers' network and necessary partners for the business development. The members of the business network allow the organization to realize the business model and increase the possibility of success in the market.

The strategic partnerships support different business functions and enhance organizations to respond to internal and external needs, not expected in its business model. The reasons which bring the decision to deal a partnership are various:

- Optimize resources and activities;

- Develop economies of scale;

- Reduce the risk of competition;

- Compete in a larger market;

- Acquire specific resources;

- Promote its brand;

- Acquire new customers;

The key partnership can be structured using three main different formulas:

- Strategic alliances: between non competing companies: suppliers or companies located inside the same productive chain;

- Strategic alliances: companies operating in the same market decide to join resources and activities to enlarge their customer base and do not cannibalize each other;

- Joint venture: agreement between two or more companies to develop new businesses or enter new markets far from their core.

Cost Structure

The cost structure building-block derives completely from the definition of the key resources, key activities and key partnership blocks. Cost structure offers different interpretations according to the strategy pursued. It is the basis of the cost leadership strategy which consists of offering basic products/services at a low price due to the fact that costs are minimized, since Ryanair is one of the most significant examples. Nevertheless, sometimes it is not relevant, all luxury industries focus on providing the best possible product/service possible regardless of the related costs.

For this reason, cost structure defines:

1. Business model driven by cost: focus on minimizing costs;
2. Business model driven by value: focus on maximizing the value through customized and premium product/service;

The cost structure is composed by different types of costs:

- Fixed costs: costs not depending on the volume of output produced (salaries, administration costs, rent);
- Variable costs: depending on the volume of output produced;
- Economy of scale: unit cost decrease increasing the volume of output produced;
- Economy of learning: unit cost decrease by increasing the scope of an operation;

The cost structure must be analysed carefully, understanding which the key activities are, resources, partners which generate higher costs and if they role are really significant for the success of the business. Finally, cost structure must be compared with the revenue stream to analyse and understand if the business model is sustainable.

4.5 Evaluate Phase

Evaluate phase defines the operative action plan to solve the problems that affect the specific customer segments and develop the business opportunities identified in the previous phases. This step is strictly correlated with to the Uniform phase because it aims to identify, design and monitor the activities required to develop the strategy of a startup, starting from its current state represented in the Business Model Canvas.

This phase is composed by four main documents:

1. SWOT Analysis;
2. Balance Scorecard;
3. ICE-Diagram.

4.5.1 SWOT Analysis

SWOT Analysis is a strategic planning document collecting information and supporting the identification of internal variables, strengths and weaknesses, and external variables, threats and opportunities, belonging to the business. The internal variables are integrated into the internal system and for this reason they can be managed, instead external variables are exogenous factors independent of the organization and can be monitored only to minimize risks and exploit possible opportunities in order to improve performances, such as represented in figure 25.
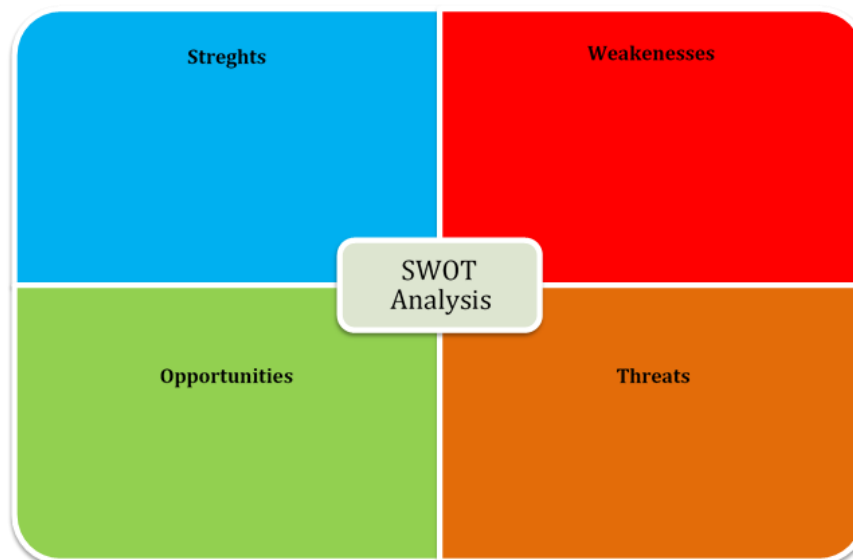

Figure 25: SWOT Analysis Framework

The internal variables can:

- Generate or destroy value;
- Identify the activities, competences or resources available to compete in the market and produce a competitive advantage or the missing ones enhancing the advantage of competitors;
- Be measured through internal analysis or external benchmarking.

The external variables, summarized in the PEST framework described previously, can generate or destroy value independently to the endogenous organizational decisions.

The tool has the aim to drive the strategic guidelines of the organization and support the decision-making process. The utility of using this framework depends on the quantity and quality of the information collected in the previous analysis, being a self-diagnosis instrument.

Furthermore, SWOT Analysis is a powerful visual tool which improves communication with the external environment and collaboration in the internal environment, aligning people with different business background towards the same strategic objective. It is an easy-to-use and easy-to-understand tool which allow organizations to model it by making the required changes from the internal and external environment. It takes tracks of the evolving strengths developed to exploit the arising opportunities in the business environment and the weaknesses which possibly may result in emerging threats.

This kind of representation generates four main advantages:

- Analysis of possible scenarios in which different strengths and weakness are generated and threats and opportunities arise, providing a complete picture of the main factors which are required or are more probable to maximize the business success;
- Delineation of the strategy, starting from a preliminary analysis of the context in which the organization operates, including observations and data collection, to an interpretation of the outcome generated;
- Continuous comparison between the evolving exogenous factors and the strategic decisions adopted to maximize the efficiency level;
- Involve the network's actors on the strategic decision-process to achieve a wider consensus.

The SWOT analysis presents, also, three main limitations:

- It can result in a superficial description of the internal and external reality;
- It does not consider in its implementation the relationship between the actors involved in the network, the absence of this involvement may result in a separation between the theoretical and actual outcome;
- It may result in a subjective selection of actions to be implemented in the strategic plan.

The SWOT Analysis is not a mandatory document to be applied by startups for the GUEST Methodology, due to its main limitations. But it can be considered as an introduction to the Balance Scorecard document and can be a useful model to drive brainstorming sessions on the evolving internal and external environment.

4.5.2 Balance Scorecard

The Balance Scorecard is defined as the comprehensive system for the strategic planning and management of the business, designed and described by Robert Kaplan and David Norton in the early nineties in their publication "The Balance Scorecard". It is a strategic approach to business management which has the aim to define the strategy starting from the strategic map, passing through the strategic execution and, finally, the strategic evaluation.

The aim of the first version of the Balance Scorecard was to measure and evaluate the significant metrics identified for describing the business and to justify the financial performances by the analysis of the previous actions. Indeed, these measures were analysed under four main perspectives concerning the business model of a company:

1. Economic and Financial Perspective;
2. Customer Perspective;
3. Internal Process Perspective;
4. Innovation and Learning Perspective.

For each perspective, four different elements were taken into consideration:

1. Objectives: the statement of the strategic objectives which the business wants to reach;
2. Measures: the metrics taken into account to evaluate the business performances;
3. Targets: the quantitative performances which are expected to satisfy the business requirements;
4. Initiatives: the strategic actions scheduled to achieve the business objectives stated in the first point.
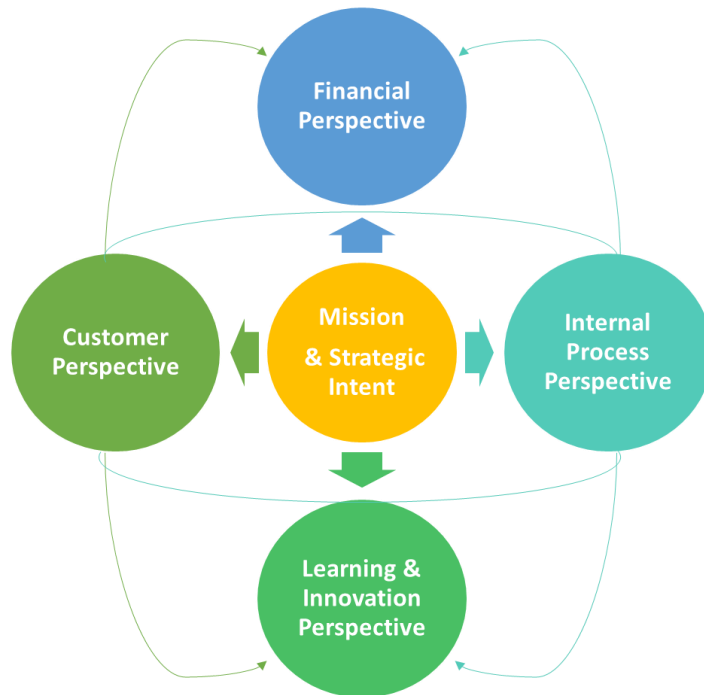
Figure 26: Balance Scorecard framework

In few times, Balance Scorecard has evolved in a complete business management system to develop and execute the strategy, aligning the routine operations and resources with the strategic mission, generating solutions to reach a detailed strategy focused approach. The system allows organizations to translate their vision to a framework in which strategy is described in terms of objectives, initiatives and measures. As represented by figure 26, at the centre of the framework the organizational strategy is subdivided into: the mission and the strategic intent to pursue the vision.

In summary, the Balance Scorecard is implemented to support:

- The articulation of the business's vision and strategy;

-The identification of the factors that best relate the business's vision and strategy to its outcomes;

- The establishment of the objectives sustaining the business's vision and strategy;

-The development of effective measures and meaningful standards, defining both short-term and long-term targets;

- The organizational common consensus of the measures;

- The creation of efficient budgeting, tracking, communication and reward systems;

- The collection and the analysis of performance data to be compared with the expected results;

 - The monitoring of undesired gaps.

The Balance Scorecard generates the great advantage of reducing the overload of information received from the four perspectives by prioritizing the measures to be applied in the evaluation. The identification of valuable metrics which monitor and describe the business performances is a complex task, most of times startup consider many vanity metrics which causes misunderstanding and confusion in the representation of the current state.

The application of the Balance Scorecard with several companies has highlighted two main benefits meeting founders or managers requirements:

1. It is a single representation of different elements composing the business of the organization supporting the processes of: customer centric approach development, response time reduction, quality improvement, teamwork collaboration, launch times reduction of new products/services, long term management.
2. It is a comprehensive representation of how the achievement reached by an operation area impacted on another one. For example, the reduction of launch time can be achieved improving the management of new products or by launching products which differ from the one already presented in the market, with the consequence of increasing heavily the R&D costs.

Finally, the application of the framework requires a defined sequence of steps:

1. Definition of the mission and the Strategic Intent;
2. Identification of the strategic goals and the variables which affects the building-blocks of the Business Model Canvas, described in the Uniform phase;
3. Definition of the strategic map required to be aligned with the mission and the strategic intent;
4. Identification of the performance metrics required by the Balance Scorecard.

4.5.2.1   Vision, Mission and Strategic Intent

The first step of the Balance Scorecard is the definition of the vision, mission and strategic intent of the startup. The business mission must be clear to each actor belonging to the network and the external environment. The clear statement of what the organization is pursuing supports the decision-making process and the determination of priorities.

The business mission can be considered the first building block of the Balance Scorecard, it drives the statement of the strategic objectives which must be reached and supports the selection of strategic activities which determine the success of the organization.

The analysis of the Value Proposition building block included in the Business Model Canvas supports the definition of the strategic vision, mission and strategic intent, since the vision states what an organization want to become in the long-term horizon, the mission states what an organization is today and its short-term objectives and the strategic intent represents how the organization plan to achieve these expected results.

The principal difference between the vision and the mission of an organization is the time horizon. As anticipated, the vision contains information concerning on the aspirational

status the organization would like to reach in future, meanwhile the mission collects information on the short-terms objectives stated. It is important to define both, without using them interchangeably, to generate an exhaustive idea of the business ambitions.

4.5.2.2   *Strategic Objectives*

In the previous sub-paragraph, it was presented the definition process for the strategic vision, mission and the strategic intent. The next step required by the Balance Scorecard is to breakdown them into strategic objectives. The GUEST Methodology provides a framework for defining the strategic objectives and their classification in the four perspectives, previously anticipated. The process consists in analysing the building blocks contained in the Business Model Canvas, gathering the information which make up the business model, under a strategic perspective and translate theme into operative actions. The framework supports the translation of the elements composing the Business Model Canvas into the strategic objectives required by the Balance Scorecard.

The process consists in a sequence of steps which anticipate the construction of the strategic map:

1. Initial brainstorming session during which each element of the block is rephrased into a strategic objective;
2. Association of the identified objectives to one or more variables, representing the ability of the elements in impacting on the goal pursued;
3. Analysis of the variables connected to the objectives to understand if there are relationships between the different strategic objectives;

The framework, presented in figure 27, analyses the four perspectives of the Balance Scorecard which are applied to the Business Model Canvas building blocks, excluding the Value Proposition, Key Partners, Cost structure and Revenue Streams blocks.

Figure 27: Balance Scorecard perspectives[38]

The main question around which the analysis has been carried on is: which are the elements contained in each building block impacting each perspective of the Balance Scorecard? In the next paragraphs, the single blocks are analysed in detail.

4.5.2.2.1 Customer Segments

Customer segments building block contains the data gathered in the GO phase and plotted in the Business Model Canvas during the UNIFORM phase. It represents the targets to which the offer of products and services is designed. The different segments take into consideration additional elements to enrich their description: customers' needs, distribution channels required to deliver the specific value proposition, relationships established to show caring towards customers and finally profitability's layers.

The Balance Scorecard analyses the building block under the four perspectives previously anticipated.

Financial perspective

Customers represent the principal source of revenues' generation and/or increase, considering a financial point of view. Startups become sustainable just in case of a fast and solid customer base growth which allows the financial survival in the market. The initial revenues streams are invested to develop and acquire new activities,

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resources, partnerships, channels, customer relationships to reach a wider market. The choice of targeting to new segment offering a new product/service is based on the decision to broader the revenue mix.

The possible objectives can be numerous. In the interest of presenting a valuable example of a strategic map, the thesis presents the two main financial goals concerning the customer segments:

- Grow revenues;
- Broaden revenue mix.

Customer perspective

Many companies are more and more searching for a customer centric approach, inserting the customer at the centre of the strategy over the product/service offered, as discussed along the thesis. Under this consideration, it is understandable the importance for organizations to assume a privileged customers' perspective.

Customers are willing to pay for customized products or services which satisfied their specific needs and services, therefore the possible objectives can be summarized in:

- Customer satisfaction;
- Customization of products and services.

Internal perspective

The objectives stated in the previous perspectives require actions to be achieved. These actions are analysed under an internal perspective by the organization. Strategic actions require to be identified in order to enhance execution to maximize the value which can be extracted from different customer segments. The possible objectives can be:

- Understand customer segments;
- Product/service innovation

Learning and growth perspective

Additional strategic objectives are identified under the learning and growth perspective to enhance the satisfaction of the customer segments. Knowledge, competences, resources must be acquired or developed to acquire customers, meet their needs and engage them. Some possible strategic objectives can be identified in:

- Develop skills;
- Recruit talent;
- Acquire machinery;
- Implement software.

Figure 28 collects the strategic objectives gathered, as instance, during the analysis of the customer segment building block under the four perspectives of the Balance Scorecard.
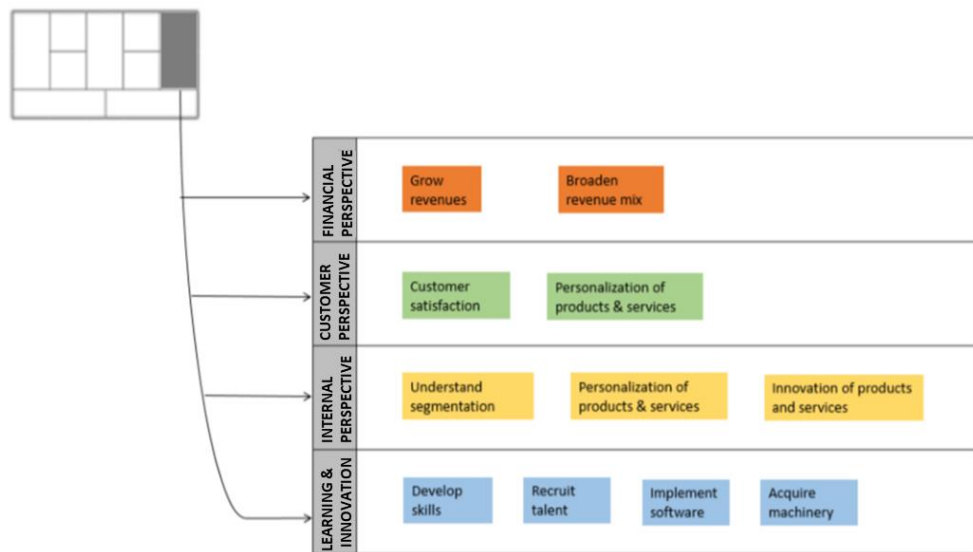
Figure 28: Definition of the strategic objectives (customer segment)[39]

4.5.2.2.2 Customer Relationships

Customer relationships building block, as described previously, represents the relationships between customers and startup. Customer segments require different forms of relationships based on their needs. Furthermore, the single segment can be addressed through distinct relationships' type.

The customer relationships decision-making process depends on the strategic objectives stated under the four perspectives of the customer segments and on the business' vision and mission. For example, the relationships actions undertaken vary if the startup is willing to acquire new customers, retain customers and/or increase sales.

Relationships present different structures, from the most traditional ones, such as the personal assistance, passing through indirect systems, self-service models, to digital designs, communities and co-creation. The decision of implementing one structure over the other depends on the strategic objectives which are willing to be reached through this block.

Financial perspective

Startups optimize customer willingness to pay by maximizing specificity and efficiency of customer relationships. Indeed, relationships support the purchasing experience and the customer life cycle related to the organization. The effects generated by the right relationships' management may produce increase of revenues

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[39] G. Perboli (Slides)

in a short-term horizon and the customer engagement and loyalty in the long-term perspective, which has the consequence to improve the sales forecast.

The possible objectives are summarized by:
- Grow revenues;
- Cash flow management.

Customer perspective

Customers are the main protagonist of the customer relationships building block. Relationships enhances customer experience to add extra value to products/services and take advantage over competitors. In luxury fashion brands, clients are assigned to personal assistant to guide them in the purchasing process delivering a comprehensive experience. Customers are increasingly involved in the value creation process to extract their needs and requirements and make them parts of the experience itself.

At the same time, partnerships are useful to develop and acquire assets to improve customer relationship but also to establish trust between partners in order to generate benefits for both parties in a long-term horizon.

Possible objectives:

- Customer experience;
- Co-creation of value;
- Trusted partnerships.

Internal perspective

Internal operative actions are required to reach the objectives stated in the first two perspectives. Efficient relationships are performed if the sales force, the customer acquisition and retention strategy are managed properly and the new form of relationships, such as communities and co-creation processes, requires an internal effort to be built and developed.
For these reasons, the possible objectives can be stated in:
- Vendor performance;
- Community building;
- Automated services maintenance.

Learning and growth perspective

The assets, competences and tools needed to establish new relationship with customers or maximize existing ones can be numerous. As consequence, the objectives to acquire and develop these resources are wide. Nevertheless, the thesis focuses on two main objectives concerning the sales force and customer relationship management at example' purposes:

- Continuous training;
- CRM acquisition/implementation.
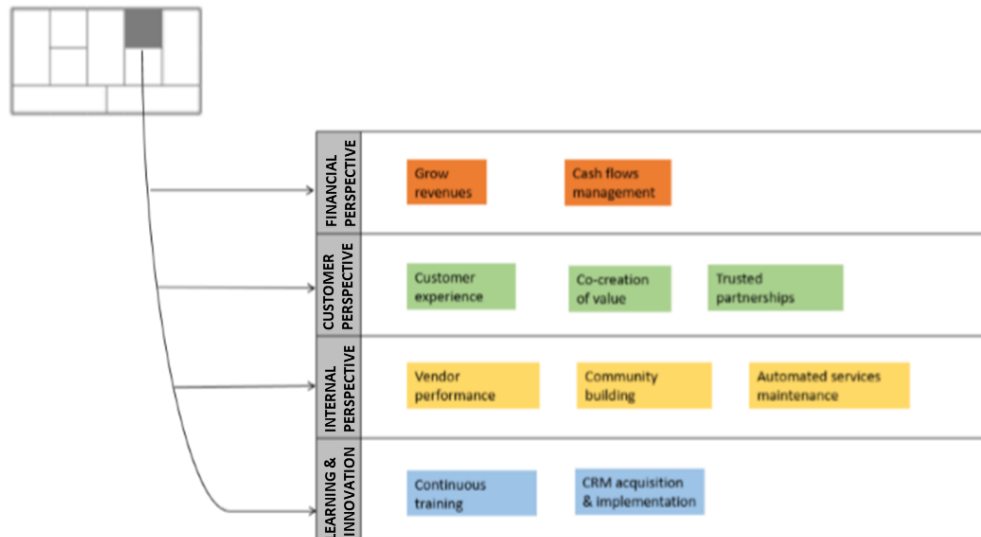
Figure 29: Definition of the strategic objectives (customer relationships)[40]

4.5.2.2.3 Channels

Channels are the bridges through which the organization deliver its value proposition to actual or potential customers. They fulfil three main functions: the opportunity for customers to purchase the product or service, the management of the distribution network and the after-sales support.

Channels can be developed in two main structures based on financial capability, business competences and degree of appropriability, as anticipated in the Uniform phase:

- Internally, as the sales force or website owned by an organization. In this case, they are called Direct Channels;
- Outsourced to another company, for example the retail network used to distribute the product/service. In this case, they are called Indirect Channels and transform the third party in an organizational partner.

In addition, channels can be inserted in two main categories:

- Marketing and Communication channels support the creation of demand by involving and attracting potential customers. TV/Radio/Print media advertising/Social media/websites and much more are some examples.
- Sales channels allow customers to purchase the product/service. They can be physical, as proprietary stores network, pop-up stores, field sales agents, events, or digital, online shops, Amazon/E-bay store, Apps and much more.

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[40] G. Perboli (Slides)

Financial perspective

Financial perspective in analysing the channels provide valuable insights to understand how to develop them. Direct channels require huge investments to be built and managed but at the same time they allow to reach higher margins than indirect channels. Indeed, the sales and distribution channels of the partners enhance the lower margins but guarantee to reach a wider customer base.

For this reason, the possible strategic financial objectives can be driven by:

- Profit margins;
- Return on investment;
- Sales growth.

Customer perspective

Channels influence customers decision in purchasing products/services in different forms and affecting different customers' characteristics.

Marketing channels enhance the reputation and credibility of the brand to create a positive and appealing brand image in the minds of customers, playing a physiological role in driving the customers' choices. Instead, the sales and distribution channels support the customer's experience and satisfaction in the purchasing process, ensuring the availability of the products, punctual delivery, the support material that covers a physical role. Furthermore, both channels spread information about the brand, such as events, collaborations, initiatives, and product/services, such as new launches, upgrades, to customers and enables the communication between them and the organization.

The main objectives can be identified in:

- Brand reputation;
- Products availability;
- Timely delivery;
- Ease of communication;
- Information availability.

Internal perspective

The choice in adopting specific Marketing and Sales channels to reach the targeted customers segments is a critical strategic decision for a startus. For example, online advertising and stores may result effective to interact with a specific segment but ineffective for others. In addition, organizations should decide which of them can be developed as a direct or indirect channel to maximize the value of the brand image through effective communication to entrust the customer and allow the product/service to be available and distributable on time any time customers require.

The main objectives identified are:

- Appropriate channels selection;
- Brand development;

- Distribution optimization.

Learning and growth perspective

The growth of the business passes through the development of the channels described in this paragraph. The strategic objectives affecting channels development are:

- Partnerships development;
- New channels acquisition.

Figure 30 collects the strategic objectives gathered during the channel analysis.
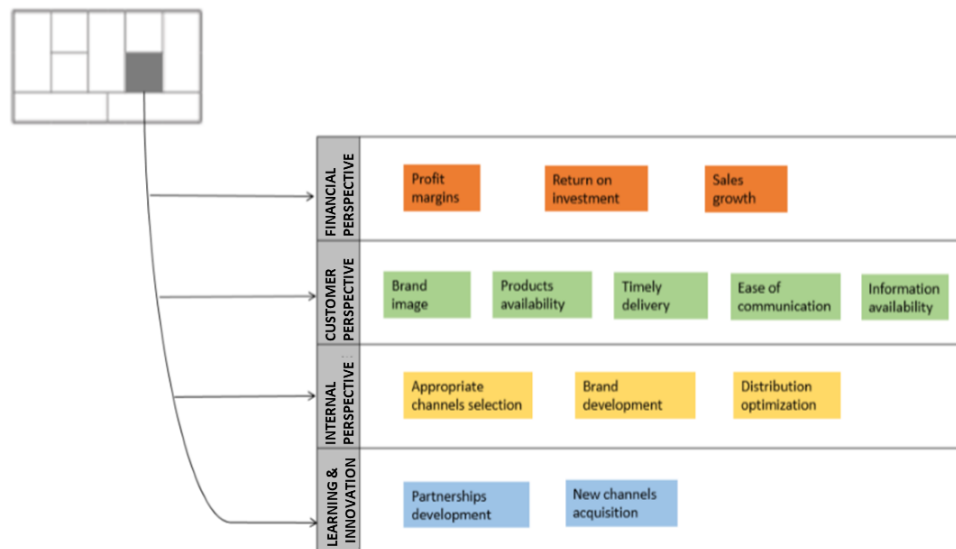
Figure 30: Definition of the strategic objectives (channels)[41]

4.5.2.2.4 Key Activities

Key activity building block describes all the actions required to implement and develop the business model planned along the GUEST Methodology. The activities are strictly correlated to the business model considered and the industry in which the startup operates, for example the key activities for an organization present in the Food and Beverage industry will be focused on the product/service production and distribution.

The key activities are grouped in to three main categories based on the outcome generated by the organization:

- Production for manufacturing companies;
- Problem solving for service providers;
- Platform/Network maintenance companies

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[41] G. Perboli (Slides)

The operational objectives stated for the key activities describe how the startup is designing the execution to achieve success and "do things" right.

Financial perspective

Key activities collect two main financial characteristics in their structure: value produced, revenues, and requirements necessary to develop them, costs. Startup should maximize the profit related to each key activity by setting two main objectives:

- Reduce costs;
- Grow revenues

Customer perspective

Efficient key activities result in customer perspective as: higher product/service quality, attractive price offer and higher satisfaction. Nowadays, customers evaluate, also, the environmental and social sustainability of the activities implemented to provide the final product/service which supports the satisfaction.
The main objective can be summarized into:

- Quality products and services;
- Low prices;
- High satisfaction.

Internal perspective

Key activities block analysis from an internal point of view provides valuable insight of how the startup is thinking to run or is managing the business. Key activities are strictly related to the employment of tangible/intangible/human resources, the management of the processes and the degree of innovation wanted to build the product/service.

It is important to define the main strategic objectives enhanced by the key activities, the list presents some possible alternatives:

- Innovation of products and services;
- Optimize assets utilization;
- Costs management;
- Productivity.

Learning and growth perspective

The development and/or acquisition of new resources and competences enhances the improvement and the generation of new activities. The objectives vary due to the product/service/network provided to customer segments, but can be collected in three main one, always at the purpose of delivering a valuable example of the Balance Scorecard model application:

- Attract and retain talent;
- Information System availability;
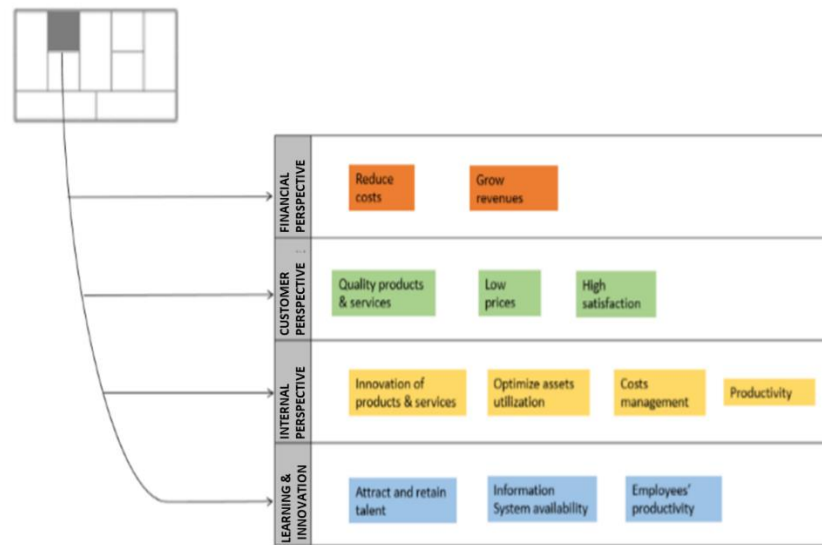
- Employees' productivity.

Figure 31: Definition of the strategic objectives (key activities)[42]

4.5.2.2.5 Key Resources

Key resources represent the source from which the startup is able to implement its business model and deliver its value proposition through tangible or intangible products or services. They depend strictly to the kind of business model selected, such as the previous building block, Key Activities.

Resources can be categorized into financial, tangible, intangible and human resources; partnerships can be considered as intangible assets, which is why this block would not be analysed.

For the sake of simplicity, it is assumed that the startup has already acquired the needed resources yet, so the analysis is focused only under the learning and growth perspective.

The stated objectives concerning the first three perspectives for the previous blocks can be gathered and considered valid also for the key resources.

Learning and growth perspective

Considering the creation or expansion of a new startup, key resources mainly impact on the perspective of learning and growth.

Startup, initially, present a limited budget to invest so they should carefully allocate investments and think about alternative resources to be acquired.

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42 G. Perboli (Slides)

Universities offer great opportunities concerning young motivated and skilled talents, partnerships allow a long-term business sustainability, and technologies enable the low cost appropriability of tangible and intangible assets.

The possible objectives which can be identified are:

- Resources acquisition;
- Employees' satisfaction;
- Partnerships development;
- Shared Knowledge;
- Information management.
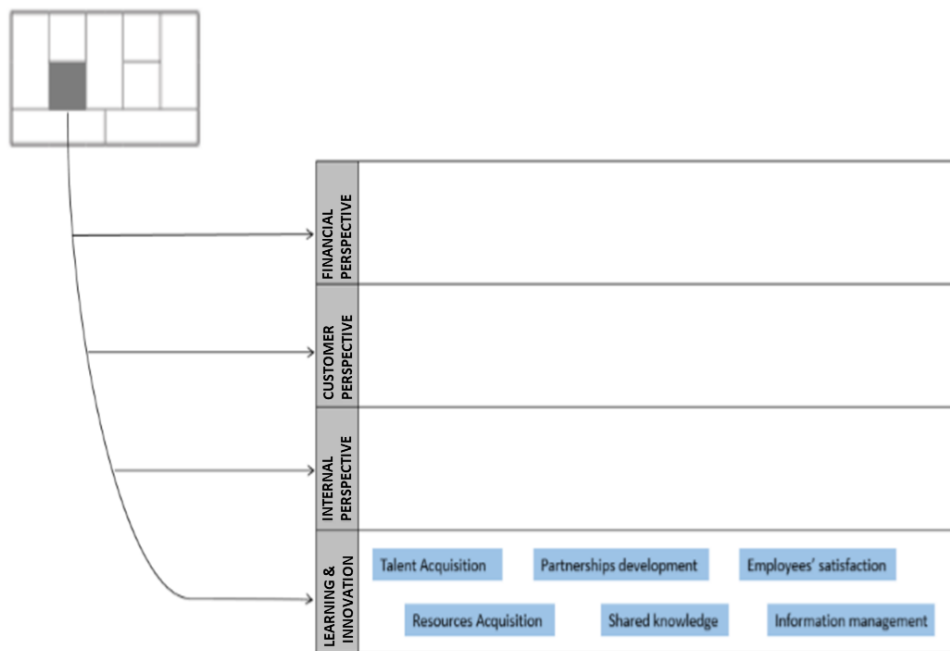
Figure 32: Definition of the strategic objectives (Key Resources)[43]

4.5.3 Strategic Map

The strategic map translates the strategic objective, identified during the previous phase, in strategic routes through the creation of relationship between the four main perspectives. It is a strategic document which formalize the principal strategies chosen by the startup to develop its business. The construction of the strategic map requires four main steps to define the final outcome. The application process takes into consideration different elements: the overall view of the strategic objectives stated for each Business Model Canvas building block analysed by Balance Scorecard four perspectives, the prioritization of these objectives, the connections of objectives relative to the perspectives and the simplification of the resulting paths.

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[43] G. Perboli (Slides)

The description of the steps is enriched by the disenrollment of the example started in the previous paragraph to deliver a clear representation how to apply the model in the correct way.

STEP 1:

The first step consists in gathering the identified strategic objectives into a grid composed by the four perspectives of the Balance Scorecard. This graphical representation enhances a comprehensive overview of the strategic objectives fostered by the organization.

STEP 2:

The collected strategic objectives are prioritized according to the strategic mission, vision and strategic intent formulated beforehand. The use of colours supports the visual prioritization. The tool identified three main colours:

- Red: high priority;
- Yellow: medium priority;
- Green: low priority

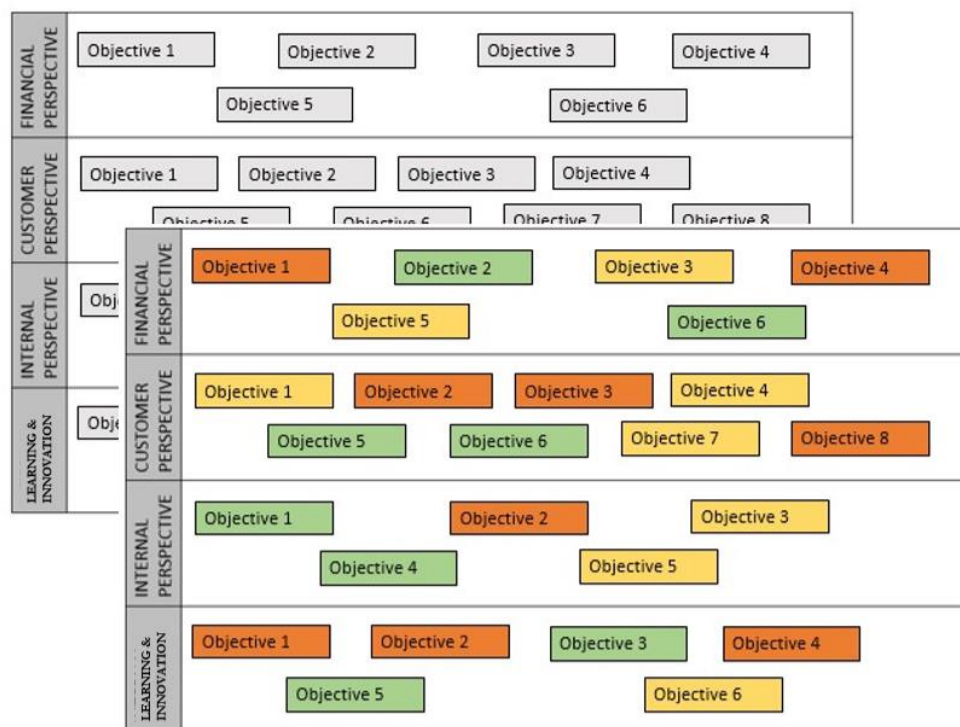Figure 33 represents the described first two steps.

Figure 33: Strategic Map (Steps: 1 and 2)[44]

STEP 3:

Relationships between strategic objectives belonging to different perspectives and priorities are created using arcs in the strategic map. The variables identified during the

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[44] G. Perboli (Slides)

brainstorming from the Business Model Canvas to the Balance Scorecard can be used as guidelines to drive this process.

According to the Balance Scorecard theory, arcs should be designed through a bottom-up approach, from learning and growth perspective to the financial perspective. This process is driven by the logic behind the Balance Scorecard, indeed, represents how the objectives stated at operative level support the fulfilment of the managerial purposes, which contribute to enhance customer satisfaction by producing the financial outcome required to meet stakeholder expectations.

The functionality of this step depends on the proper and correc identification and classification of strategic goals in the four perspectives during the collection phase.

STEP 4:

The most important routes, the arcs and nodes in the strategic maps from the learning and growth perspective to the financial one, can be identified by eliminating the nodes which have the lowest priority level and the number of incoming arcs.

The final result is suggested to represent one or two paths linking all the four perspectives' objectives. The figures below represent the process described for the last two steps and the completed strategic map.
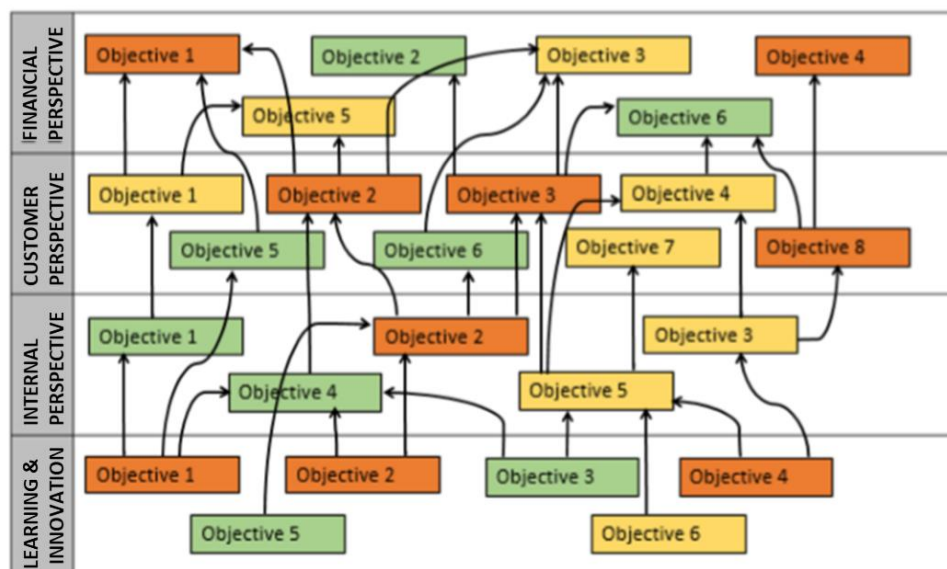

Figure 34: Strategic Map (Step: 3)[45]
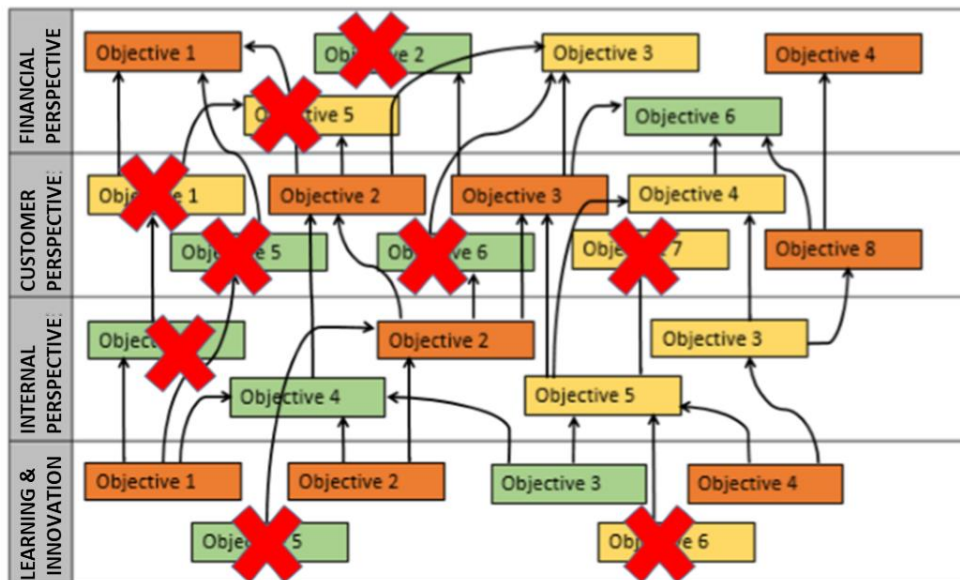

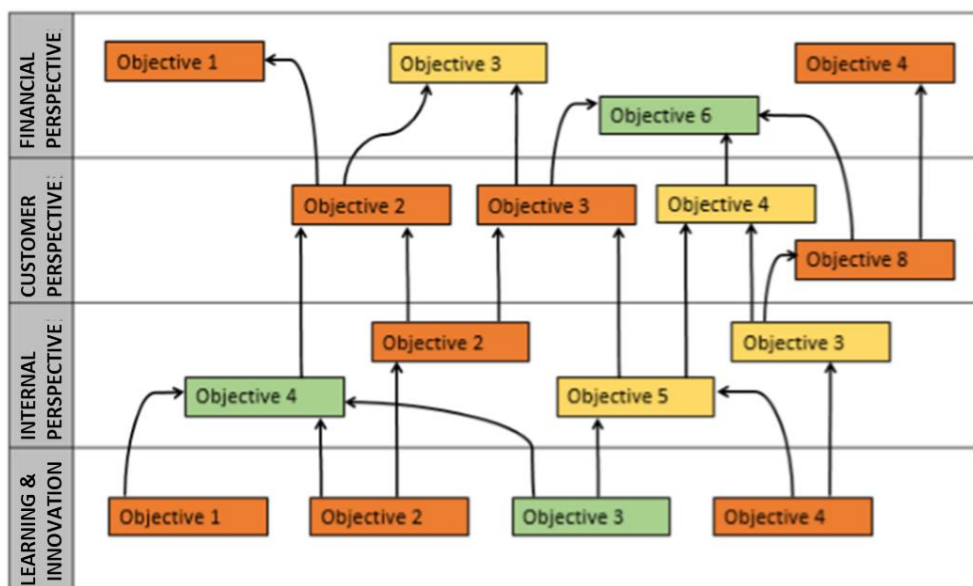[45] G. Perboli (Slides)

Figure 35: Strategic Map (Step: 4a)[46]

Figure 36: Strategic Map (Step: 4b)[47]

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[46] G. Perboli (Slides)

[47] G. Perboli (Slides)

4.5.4 Balance Scorecard Tables

The Balance Scorecard can be structured according to the strategic objectives composing the routes defined by the strategic map. One or more variables with the respective performance indicators are established for each goal to monitor and evaluate the performances generated.

Four tables, one for each perspective, compose the final Balance Scorecard document as represented by the below figures. The quantitative performances indicators support the quantitative evaluation of the strategic objective achievement. The identification of valuable and reliable metrics is a critical process to represent efficiently the dimensions and success of the business in front of the internal organization and the external stakeholders.

The graphical representation of the target addressed by the startup and the successful performances generated in a single document is a simple and direct way to monitor and communicate the profitability of the organization under four main dimensions.

The selection of appealing indicators and targets would invite investors to believe in the business probabilities of success and commit financial resources to the project which would be used to develop the key activities, acquire new resources and enhance growth.

CUSTOMER PERSPECTIVE	
VARIABLES	**INDEXES**
Customer satisfaction	• Number of complains/Number of customers • Average duration of the customer relationship • Number of recesses/Number of customers
Product quality	• Number of returns products/Number of sold products
Brand Notoriety	• Brand Notoriety Index

Table 9: Balance Scorecard Table (Customer Perspective)[48]

INTERNAL PROCESSES PERSPECTIVE	
VARIABLES	**INDEXES**
Check of the customers acquisition goal	• % special customers/number of customers • Birthrate of special customers • % of cash coverage
Check of the product quality	• Number of production waste
Check of the service quality	• Average time for the evasion of maintenance practices • % customers served in a week
Speed for obtain financing	• Average time for the evasion of financing practices

Table 10: Balance Scorecard Table (Internal Processes Perspective)[49]

LEARNING & INNOVATION PERSPECTIVE	
VARIABLES	**INDEXES**
Training of the sales forces/customers	• % sales force trained • Turnover rate • % of certified customers
Check advertising campaign	• Effectiveness of the advertising campaign
Software development	• % progress of software - financing • % progress of software – geo mkt

Table 11: Balance Scorecard Table (Learning & Innovation Perspective)[50]

4.5.5 ICE Diagram

The ICE Diagram is the last document presented in the Evaluate phase of the methodology. ICE stands for Identify, Control and Evaluate and it is a table composed by three main columns containing the elements defined by the acronym.

The Balance Scorecard is the starting point from which the ICE Diagram begins. Its aim is to translate issues and opportunities into tangible actions which are continuously implemented and evaluated by valuable metrics representing the comprehensive internal and external context in which the startup operates. Indeed, the tool identifies problems which present different levels of priority, spots solutions related to them and, finally, sets

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[49] G. Perboli (2018)
[50] G. Perboli (2018)

KPIs to monitor the performances generated by the identified actions, as represented by table 12.

ICE Diagram

Identify	Control	Evaluate		
		KPI	**Res**	**Time**
Problem x	**Action to implement**	KPI 1x ~~KPI 2x~~	10K	1 w
Problem y	**Action to implement**	KPI 1x KPI 2y	50K ~~70k~~	3 w ~~2W~~
Opportunity z	**Action to implement**	KPI 1z	30K	4 w

Table 12: ICE Diagram Table

For these reasons, the development of the tool requires, also, the completion of the SWOT Analysis, previously described, because it enhances the brainstorming of threats and opportunities faced by the business at high level. It is built by three main steps which bring to the final outcome, as anticipated:

1. The first step selects and identifies the opportunities and/or problems affecting the startup, taking into considerations the ones spotted in the SWOT Analysis;
2. The second step defines the actions/solutions required to exploit the identified opportunities and handle the problems in the Control Column;
3. The third step, the Evaluation column, is divided into three sections:

   - In the first one, the key points indicators, KPIs, needed to evaluate and monitor the action to be implemented are defined to take track of the business performances and evolution;
   - The second section establishes the financial resources required to develop the actions identified by the Control column;
   - The last one considers the time scheduled to implement and complete them.

The outcome generated by the ICE diagram provides the results used as input by the Solve phase, following phase of the methodology.

The ICE Diagram to be efficient must be customized based on the business model proposed by the organization and its profile, prioritizing the actions which supports the sustainability of the startup.

The prioritization of the operative actions is due by two main reasons, viewed from the financial and the internal perspective of the organization:

1. The economic budget associated to startup is generally limited and cannot cover, usually, all the action identified in the same time horizon;

2. The management of the totality of the actions at the same time require a great organization and development of the tasks, which is often not reachable in the reality. So, scheduling the activities by priority supports organizations to manage the numerous tasks.

The prioritization, similarly to the Balance Scorecard and Value Ring, associates the elements contained in the table to three significant colours to support an impacting graphical representation:

- Red: Action with urgent priority;
- Orange: Action with intermediate priority;
- Green: Action with low priority.

As described, the document takes into consideration financial and non-financial factors which are determinant for the sustainability and competitiveness of the business over time. It collects all the possible problems/solutions affecting the organization which are revised and selected to complete the startup's operational plan, the Executive ICE-Diagram.

Problems and opportunities, after the identification through the SWOT analysis, are defined and developed by their analysis under the four perspectives used for the Balance Scorecard:

1. the financial perspective;
2. the customer perspective;
3. the perspective of internal management processes;
4. the perspective of learning processes and growth.

The process described to complete the ICE Diagram is applied to the four perspectives to give continuity to the strategic identification and implementation started with the Balance Scorecard. The strategies identified are translated, in this phase, into efficient tangible actions of operative management addressed to specific problems/opportunities and monitored by valuable KPIs.

The identification of the KPIs should be shaped to the business model taken in consideration to represent properly the startup's operations and capacity in generating value. Each indicator should consider the following information as valuable:

- Description;
- Formula for the computation;
- Responsible;
- Format of data (%, value);
- Trend type (ascending or descending);
- Detection rate (monthly, quarterly, semi-annual, annual);
- Source of data;
- Target origins;

The indicators should be shaped, also, on the perspective taken into consideration. For example, ROE (Return on equity), ROI (Return on Investment), ROS (Return on sales) are financial indicators which evaluate the economic solidity of the startup. Rate of

customer loyalty, degree of customer satisfaction, acquisition rate of new customers, profitability per customers are examples of measures related to the ability of organizations to meet customers' requirements, needs and the target market. The distribution rate, rapidity in answering by the customer care and the degree of product innovation measure the performances of the process from an internal point of view to determine the impact of the value generation and the strength of market relationships. Finally, indicators such as the degree of satisfaction and retention rate of employees, the level of training and the degree of professionalism of the staff, the ability to transfer knowledge and the level of excellence in the information system measure the ability of the startup in growing through continuous learning.

In conclusion, the advantages presented by the ICE diagram can be summarized by four main benefits:

- Performances' overview of the company activities;
- Communication enablement and understanding of the business objectives and strategic decisions at all internal and external levels;
- Cognitive and operational support for the development of the Solution canvas;
- Clear and summarized information which can be easily processed by an IT system to generate an historical database.

4.6 Solve Phase

Solve phase represents how the startups decide to address customers to meet their needs and requirements to generate value through different solutions concerning the Business Model Canvas building blocks, with further enrichments, analysed in the previous phases.

The objective is to synthetize the information about the operative solutions, transformed into actions, chosen by the organization in a single document in order to provide a comprehensive view of the operative plan applied internally.

Depending on the business model structure adopted by the organization, two different tools are included in the analysis of this phase which can be implemented independently or integrated, based on the needs:

1. The Executive ICE-Diagram;
2. The Solution Canvas.

4.6.1 The Executive ICE Diagram

As anticipated in the previous paragraph, the information gathered into the ICE Diagram requires to be selected, simplified and prioritize to enhance the startup operative plan considering both the constraints of financial resources and the time required for implementing the solutions and the related identified actions.

Table 13 shows that the structure of the Executive ICE Diagram is not changed with respect to the ICE Diagram presented in the Evaluate Phase. It contains exactly the same columns' elements building the ICE Diagram, Identify, Control and Evaluate, with the same prioritization principle.

EXECUTIVE ICE DIAGRAM

Identify	Control	Evaluate	
		KPI	RES
Problem x	Action to implement	KPI 1x	10K
Problem y	Action to implement	KPI 1x KPI 2y	50K
Cash Flow	Action to implement	IN/OUT	

Table 13: Executive ICE Diagram Table[51]

The first difference is that the Executive ICE Diagram takes into consideration only a subset of the content contained in the related diagram, just the strategic actions with higher priority and related to interesting parameters, cost and time, are selected.

The second main distinction is that the Executive ICE Diagram includes, also, the cashflow generated by the business. It provides an additional information with respect to the ICE Diagram useful to represent the results of the commercial activities implemented by the startup. The cashflow takes into account the investments made, the funds received and the related activities costs and revenues. The cashflow requires a continuous monitoring and evaluation to understand the budget availability at the disposal of the startup to enhance the operational plan.

This constant control is required not only by the cashflow element, but by the entire Execution ICE Diagram. Indeed, the document must be updated on the basis of the activities' progress, changes and integration to present always the as-is operative business status.

4.6.2 The Solution Canvas

The Solution Canvas is the second analytical tool included into the Solve phase of the methodology. It has the intention of representing the to-be business structure, focusing on the solutions identified and designed due to the development of the previous steps. It is inspired by the Business Model Canvas, which is the as-is representation of the business, the document is nothing more than a direct consequence of the outcomes generated by the prior activities developed during the methodology implementation.

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[51] G. Perboli (2018)

It is able to provide a simple and clear standard graphical representation of the business' solutions supporting and creating the value proposition of the startup which results to be a repeatable process during the business development.

The structure of the Solution Canvas is composed by nine main building blocks such as the Business Model Canvas, with significant elements, as represented by figure 37.
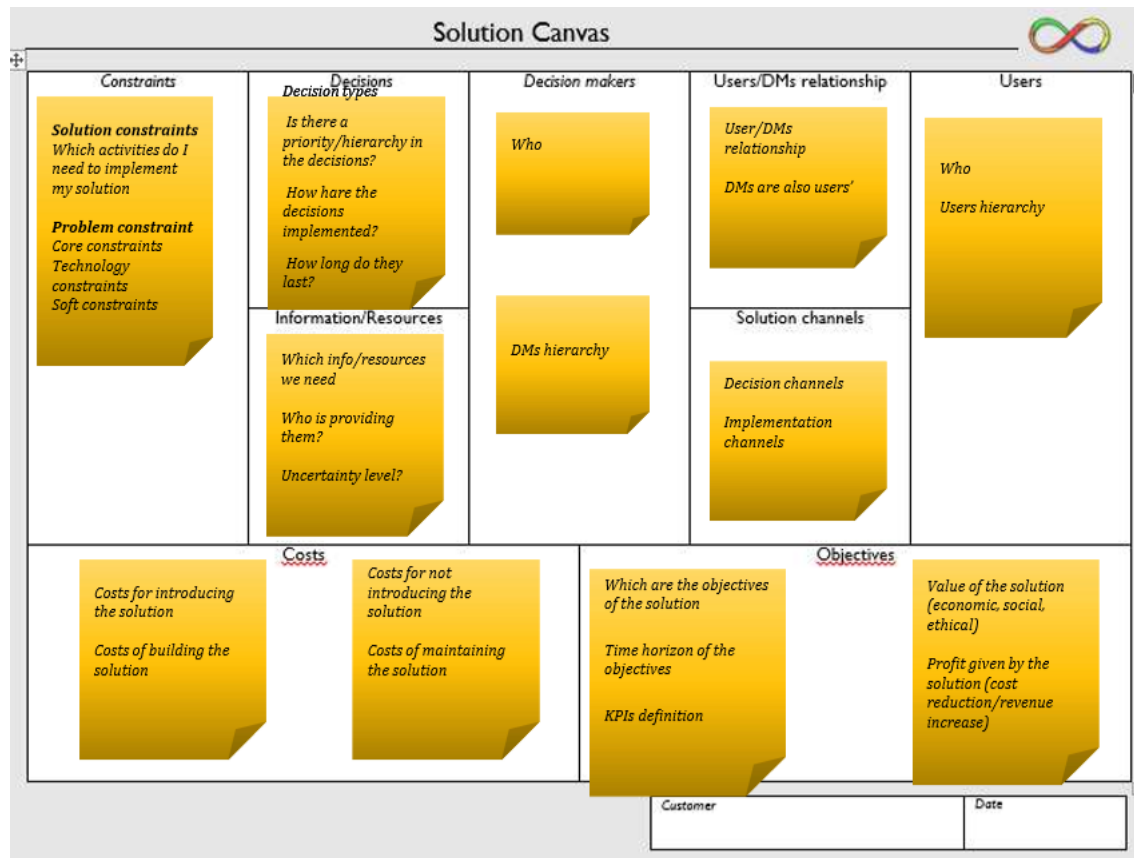

Figure 37: Solution Canvas[52]

The structure of the document has not been changed, but the building blocks have undergone a transformation to adapt the tool for the Solve phase. The new ones are:

1. **Decision makers**: it is at the centre of the solution and identifies who takes the decisions stated in the previous phases, their hierarchy and the related timing;

2. **Users**: it represents the "customers" of the solution, meaning the stakeholders involved in the solution making process, those actors who benefit from the implemented actions. The success of the business depends on them, decision makers should be able to guide them, support them and involve them in the project. It is necessary to avoid the phenomena of resistance at business level which would compromise the achievement of the startup's strategic goals;

3. **User and decision makers relationships**: it describes the relations existing between these actors, who take the decisions and who is influenced by the solution derived by these decisions;

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[52] G. Perboli (2018)

4. **Solution Channels**: it defines the two main categories of channels: the channels used to inform the actors involved about the benefits generated from the solutions, what changes are developed, and the channels used to implement and provide them with the chosen solution;

5. **Objectives**: it represents the value chain of the generated solution, it collects the main strategic objectives to be achieved that were collected during the assessment phase;

6. **Decisions**: it collects the list of decisions taken and implemented with information related to their characteristics, hierarchy and methods of implementation. It is useful, also, to include the duration of their produced effect in order to evaluate future solutions and actions;

7. **Information/Resources**: this block indicates the sources and providers from which the information used to select the solution was found. It specifies, also, the degree of uncertainty or certainty belonging to these sources;

8. **Solution Constraints**: it sets up the activities required to implement the solution, stating how the objective will be reached and weather there are technological/political/social/economic constraints. This block needs the information gathered by the application of the PEST Analysis, presented in the thesis, which should be modelled and adapted to fulfil the requirements of the solution canvas;

9. **Costs**: it lists the set-up costs faced to implement the solution and maintenance costs to allow it to last in the future. It, also, requires including the cost derived from the failure to implement the solution and the opportunity cost in implementing this solution and not others.

4.7   Test Phase

Test phase is the last phase of the GUEST Methodology, it may be considered as the initial phase to generate a continuous improvement system. As anticipated, it does not contain any formal and standard document to support its development, if not the evaluation and monitoring of the elements stated during the GUEST's implementation. The following chapter will introduce the document, "Learning Canvas", designed to be integrated in this phase, to enhance the potential of the startup to learn from what has been done and to structure new strategies and actions through pivoting decisions and changes.

5. The Learning Canvas

5.1 Introduction to the Learning Canvas

During the PhD course *"Lean startup and lean business for Innovation management"*, in which I was introduced to the GUEST Methodology implementing it in a project called "Re-Glass" with other two PhD students, and reading the book "The Lean Startup" written by Eric Ries, I started thinking about developing a useful tool to validate the learning acquired by startups after the launch of its product/service. The tool is the Learning Canvas, which will be inserted in the Test phase of the GUEST Methodology. It has been designed thinking about startups' methodologies and approaches and it is analysed under this perspective in the thesis. Nevertheless, it is applicable as the GUEST Methodology itself, also to SMEs, companies' innovative projects and consulting activities. The model is adaptable to different scenarios and realities to follow the purpose of the GUEST Methodology's to be suitable for the entire business environment.

The document must be implemented both before and after the launch of the product/service in the market, unlike those analysed in the first four phases of the methodology, in order to support the Build-Measure-Learn loop characterizing the Lean Startup approach, which is discussed in the next paragraph. The canvas is featured by 9 main building blocks, taking inspiration from the Business Model Canvas and the Solution Canvas.

The objective of each startup is providing perceived value to the right customers in the shortest possible time, find the proper business model, develop the business and burn as little money as possible, as analysed in the previous chapters. Learning and understanding the different customer segments is a key point to reduce the uncertainty which affects the startup's environment. Learning is a fundamental component to achieve success, nevertheless, it is difficult to transform it into a tangible and a concrete concept to present to the different internal and external stakeholders involved in the business: employees, suppliers, partners, investors, business angels, media. Here is the question "How could learning be validated?". Answer to this question is the scope of the thesis and the research. The model includes qualitative, quantitative and communicational concepts which are related to the ones analysed until now.

Every methodology applied to the Build phase of a startup forecasts a set of assumptions on the identified customers who interact with the product or service, and the actors of the business network in general. Most of startups take the stated assumptions for granted and take a lot of time, economic resources, effort to build the best possible outcome for people who don't care at all. They don't spend time on learning from real customers. Experiment and theory are the two main sources of learning, one cannot exclude the other. The "a priori" approach should be integrated with the "posteriori" one, generating a loop which brings a concrete knowledge about the customers and the business itself.

Startups are required to understand the need and requirements of their customers, create a minimum viable product and test it in the real market through a lean methodology

supporting this process, such as the one presented: the GUEST Methodology, in order to avoid the failure causes highlighted in the third chapter. The methodology sets the hypothesis and guides entrepreneurs to design effective business models and develop it to launch the product/service in the market, after a comprehensive analysis, understanding and structure of all the factors influencing the business. But after this first step, feedbacks and customers' responses determine the first real result of the generated solution.

This result is the source of knowledge needed to build a sustainable business. Indeed, GUEST Methodology supports the business model creation and development, collecting all the information and setting the hypothesis required to reach these aims but it needs to be iterated in order to enhance the startup sustainability. This iterative loop generates the knowledge required to set new hypothesis, new measures, new actions, and build a product/service/platform which fit better to the customer requirements or, even, new customers.

The methodology must be designin this Build-Measure-Learn loop to generate an efficient outcome. Startups survive just in the case they learn as quick as possible about: customer behaviour, product/service technical features, market competitiveness, network relationship management, channels development, stakeholders' involvement and integrating the learn obtained through real market tests.

The Learning Canvas has the strategic objective to standardize and formalize the "Learn" phase of the loop and provide a formal document to support the Test phase of the GUEST Methodology in order to push the continuous improvement, evolution of the product and the business model, until reaching the business sustainability.
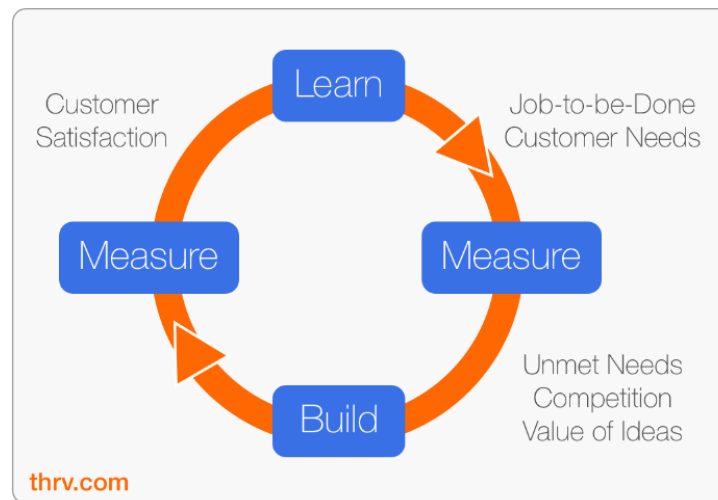
5.2 BUILD-MEASURE-LEARN Feedback Loop

Figure 38: Build-Measure- Leran framework[53]

The Build-Measure-Learn feedback loop is one of the core concepts present in Lean Startup methodology. It is used to accelerate the process which bring the product/service in the market, from the ideation to the execution. It fits perfectly with the aim of the GUEST Methodology which support the business in the Build and Measure steps through its process and its documents. Indeed, it provides all the material needed to formalize and standardize the creation of the business model, to save time and financial resources.

During the Build and Measure phases, which correspond to the first four steps of the GUEST, learning is generated by the collection of information and the enhancement of communication between the different actors of the business network. This knowledge base makes possible the creation of an operative plan which allow the product/service to land on the market.

Knowledge and hypothesis related to the startup business iare tested only after the product/service has started to be distributed or sold on the market or launched on the web. This is the Test phase of the GUEST Methodology and what is called Learning with the Lean Startup method. The resulting feedbacks received at first from the customer segments to which the organizations addressed, and secondly from the actors involved in the business must be used to pivot. Pivot is defined by Eric Ries as the change of strategy without shifting the stated mission and vision. The changes can affect the technology on which the product/service is developed or the business model's components, summarized by the building blocks of the business model canvas. Successful startup were able to apply pivot and reach its vision changing something from their starting model, Youtube, Paypal, Twitter, Groupon are just few examples. Groupon started its business with the name of "The Point" and it was designed to support people doing petitions for social causes. The idea was a complete failure, so the founder, Andrew Mason actual CEO of the company,

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[53] *thvr.com*

decided to change strategy. He built a commercial platform which allow consumers to receive coupons usable to get discounts on products/services. The vision has not changed, it collects people who must buy a certain product/service at the same time to give them the possibility to take advantages of discounts thanks to the relationships between the platform and its partners, which is the same to the initial one which consisted of collecting people to support them in reaching their causes. The strategy behind the platform and the business model have changed.

Learning from empirical experience is the basis to understand what is needed to be changed and iterate again the loop to obtain a continuous improvement approach. This experiential learning is generated by the interaction between the customers mainly, but in general with the actors composing the network, and the product/service offered by the startup. The outcomes of the test are quantitative and qualitative data and information, which must be used to reformulate the business strategy, operation activities and business model.

Most of the cases do not end as the examples described, as it has been analysed in the third chapter. Startups invest time and resources without testing the initial business hypothesis, offering to customers, who may not be interested, product or services which are not supported by an effective business model, business development strategy and product/market fit.

GUEST Methodology is aimed to solve these issues, but it does not provide any document to represent the acquired teachings. Learning most of the time is quantitatively validated based on financial and accounting values, but are they the most effective way in communicating the validated learning? Can they be applied to all the industries? Vanity metrics can allow entrepreneurs to form false conclusions and live their own private reality, unclear hypothesises are difficult to measure under a quantitative perspective. Poor quantitative results push entrepreneurs to declare failure and generate pessimism in the startup environment.

For these reasons, it is necessary to include in the methodology the introduction of a formal document to collect and standardize the learning gathered by each learning milestone.

5.3 Structure of the Learning Canvas

The Learning Canvas is a qualitative tool which has the scope of simplifying customer interpretation and communication of the learning obtained during the different BUILD-MEASURE-LEARN cycles, with the additional goal to formally validate learning. The following sub-paragraphs present the evolution of the model from the beginning to the last result, in order to valorise the design process.

The document is a graphical representation containing information of the initial hypothesis stated by the business model through the four steps of the GUEST Methodology, description of the product/service test, results obtained from the first cycle through the matrices stated in the Balance Scorecard, major insights generated by a careful analysis, validation or failure of the initial hypothesis and, finally, prioritization of the future activities to improve the previous product/service and business model. It takes inspiration from the Business Model Canvas, presented in the Uniform phase, which include in its nine building blocks the main elements which support the business model of an organization, and the Solution Canvas, described in the Solve phase, to design the operative plan required by startups to make the business actionable.

5.3.1 First Step – The Structure

In the first design step, the structure of the Learning Canvas was constituted by six main columns focused on a customer centric approach and an unlimited number of rows designed for each iteration of the product/service, as represented in table 14, without stating a fix number to ensure the flexibility needed to support a continuous improvement process.

The columns' elements constituting the first step of the models were:

1. Customer Hypothesis: it collects information about the needs and requirements which the startup thinks to fulfil through the value proposition characterizing the product/service. As presented in the customer segment block of the Business Model Canvas, customer hypothesis must be customized for each specific segment, highlighting their differences;
2. Test: it collects information about the operative activities developed to test the product to a sample of customers or to support its diffusion in the market;
3. Metrics: it collects the main significative metrics to represent the results generated by the test. It selects a subgroup of customer, economic and operative indicators considered in the Executive ICE Diagram, belonging to the Solve phase of the GUEST Methodology;
4. Failure/success causes (actors): it analyses the success and failure causes in each iteration to understand what actions are needed to maintain the organizational strengths and correct weaknesses;

5. Learning Validation: it describes the insights deriving by the response of the specific customer segments toward the product/service in terms of technical features, marketing communication, customer relationships, and delivery of the value proposition, elements contained in the Business Model Canvas;
6. Where to invest financial and temporal resources: it includes the strategic actions with the relative quantitative financial and temporal costs needed to improve the actual as-is business.

Customer Hypothesis	Test	Metrics	Failure/success causes (actors)	Learning Validation	Where invest financial and temporal resources
New Customer Hypothesis	Test required	Setting new Metrics			

Table 14: The Learning Canvas (Step: 1)

Both the columns and the rows, with the related contents, have undergone to modifications and specifications along the design process until reaching the final model. Nevertheless, the objectives addressed by the model have not changed in its evolution. The design process itself has been implemented through a pivot process, making changes but keeping the initial vision and mission of the beginning.

The main purpose of the learning canvas is to present graphically in a single document the continuous progress, evolution and comprehensive as-is status of the business. The formalization and standardization of the learning information has been designed for both the internal and the external environment in which the business operates. Indeed, it supports strategic decision-making process and the operative action plan brainstorming of ideas related in how the business needs to evolve, grow and increase its own value. It represents the starting knowledge base for each iteration from which the Build and Measure phases are implemented.

It enhances the internal communication and cooperation between the organization in analysing the results, solutions, benefits, opportunities, failures generated by each iteration thanks to the most significant monitoring KPIs related to the activities planned in the Solve phase, finding new strategies to support the business, understanding how to improve the product/service or modify its business model.

At the same time, it supports the information flow between the startup and the stakeholders of the network, about their responsibility in the business evolutions, the strengths and weaknesses of the project and the changes needed to reach a sustainable competitive advantage and survive in the market. In specific, it has been though to cover a centric role in business presentations to enhance the involvement of all the business

actors in the startup project, in specific possible investors in order to make them aware of the process and the transformation efforts which characterize the business.

The main benefits of the model can be summarized in these eight points:

1. It shows the ability in understanding what is brilliant and executable and what is not. It is a visual representation of how the business process is evolving to the internal and external business stakeholders;
2. It validates learning through the experience gathered from the product/service test on the market with the consequences it generates concerning the customer hypothesis, operational activities and the responsibilities of the actors;
3. It valorises, analyses and presents how the organization has minimized economic and temporal wastes;
4. It supports the feedback process, enhancing the graphical picture of the results achieved, the success and failure causes which generated that result;
5. It encurages cross-functional cooperation and collaboration. It supports the overall resulting business picture, to push each organizational function to work together in order to reach the strategic mission and vision of the startup. The intent is to promote healthy internal competition to enhance improvements and growth. At the same time, it connects the actors included in the business network to understand together how to improve the value proposition for customer segments;
6. It identifies cause and effects;
7. It collects the most significant qualitative and quantitative data which characterize the as-is status of the startup. It is very useful to represent the evolution of the project at the beginning when large quantitative information regarding the business is not available;
8. It generates the perception of continuous improvement through the implementation of a standardize and formal model;

5.3.2 Second Step – Iterative Cycle

As anticipated, lean startup methodology and GUEST Methodology require a continuous improvement process to be effective and sustain the business properly in its development. Previously, it was described the BUIL-MEASURE-LEARN loop which characterizes the startup business life-cycle. This iterative process ends at each step with some significant decisions on changes directly affecting the product/service or the business model which supports it.

For this reason, the Learning Canvas should be applied at each learning milestone. The evaluation of the product/service or the business model is required after having completed the test. Tests' experimentation is the continuous launch on the market of the evolved product/service version with compared the previous one or to the different mix of business model involving the actors of the business network. The learning generated by the test creates the basis for future decisions taken by the organization. As introduced, the decisions may affect the product itself or the business model. For this reason, the Learning

Canvas require a detailed analysis involving different actors and following a specific process based on a meeting divided into three main phases:

1. In the first phase of the meeting, the different functional divisions of the startup, or at the beginning of the business single human resources, analyse together the feedback received from customer segments on the product's architecture to understand if design and technical features meet their needs. Due to the demanding markets present in the today's society, even the external business actors, such as market experts and customers themselves, are involved in this analysis. Of course, their presence adds an increased value to the assessment, but at the same time it represents a cost which should be considered.

   During the meeting, each team or resource bring data and considerations about the response generated by the customer segments concerning the product/service architecture. Parallel to this technical analysis the Learning Canvas requires to take into consideration also the information related to the business model's results, if possible, including all the actors of the business network, to identify how the customers have responded to the offered channels, relationships and payment schemes.

   This cooperation and collaboration in answering to the starting customer hypothesis made at the beginning of the BUILD phase generate a comprehensive overview of the perception of the product/service by customers. Furthermore, this suggested process enhances the clarity of the information flow and human aggregation which aims to avoid disputes over possible business failures.

2. The results of the described analysis are represented and formalized in the Learning Canvas during the second step of the process. Its structure supports the members of the meeting to design the conclusions and select the significant information needed to communicate internally and externally which features of the product/service have worked and the requirements of the customers, and which ones should be improved, which customers have interacted efficiently with the product, the causes of success or failure related to the test. In summary, what the startup has understood from its customer segments and from the business test.

3. In the last step of the Learning Canvas fulfilment, estimated costs based on the budget and time expected to launch the new product/service version are allocated to the startup functions in order to design a brief and summarized forecasted plan. By setting the new customer hypothesis, the methodology starts again to understand how to solve or improve the factors analysed previously, which strategic shifts develop, and the operative actions required to better meet and acquire new customers and generate more value. These lasts two steps enhance startup vision and mission. In this way, learning can be validated between all the parties involved through a standard and formal document easily to be implemented and communicated, keeping the intention of the GUEST Methodology to propose tools and models applicable by entrepreneurs coming from different industries and with different levels of business knowledge and competences.

In order to take track of the Learning Meetings, I introduced a seventh column in the model containing the code, which can be a number or a letter, related to the reference iteration and the date on which the meeting required to analyse the results, fulfil the

Learning Canvas' blocks and state the new customers' hypothesis occurs. This information represents for the stakeholder the speed with which the startup is able to generate new solutions, apply pivot and test the new product/service/platform on the market, nurturing the continuous improvement process related to an expected growth and business sustainability.

Table 15 represents the updated version of the Learning Canvas.

Code and learning meeting date	Customer Hypothesis	Test	Metrics	Failure/success causes (actors)	Learning Validation	Where invest financial and temporal resources
Step 0 (20/10/19)						
	New Customer Hypothesis	New test required	Setting new Metrics			
Step 1 (20/12/19)						

Table 15: The Learning Canvas (Step: 2)

5.3.3 Third Step – Definition of the Vision and the Strategic Objective

The third step characterizing the evolution of the Learning Canvas takes inspiration from the book written by the PayPal cofounder, entrepreneur and venture capitalist, Peter Thiel, called "Zero to One". In its book, the author supports the core idea that startup need to discuss their business idea, represented by their mission and vision, and rethink the business from zero. This concept enriches the model presented in the thesis and offers interesting insights. Indeed, at each iteration the business strategy adopted by the organization needs to be rethought, without changing the initial mission and vision belonging to the startup. This process enables two important goals associated to the business success:

1. Understanding what is strategically and operatively working in the organization, thanks to the analysis discussed previously and the target KPIs identified during the methodology's description with the consequence of obtaining the validation of these elements;
2. Understanding what is strategically and operatively not working or need to be improved in the organization and should be rethought.

In addition, the book presents another useful theme which has been integrated to the previous concept to bring an upgrade to the model. The author discusses, also, about how

the crucial role of future's interpretation has determined the social and economic success of countries along the history. He summarizes four main approaches which have characterized historical periods, and are still doing it, as represented by table 16.

FUTURE	Defined	Undefined
Optimistic	USA, Years 50' and 60'	USA, 1982-present
Pessimistic	China, present	Europe, present

Table 16: Vision of the future for P. Thiel

What Peter Thiel underlines is that the undefined vision of the future is the cause of dysfunctional aspects of the actual world, no matters which attitude is adopted towards it, both optimistic or pessimistic. This is the case involving USA, since 1982, the year which corresponds to the beginning of the great economic recession which affected the country due to the tight monetary policy established by the government, passing through the turndown of 2007-2009, until now. Although, the positive view which characterize the country the undefined vision of future has generated several social and economic problems. The same vision worsened by a negative attitude is what marks Europe in the present. Thinking about Italy, the total lack of political vision on how this class expects the country to be in 5-10 years, in terms of education, life-science, healthcare, culture, is leaving the country lost without a real objective to aim and reach.

Moreover, the author asserts that the defined view of the future allows governments to plan and program actions. If the attitude characterizing the government is pessimistic, it supports the strategic and operative plan to face possible negative events in the future, while if the attitude is optimistic it enhances the improvements of the present condition. Both the perceptions toward future assist the development of a dynamic vision in forecasting and determining, actively, what will happen in the short or long time-horizon. For example, China is continuously threatened, thought a pessimistic attitude, that its growth would not be enough to overcome the American economy and become the first economic power in the world, this is the main reason which push the country to plan and design future actions which will enable the achievement of its objective and justifies its fierce technological and economic progress. Considering the same process described but with a positive attitude which characterized the historical period, the entire scientific environment, composed by scientists, engineers, doctors, entrepreneurs, researchers, from the 17th century till nowadays has driven the scientific, social and lifestyle progress. Ideals and believes in improving the human conditions, that havea clear and strong vision, guided these professionals in achieving results which allow people to live in better conditions.

The entire reasoning has been presented for two main purposes:

1. To underline the importance to set a clear vision of the business idea which is behind the startup and communicate it properly. A weakness that emerges from the lean approach analysis is that most of times it is confused as the vision of the project and not the methodology needed to support the design and the development of the business model. The continuous changes, tests, pivoting enhanced by the methodology support the startup to be flexible and make short term programs and

plans, which guide the project into a short-term deterministic future. What should not change is the long-term view which is aimed by the business. It should not to be lost or misunderstood because it would compromise business success

2. To explain why I decided to include in the Learning Canvas two additional elements:
   - The initial row containing the vision stated by the organization on top of which the business is built;
   - The objective characterizing each iteration at which the new product/service is aimed.

Both the building blocks have been implemented to make clear in which direction the evolution is going, if it is respecting the initial vision or if it is presenting a lack of alignment between the strategy and the vision, and to communicate directly to the stakeholders involved in the business the progresses accomplished by the organization based on validated certainties and the improved deficiencies.

5.3.4 Fourth Step – Final Layout of the Learning Canvas

In the fourth step of the Learning Canvas structure, the following modifications have been implemented in order to obtain a coherent document with the GUEST Methodology:

1. The first main change involves the "Where to invest financial and temporal resources" building block. Thinking about the phases designed by the GUEST Methodologies, I decided to translate this building block in terms of activities. Indeed, the Evaluation phase sets prioritized activities aimed to fulfil specific business function which are monitored and evaluated through selected KPIs in terms of financial resources and development time through the Balance Scorecard and ICE Diagram documents. For these reasons, during the Learning Meeting can be more useful to prioritize the activities needed to be implemented to generate the pivot and changes emerged by the test, before setting their metrics. Indeed, the final version of the Learning Canvas contains the "Prioritized Activities" building block. The associated KPIs are suggested to be discussed and forecasted during the meeting but are going to be detailed in the following iteration of the Evaluation phase of the methodology.

2. The Customer Hypothesis" building block has been sub-divided into two main sections. The first one contains the specifications of the customer segment to which the test is addressed and its customer category, explained and justified in the following paragraph. Instead the second section contains the hypothesis described previously.

3. It has been decided to present a unique document, eliminating the unlimited number of rows characterizing the previous version, substituted by the "Iterative code" building block. The model keeps the same aim, as before, in enhancing a continuous improvement approach, but instead of formalizing the information related to each Learning Meeting in different rows, they are included in a sequence of comparable Learning Canvas. The decision has been driven by the need to offer a document that is easy to communicate and implement;

4. Repositioning the building blocks composing the Learning Canvas in an easy to read sequence capable of containing the great number of information and data, described

in the following paragraph. The rework has been driven by the intention to create an effective model layout like the one offered by the Business Model Canvas.

The fourth step ends with the final design of the Learning Canvas. The document is composed, as represented in figure 39, by: a first row containing the mission and the vision characterizing the business, eight main building blocks containing the elements required to communicate efficiently the knowledge acquired and validate the learning generated.

Figure 39: The Learning Canvas - Final Layout

The successive paragraphs discuss further enrichments gained by the model during the research and the analysis developed along the thesis development. The evolution does not involve the standard structure designed in the previous steps, but it concerns the content required by each building block to represent efficiently its function. In order to standardize as much as possible, the fulfilment process and the elements required by the Learning Canvas, I developed specific guidelines for each building block. There are three main reasons from which these decisions derive:

1. Standardization of information enhances communication inside the organization, within the business network and with the external environment;
2. Information systems can be automated and used to collect standardized information;
3. Guidelines support people with different business backgrounds and competences to easily formalize the learning acquired.

5.4 Building Blocks of the Learning Canvas

As just introduced, the paragraph details the content of each single building block designing guidelines for all the business actors involved in the Learning Meeting to drive the analysis and the formalization of the learning acquired during the test or the launch of the product/service on the market. The detailed description does not include two main building blocks: the "Iterative Code" and the "Mission and Vision".

The reasons are that in the "Iterative Code" building block, it is just required to include the iteration number and the date referred to the Learning Meeting in order to keep track of the frequency in the organisation of meetings involving the actors of the business network and the speed in bringing new solutions or changes to the product/service or business model, simple information which does not require further explications. At the same time, the definition of the "Mission and Vision" building block has been detailed with all their main characteristics and differences in the previous chapter, describing the main phases to build the Balance Scorecard document.

5.4.1 The Objective

The statement of the business objective is the third task required to implement the Learning Canvas. During the process of standardizing the guidelines for this first building block many sources provided useful information and inspiration. One of them has been the book "Running Lean" written by Ash Maurya, founder of Spark59, startupper, venture capitalist, mentor for different accelerators such as Mozilla Foundation, Year One Labs and Capital Factory, which fulfilled an important role to develop concepts around this step and determine the evolution of the model.

The author presents his lean approach with different models to support the lean startup methodology in the books. He asserts that we are living in a world where technology is evolving faster than ever. There are great possibilities in exploiting innovation and generate new sustainable businesses. But a proper business methodology is required to support technology and allow startuppers to use these resources. In fact, nevertheless the cost for implementing and developing technology is decreasing, the probability on building a successful startup doesn't change. These core concepts have been discussed in the thesis by presenting SHELL model and the research developed by the pool of professors of the "Politecnico di Torino" to define the main failure reasons affecting startups

In addition, Ash asserts that startups have to experiment more than ever to grow and success in the market. Right on these concepts lean startup and lean business methodologies, have been developed, as it was widely described during the presentation and analysis of the GUEST Methodology's phases. Experimentation is the fuel used to

the BUILD-MEASURE-LEARN loop to make the business progress and allow its growth.

The approach supported by the author is nothing else than the scientific methodology proposed by Karl Popper in his book "All life is Problem Solving", which takes inspiration from the Galilean scientific approach developed in the seventeenth century. The philosopher designed his scientific approach scheme based on three main steps:

1. Problem;
2. Attempts of solution;
3. Elimination;

On the basis of these considerations, Ash Maurya proposes in his book an adaptation of the Business Model Canvas by Alex Osterwalder to the startup environment, the Lean Canvas, represented in figure 40.
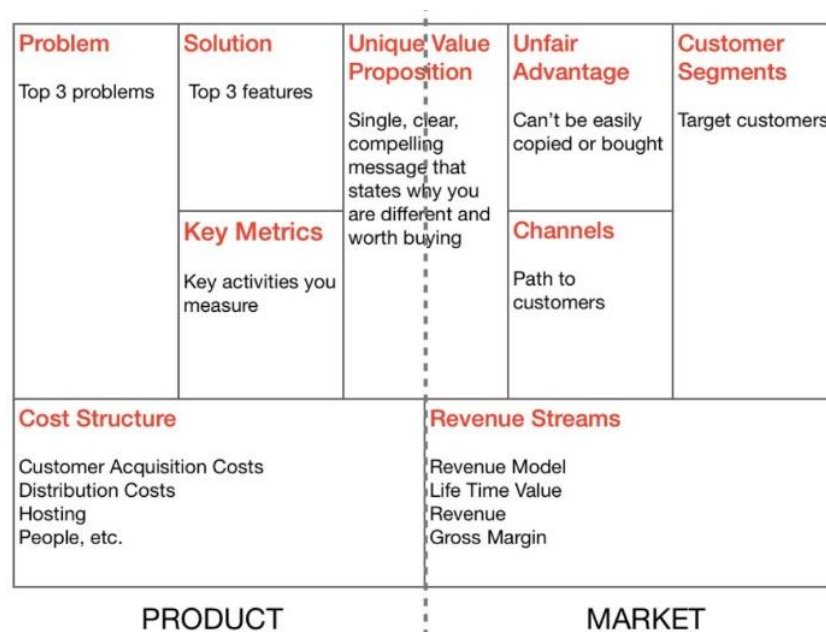
Lean Canvas is adapted from The Business Model Canvas (http://www.businessmodelgeneration.com) and is licensed under the Creative Commons Attribution-Share Alike 3.0 Un-ported License.

Figure 40: Lean Canvas[54]

The model keeps the same structure of the Business Model Canvas, with a clear focus on the Problem and Solution validation, elements which substitute the Key Partners and Key activities building blocks. Indeed, the author believes that the business objective of a startup is not to achieve success through Plan A but to find the best solution before running out of resources. In order to reach these goals, two main tasks are required:

1. a series of experiments and tests;

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[54] A. Maurya (2012)

2. a cycle to maximize learning about per unit time;

The author is convinced that the continuous research and discussion with customers about their problems and feedbacks concerning the solution proposed by the product/service enhances the technical and business improvements needed by the startup to both survive, initially, and then success. Learning is the only way to validate the hypotheses on these two elements.

Anyway, as introduced in the third step of the evolution design of the Learning Canvas, the process consisting in continuous iterative tests, feedbacks and changes can cause a loss of focus with respect to the initial mission and vision of the business, especially if the evolution is fast. He asserts that finding an equilibrium to generate the optimal learning loop is a critical task to guarantee the efficiency of the methodology supporting the business development. Learning, speed and focus are the three elements which he identifies as factors affecting the optimal learning loop. In specific, he describes that the loss of focus pushes startup in the premature optimization trap which causes time and resources wastes.

For these reasons, the elements contained in the objective blocks are aimed to represent the main planned strategy addressed by the organization. The attempt is to state a clear and unequivocal message which summarize the business strategy, which is detailed in the Evaluate phase of the GUEST Methodology. Its comparison with the different iteration cycles underlines which changes the business has generated and which elements of the business model have been validated.

The guideline designed has the aim to:

- Keep the focus towards the organizational mission and vision;
- Generate a clear and direct statement to communicate both internally and externally to the organization;
- Enhance problem and solution validation;
- Summarize in a few lines part of the elements contained in the Lean Canvas. Indeed, in its formulation it contains: the solution (technology), the problem, the customer segment and the value proposition;
- Enhance an easy and smooth completion;
- Support flexibility and adaptability to continuous iterations.

The objective block must be filled following this semantic pattern: "The product/service is aimed to solve the PROBLEM of CUSTOMER SEGMENTATION through TECHNOLOGY generating VALUE PROPOSITION".

Iterative code (Learning meeting data)	Mission and Vision			
OBJECTIVE	CUSTOMER HYPOTHESIS	TEST	FAILURE AND SUCCESS CAUSES	PRIORITIZED ACTIVITIES
"The product/service is aimed to solve the **PROBLEM** of **CUSTOMER SEGMENT** through **TECHNOLOGY** generating **VALUE PROPOSITION"**.	**CUSTOMER SEGMENT:** **CUSTOMER CATHEGORY:** **HYPOTHESIS**			
		METRICS	LEARNING VALIDATION	

Figure 41: The Learning Canvas - The Objective

5.4.2 Customer Hypotheses

As introduced in the previous sub-paragraph, the balance between learning, speed and focus is a critical element to obtain an optimal learning loop. The focus must be analysed for the strategic objective formulation, to continually align it with the organizational mission and vision and to highlight the main shifts developed in each iteration, but also to identify the main learning source from which the startup is willing to extract the required knowledge. Obviously, startup are required to meet and develop efficiently all the elements present in the Business Model Canvas to grow and scale the economy at the same time. However, it is almost impossible because of the limited resources, assets, experience, organizational structure and management. Market scalability and growth requires a step by step approach with a deep focus on few main elements which allows revenues' generation necessary to enhance the business structure and development.

The principal financial source for the startup, as for most of the businesses, are customers. Creating a starting customer base is the first objective to test the product/service offered but also the entire business model hypothesis developed during the GUEST Methodology implementation. They are the starting point to generate pivot and meet more and more their real needs and requirements to survive in the market. Indeed, not only they represent an economic resource, but they are the main learning source from which startups are able to gather knowledge, feedbacks, information, feelings, to build a continuous improvement loop. The Learning Canvas is based on a customer-centric approach to represent internally and externally how the business is evolving and discovering the features of the customer segments. Over all the Business Model Canvas building blocks analysed during the Uniform phase and the Problem-Solution Canvas presented by Ash Maurya, customers are the drivers for the pivoting implementation and on which the offer of

product/service and business model are based on. For this reason, it is important to represent in a clear and simple way:

- The customer hypothesis challenged by the product/service and the business model through tests;
- The basis on which the analysis and identification of the customer learning is based by understanding which hypothesis have been validated or failed;
- The comparison between the different customer hypothesis stated during the subsequent iterations.

The description of the content developed to be contained in the customer hypothesis block is driven by two main phases:

1. The first phase is an analysis of the well-known Moor Innovation curve to prioritize and place in it the customer segments identified in the Business Model Canvas;
2. The second phase states and describes the four-hypothesis associated to the customer selected for the test with the relative qualitative and quantitative information, starting from some considerations present in the book "Running Lean".

5.4.2.1 Customer Hypotheses – Customer Categories

During the Uniform Phase of the GUEST Methodology, it was presented the Business Model Canvas by Alexander Osterwalder with a deep dive on the customer segment building block. In a first step the information gathered during the GO phase was formalized though the "Knowing the customer" questionnaire and the Actor ID Cards. Then, customers were placed in the document through a segmentation based on:

- Their needs and problems to which the value proposition is addressed;
- Behavioural, psychological, social, economic, geographical features;

- The reference market in which they are included: mass market: niche market, segmented market, diversified market, multi-selected market.

During the course "Innovation management and product development" held by the professor Marco Cantamessa, an additional segmentation was presented which inspired an evolution of the Learning Canvas. In 1962, Everett Rogers proposed the technological segmentation represented in figure 42.
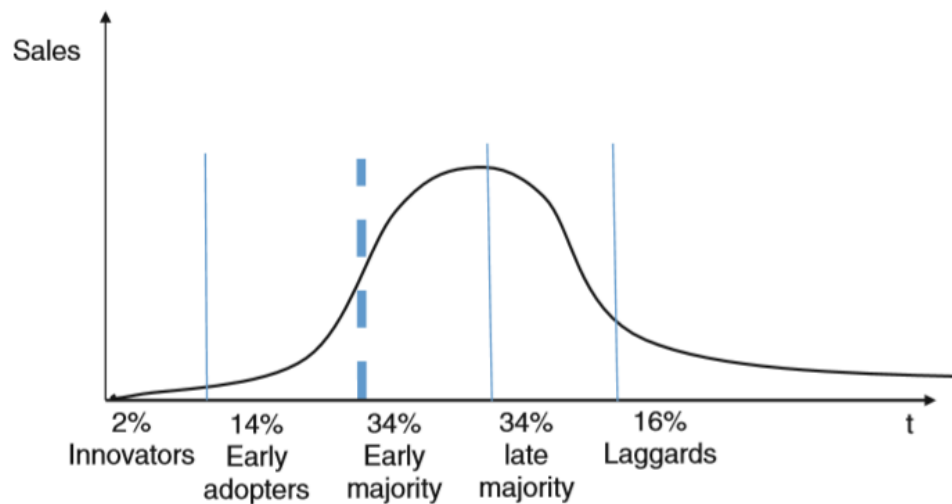
Figure 42: Rogers' curve[55]

Rogers based its segmentation on the diffusion S-curve suggesting that customers adopt a certain technology in different moments of the product/service lifecycle associated to its technical performances. The Rogers' curve approximates the diffusion sales curve to a normal distribution split at the midpoint and at -2, +2 and+1 standard deviation. It displays how the different technological segments distribute along the curve through the number of generated sales and the time required to accept the innovative technology. He identified five main customer categories belonging to the product/service lifecycle with detailed descriptions and market coverage percentages:

- Innovators (enthusiasts): they represent 2% of the market addressed by technology. Customers love technology just for the sake of interest and experience provided by innovation. In the case of the B2B market, customers represent business innovators who pursue innovation for their specific requirements. They represent the initial beachhead market to test the immature technology offered by startup, instead they result to be less interesting from an economic point of view for large companies. Usually, they act as lead users (von Hippel 1986) proving useful feedbacks and insights to improve the product/service;

- Early Adopters (visionaries): they represent customers who understand the role that the technology will play in the future and decide to gain some experience before obtaining future benefits also through the cost-benefit analysis that suggest waiting. They represent the 14% of the market and for this reason it may result financially and temporally attractive to impose the emergent brand;

- Early majority (pragmatists): customers who decide to adopt a certain technology only when the cost-benefit analysis results to be profitable. They avoid immature, too costly or difficult to use technology postponing its adoption. They represent 34% of the market and result to be an attractive segment to address;

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[55] M. Cantamessa, F. Montagna (2018)

- Late majority (conservatives): they represent that customer segments who decide to adopt a certain technology based on the cost-benefit analysis with additional hesitation due to the perception of risk and the causes of change. They represent 34 % percent of the market and result to be very appealing also for the reduction of uncertainty present in the market at this time of the product/service lifecycle.
- Laggards (sceptics): customers which adopt the technology very late because of their specific needs or reluctance to change. The interest generated by this segment is low due to the size, 16%, and the delay.

The segmentation proposed by Rogers was enriched by Goeffrey A. Moore in 1991 with his book called "Crossing the Chasm" in which he discusses the homonymous principle. The American theorist suggests the existence of a deep gap between the early adopters and the early majority segments, the so-called chasm. The difference consists in the attitude characterizing the two segments toward maturity of product/service. Indeed, early adopters looks to the future and accept immature technology for the reasons illustrated previously, while the early majority pretends a product/service which perfectly matches their needs and requirements. The product/service offered to the early adopters and early majority cannot be the same. This evolution phase of product/service development will determine the crossing of the chasm with the consequence adoption of a large market and the success of the proposed technology.

The segmentation with the relative principle presented is focused on the innovative changes which the product/service brings to its customers through a specific technology. The innovation is developed at the product/service level and driven by the reference technology and the relationships between the components, as presented in the taxonomy by Henderson and Clark discussed in the initial chapter of the thesis.

Even if the segmentation follows this framework, it is possible to adapt it at a more generic innovation concept concerning the entire business model built by the startup, and not only the product/service technology. Indeed, the five segments described not only have different attitudes and peculiarities towards the technological features characterizing the core product/service but also to all the elements needed to compose the business model of the organization, collected and summarized in the Business Model Canvas. The strategic objective, the value proposition, the customer relationships, the partnerships, the direct and indirect channels to reach the segments vary in a wide range. The communication and marketing required to attract early adopters or early majority is completely different, the channels accepted to receive the product/service by the innovators and the late majority is not the same, and so on.

I decided to introduce this adaptation of the segmentation proposed by Rogers in the Learning Canvas for four main reasons:

1. Supporting a more detailed customer segmentation associating each customer segment identified in the previous phases of the GUEST Methodology to a specific segment spotted by Rogers in the development of his model. In this way, each customer segment is inserted in a specific iterative step of the business lifecycle;

2. Design customized qualitative and quantitative hypothesis around the customer segment belonging to a certain step based on additional information towards its innovation attitude;
3. Evaluate the metrics selected to represent the customer segment performances based on reliable forecast of the market share belonging to these customers;
4. Represent clearly the protagonists involved in each iteration, such as changes over time and the role being fulfilled in the business lifecycle, supporting the business evolution.

Each block belonging to the Customer Hypothesis column presents a starting row that collectsg information about the customer segment, identified in the Business Model Canvas, on which the split-test is implemented and its association with one of the five customer segments described in the Rogers' curve, which are called "categories" in the Learning Canvas to avoid confusion.

5.4.2.2   Customer Hypotheses – Guidelines

GUEST Methodology supports the design of the business model, from the initial idea to the execution of the operative plan based on the strategic goals selected in correspondence of the organization' vision. It sets a list of hypotheses concerning the elements constituting the business model which need to be tested and validate in the market. As anticipated previously, the Learning Canvas is focused on a customer centric-approach.

After having identified the customer segment to which the split test is addressed and having associated the customer category to the iterative step, it is necessary to design some guidelines to enhance experiential knowledge about these customers. Customer hypotheses' have been designed for two main reasons:

1. Avoid entrepreneurs to set vague and useless hypotheses;
2. Support entrepreneurs to understand which of the selected hypotheses have been validated or not after the split test experimentation.

Learning Canvas contains specific and testable hypotheses' framework. The objective is to provide to startup entrepreneurs with falsifiable hypothesis.

"A falsifiable hypothesis is a statement that can be clearly proven wrong"[56].

Hypotheses which cannot be proven to be wrong could generate the misleading belief that they are correct just collecting "enough evidences". The book "Running Lean" suggests a scientific formula to design falsifiable hypotheses, which has been adapted to the learning canvas:

Falsifiable Hypothesis = [Specific Repeatable Action] will [Expected Measurable outcome].

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[56] A. Maurya (2012)

The customer hypotheses layout presented in the learning canvas contain qualitative and quantitative information to avoid the harmful trap in which the business may fall. This is inspired to the Problem/Solution Canvas represented in the previous phases of the thesis, the Rogers' curve that concerns customer' adaptation to technological innovation in the product/service and Business Model Canvas.

Learning Canvas suggests the combination of two information points to estimate the quantitative measure associated to the hypotheses. The first piece of information is the market share the customer category related to the iterative step, illustrated in the previous paragraph.

The second is the result coming from the application of the marketing graphical representation showed by figure 43. This model has been designed Steve Blank and Bob Dorf in their book "THE STARTUP OWNER'S MANUAL, The Step-by-step Guide for Building a Great Company".

Total addressable market (TAM) can be estimated through a top-down estimation using industry-analyst reports, market-research reports, competitors' press releases, university libraries, consulting statistical dataset and databases in the web or acquiring information by a third company. The resulting amount needs to be adapted to the sales channel, operative capacity and financial resources of the organization, obtaining the served available market. Finally, the SAM is reduced by applying the % of the market covered by the customer segment's category to obtain the initial target market estimation. The final outcome has to be included in the customer hypotheses block with additional adjustments due to organizational insights and considerations.

Figure 43: Market forecast framework[57]

The formulation of the customer hypotheses contained in the building block may follow some of the following examples:

1. N CUSTOMERS declare the product/service addressed the PROBLEM;
2. N CUSTOMERS declare the SOLUTION provided has been satisfying;
3. N CUSTOMERS declare to be satisfied by the TECHNOLOGY features of the product/service;
4. N CUSTOMERS buy the product through PAYMENT SCHEME;
5. N CUSTOMERS buy more than one product (CUSTOMER RELATIONSHIP);

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[57] P. Landoni (Slides)

6. N CUSTOMERS are reached by the CHANNEL;

Hypotheses may be more subjective as the first three or more objective as the last ones. What really matters is how these hypotheses are going to be evaluated and measured. The following steps describe how to develop efficient and concrete tests to compare the results with the initial hypotheses set.

Figure 44: The Learning Canvas - Customer Hypothesis

5.4.3   The Test

5.4.3.1 The Test - MVP and Test Analysis

In 2001 Frank Robinson articulated for the first time the concept of MVP (Minimum Viable Product), as the combination of product and customer development which he decided to define as "synchronous development". The concept was made popular by Steve Blank and Eric Ries, becoming a core theory of the Lean Methodology for startup.

MVP is a version of the product/service proposed to a certain customer segment to solve a specific problem generating an interaction from the beginning of the business. The process involves all the business development activities, from the starting idea and business model generation, supported by the GUEST Methodology to the iterative releases of the product/service in pursuing continuous improvement. While, GUEST Methodology sets all the business model hypotheses to support the business, MVP is the mean by which the value proposition is tested in the market, consequently validating the initial hypotheses. The MVP process is complementary to the GUEST Methodology and

it is needed to enhance execution and experiential learning about the product/service, the problem/solution and customer segments.

MVP has the main objective to avoid waste in terms of time and resources, , avoiding the production of products/services customers may not be interested in. MVP is needed to identify which action must be undertaken in three main scenarios in order to avoid a complete business failure. It is necessary to understand if it is better:

- To modify the business model;

Or

- To pivot the business model;

Or

- To kill the business model;

The benefits generated by this approach can be summarized by the following points:

- Test business and product hypotheses by using limited economic and temporal resources;
- Accelerate the Build-Measure-Learn loop concerning the business model, the product/service offered in the market, and, in specific, the real needs and requirements pursued by customers;
- Support experiential learning generation to validate falsifiable business hypotheses;
- Receive concrete customers' feedbacks to understand which of the three decisions described previously is needed to avoid failure.

MVP process can be developed by implementing different solutions selected based on the kind of business model, product/service offered by the organization and on the degree of innovation and technology characterizing the market. The level of complexity presented in the product/service must follow an increasing trend which will allow the business to survive at each iterative step, initially testing the most significant and essential technical features or business model elements for specific customer segment. The wide technological innovation, present nowadays, provides low cost and fast solutions to test tangibly the product/service in the market or in front of valuable customers and stakeholders compared to the past.

There is not a unique MVP solution for each iterative step, it depends on the strategic goal pursued by the business. In addition, the adoption of one solution over another depends on the combination of different factors which characterize the technological competence, financial budget, human resources' capacity, market structure, and much more.
The following points provide a list of possible solutions which can be adopted to develop a testable MVP:

- Explainer video: it represents a clear and short video in which the business idea with the relative product/service is explained to potential customers or stakeholders;

- Digital Prototypes: mock-up, demo, code can be included in this category. They are used to save money and time compared to the high-customized designs and UX in order to show the functionalities of the product/service in front of real customers and stakeholders;
- 3D Models: it is a virtual prototype which allow fast and easily modifications before manufacturing the last version of the product;
- The "Wizard of Oz" MVP: it is the proposition of an automized front-end product/service in front of potential addressable customers, but all the back-end activities are performed manually by human resources. It allows to save money without implementing high specific technology before having validated significant business hypotheses which will made the investment worth;
- The "Concierge MVP": it is easily confused with the "Wizard of Oz" MVP, however it makes customers aware that the product/service offered is realized by a human effort and not automized. The previous solution is used usually when the business has reached a valuable validation of the solution proposed to the customer segment;
- The "Piecemeal" MVP: it is a hybrid between the "Wizard of Oz" and the "Concierge MVP". Startup develop and deliver product/service's functionalities by implementing existing technologies due to the human support for the process management;
- Crowdfunding: it consists in the creation of an explanatory video based on the product/service offered with the supporting business model to raise money due to pre-orders. The objective is to exploit the received founding to manufacture or build concretely the product/service. Kickstarter is a well-known platform employed by startup to advertise their video and gather investments by future customers.
- The Single featured MVP: it consists in testing a single specific product/service feature to understand its strengths or weakness generated by the market impact and the feedbacks generated by the customers.

The solution identified by the MVP has the principal goal to gather learning about customer hypothesis, as previously suggested. So, it is required to formulate a relative strategic action able to extract and collect information from customers. Many documents and tools can support this phase and formalize the feedback received from the test. Also, for the MVP test is valid the concept that it is customized based on the features involved in the business model, the market and the product/service offered.

The list suggests the most significant methods and tools that can be implemented to achieve a significant volume of information, thanks to the research carried on during the thesis:

- Customer interviews: they can be managed by phone or in person. The choice of an alternative with respect to the other depends on the financial budget, the temporal constraints and the available sample. It is crucial to generate valuable insights to validate the customer hypothesis. In the book "Running lean" many suggestions are provided to lead an efficient personal customer interview, the main concept is not to try to convince the customer that the identified problem or proposed solution is the right one, but to guide it through open questions;

- Surveys and questionnaires: they can be digital distributed via email or website's form delivered in the shop or during a meeting. As for the previous models, it is important to collect significant information from customers without fall into the trap of false believes. The format followed may be the one presented in the GO phase, obviously with specific adaptations;
- Blogs: it is a cheap and easy to implement solution that can be used to collect information. It gives the possibility to customers who tested the product/service to express their considerations and feedback without being influenced by any guidelines. At the same, time the information gathered to validate the hypothesis must be carefully analysed and formalized to avoid the generation of wrong believes;
- Forums: it is a cheap solution to generate information flow allowing potential or effective customers to discuss the product/service and the business model supporting it;
- Social networks: recent source of information but very effective. It is cheap and easy to develop, feedbacks collected by customer who tested the product/service must be taken into consideration in order to drive the decision-making process;
- Website: it is an alternative solution in which to direct customers in order to release feedbacks though surveys, forms, questionnaires…

Usually, the models described are considered MVP themselves. Nevertheless, I think it is a mistake because they represent the point at which the MVP is tested and the source to collect information, data, feedback from customers in order to implement the business model and product/service analysis. For this reason, I categorized them into two different clusters, and will be integrated separately into the Learning Canvas.

Dropbox is a well-known case of successful MVP implementation. Dropbox was born in 2007 from the idea of two MIT students Drew Houston and Arash Ferdowsky. The idea consisted in projecting a freemium platform to upload files to a personal cloud and share them with other user though a synchronization system. The first MVP was a three minutes video-demo uploaded on Hacker News presenting its idea. It was full of humour and was able to perfectly engage customers by becoming viral. Indeed, it produced an increase of the beta sign-up from 5000 to 75000 on the startup website.

In the following paragraph, the analysis is developed to create the guidelines suggested for startup entrepreneurs to represent clearly which MVP is implemented, how it is tested and from which source is collected the customers response on the test associated with the iterative phase.

5.4.3.2 The Test – Guidelines

The test building block contains the useful information to represent the main features that characterize the test implemented in the iterative step. It is designed starting from the analysis described in the previous paragraph. As for the previous building blocks, it is composed of guidelines to support entrepreneurs in communicating with the internal and the external environment with five principal elements target to describe the test developed through the MVP implementation.

The objective is:

- Represent the different peculiarities of the test providing qualitative and quantitative information;
- Create standard keyword that can be collected and formalized in an informatic system;
- Support communicational activity;
- Generate a simple but effective graphical representation to show how the business is evolving and changing at an operative level;
- Make analysis and evaluation on the various tests developed in each iterative step.

The elements contained in the test building block collect economic, market and operative information. They are summarized into five main voices:

1. Financial resources: it is a quantitative data related to the cost generated by the business in the development of the Minimum Viable Product or only the product/service target for the test, all the business activities to support it, such as marketing campaigns, website development, distribution…, and planned activities to collect customers' response;
2. Time: it is the temporal horizon required to develop the MVP or the product/service, test it and collect the feedback of the relative customers. It depends principally on the kind of market in which the business operates, for example the software startup may release different versions on the same day instead physical products may require months to release its upgrade;
3. Sample: it represents the number of customers that have interacted with the business offer and are engaged to generating information on the customers' hypothesis;
4. MVP (product/service): it contains information concerning the solution selected to test the business idea, product/service or business model. In the previous paragraph, different possibilities have been presented that differ in terms other of features, complexity and business adaptability;
5. Where: it shows where the MVP or the product/service has been tested, it may be a digital platform, such as Kickstarter, startup webpage or socials media profiles, or physical places, such as incubators or meetings or fairs. It is flexible to different businesses requirements;
6. Information source: it represents the source from which customers feedback was collected, as for the previous element, the precedent paragraph suggested some.

The update version of the Leaning Canvas is represented by figure 45. In conclusion, even if the MVP method was designed for the innovative technological startup, which enhance an agile project management approach and fast releases of different product/service versions, the Learning Canvas supports tests of product/services belonging to different industries and does not present any constraint for them. It is in the hands of startups to discover the best model that allows to test their business.

Figure 45: The Learning Canvas - Test

5.4.4 The Metrics

5.4.4.1   The Metrics – Valuable and Actionable Metrics

During the Solve phase description of the GUEST Methodology, it was presented the Execution ICE Diagram in which the main strategic actions were prioritized based on the business need to reach the sustainability to survive on the market. Each activity was related to the target KPIs needed to set the performance it was aiming for and have a reference to evaluate its implementation.

The performance indicators were selected based on the four perspectives introduced in the Evaluate phase: financial perspective, customer perspective, internal perspective, learning and growing perspective. The metrics come specificallt to monitor and evaluate the operative and strategic plan and the execution of the business. Starting from this analysis, the Lean Canvas designs some own metrics to evaluate and control the performances reached by the implementation of the test, including also the metrics stated in the ICE Diagram.

The metrics focus on the customers' hypothesis and aim to validate the knowledge associated with the analysed customer segment, suggesting a net customer-centric approach the same that characterizes the entire model. The books "The Lean Startup" and "Running Lean" provide clear definition on valuable and actionable metrics to visualize the results of the customer lifecycle.

Ash Maurya defines the actionable metrics as the one that "ties specific and repeatable actions to observed results"[58]. The implementation of this kind of metrics avoids the worst scenario of setting up vanity metrics that document the current state of the business but does not offer any suggestion on the results achieved up to that point or on what should be done in the future, web hits or number of downloads are examples of vanity metrics. In addition, he asserts that metrics must be accessible, for example through simple and auditable reports. Metrics do not explain themselves through numbers, they need further analysis to understand the causes of performances the initial standard, considerations that are deepened on the failure or success causes block.

For these reasons, he proposes two different visualization models:

o Reporting dashboard: it is a report that shows information on the lessons learned generated by the implementation of the MVP test, as represented by figure 46. It contains elements concerning:
  o The hypothesis set before the test from the startup;
  o The insights emerged after the test;
  o The future steps planned to modify the product/service and/or the business model in order to meet better customer needs;
  o The performances achieved through the actionable metrics;
  o The Lean Canvas;

The model is used to graphically represent the learning received during a certain period, the same aim pursed by the Learning Canvas. At the same time, it requires less formalization of information and does not offer guidelines to support its implementation to entrepreneurs
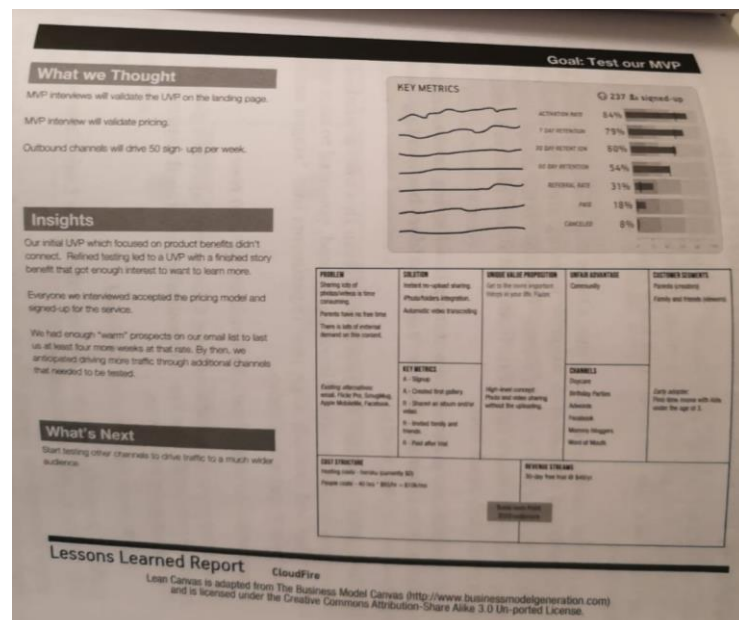
Figure 46: MVP dashboard[59]

[58] A. Maurya (2012)
[59] A. Maurya (2012)

o Cohort funnel: it is a visualization tool that takes inspiration from the famous Cohort analysis in medicine applied to study the long-term effect of medicines and vaccines. The objective is to represent the performances achieved by a customer segment or group of different customers along its lifecycle.

o

The process unifies funnels containing three main customers measures, acquisition, activation and revenue, referred to different time periods. It is used to:

    o Deal with information flow traffic;
    o Measure progresses or slowdowns of the performances;
    o Segment the funnels;

The following paragraph presents how these insights provided by Ash Maurya were integrated in the Learning Canvas to generate valuable and actionable metrics.

5.4.4.2 The Metrics – Guidelines

The analysis developed on the models suggested by Ash Maurya supported the design of the metrics present in the Learning Canvas. Their visualization is a combination of the reporting dashboard and cohort funnels models. Indeed, the metrics suggested by the Learning Canvas involve the ones present in the cohort funnel model, in addition the continuous application through the iterative steps reproduce the flow enhanced by it. The metrics suggested by the Learning Canvas are:

1. Customer acquisition: how many customers are acquired during the iterative step. It is not the same number of the sample involved in the MVP (product/service) block because it also includes customers who do not have useful information and insight to directly validate the customer hypothesis;
2. Customer Activation: interested customers who interact with the product/service, for example when a customer subscribes to a website;
3. Revenue: customer who generate an income economic flow due to product/service purchase;
4. Retention: customers who make a successive purchase or repeat the use of a certain service;
5. Referral: customers who introduce prospects in the business fulfilling the role of indirect channels.

These are examples of valuable and actionable metrics that can be used to evaluate the impact that the business generates on its customers. Nevertheless, it is a decision of the entrepreneur to adopt the metrics that fit at the best customer evaluation associated with the iterative step.

At the same time, these metrics are inserted in a context enriched by further customer information and insight following the structure of the reporting dashboard described. In addition to these metrics, a selection of the most significant metrics designed in the

ICE Diagram can be included to present a comprehensive view of the business performances generated during the test. Figure 47 represent the illustrative example.

Figure 47: The Learning Canvas – Metrics

5.4.5 Failure and Success Causes

5.4.5.1 Failure and Success Causes – The Analysis

The failure/success causes building block is aimed to formalize and represent the causes which have produced both positive and negative test results with respect to the customer hypothesis, quantitative metrics, customer feedback and business expectations. As anticipated in the introduction of the model, the learning meeting is organized to discuss the main factors that influenced the test at each learning milestone. The meeting requires the presence of the main internal functions running the business, which are usually met by just few resources considering the startup level.

In addition, external actors taking part in the business network can be involved to generate detailed and comprehensive analysis of the test' results and performances. Customers play an important role in determining the efficiency of the meeting, indeed, they are the main external actors on which the business is built and the target test. For this reason, it is suggested to include some customers in the meeting, based on the targeted market and the financial budget. They physically represent the feedback and responses collected from the different methods described in the previous phase and provide a different point of view in analysing the causes of failure/success that characterize the test results.

The reasons why the failure/success causes building block is included in the Learning Canvas are summarized by the following points:

- Metrics are useful to monitor and evaluate the performances reached by the business, but they do not provide any direct explication concerning the causes which enhanced these outcomes. For this reason, it is needed to identify them through the learning meeting by collecting internal and external actors who are directly involved in the process;
- Understanding the causes of failure or success supports the validation of the customer hypothesis that are collected in the learning about customer's building block;
- Failure/success causes identification enhances the decision process to pivot concerning both the design and the technical features of the product/service and the startup business model;
- It creates the required knowledge to prioritize the activities to be implemented in the next phases of business development;
- It supports the continuous improvement approach characterizing the GUEST and lean startup methods.

Quantitative data and qualitative information are used to spot the main causes of failure/success. The outcome resulting from the information sources, formalized in the test building block drives identification during the meeting. Therefore, it is essential to collect a significant amount of information by applying efficient tools and documents both digital and physical, such as: blogs, social media pages, forums, interviews, questionnaires.

The following paragraph analyses the structure of the building block is structured and the elements that can be included in it to represent the business strengths and weaknesses emerged from the test.

5.4.5.2 Failure and Success Causes – Guidelines

The building block summarizes the main causes of failure and success in communicating which business aspects work properly and which ones need to be improved or changed. This simple representation can be implemented and understood by business actors from different business backgrounds and with different levels of business knowledge. Obviously, the success of the causes' identification depends on the quality of the information collected and the analysis developed. Anyway, their direct representation may support a better flow of internal and external communication. For this reason, the block is divided into two sub-groups: the causes of failure and success. An interval measurement is associated with each cause, the interval scale is composed of three values from 1 to 3 with the following degree of meaningfulness:

- 1=High impact;
- 2=Medium impact;
- 3=Low impact.

The intent of the ranking is to categorize the different meaningfulness of the causes in determining the aspects of failure and success of the test. The ranking of the causes of failure will have a correlation with the prioritized activities to make clear that the weaknesses have been identified and are addressed to be solved as soon as possible by

implementing the following iteration. Nevertheless, the causes can be identified in different functionalities of the business model, such as: inefficient marketing communication, wrong channel and distribution management, mismanagement of customer relationships, or in the product/service performances, the categorization is cross-functional to provide a comprehensive view of the factors impacting the failure and success of the test.

Figure 48 represents the model evolution by considering the features describes in the paragraph.

Figure 48: The Learning Canvas - Failure and Success Causes

5.4.6 Learning Validation

5.4.6.1   Learning Validation – Organizational Learning

"Learning Validation" building block formalizes the knowledge collected about customers using quantitative data and qualitative information gathered throughout the test methodology and implementation. It represents which customer hypothesis, set at the beginning of the build phase of the Build-Measure-Learn loop, are validated and which are not, after the test. The resulting outcomes create the new knowledge base to run the following iteration of the GUEST Methodology.

Along the thesis, it was discussed the importance of validate learning about customers to build a business model target for specific customers' requirements and elaborate business development strategies to scale the economy as fast as possible. Customers represent the principal learning source from which the startup creates knowledge to evolve and survive

in the market. According to the evolutionary theory of the firm developed by Richard Nelson and Sidney Winter's in their book "An evolutionary Theory of Economic Change" published in 1982, organizational learning is the ability to change and evolve the knowledge base which characterizes its resources and routines. In order to enhance this activity, absorptive capacity plays a key role. It is defined as the ability to employ external knowledge to improve and evolve the business. The task in gathering external information and integrating it into organizational culture to generate a relevant use is carried out by the so-called gatekeepers considering huge established companies. Indeed, the acquisition of new knowledge is not just the collection of information but consists in creating relationships between elements already existing in an organization and new ones. In the same way, startup searches, explores, collects and integrates its customer knowledge, represented by the customer hypothesis, with the new information provided by the test phase.

The Learning Canvas is aimed to create relationships between the information gathered in the different iteration phases in order to generate a real knowledge base that can be employed to each social business networks' actor to work on the as-is and to-be status of the business. The document supports this process by visually describing the value produced by its implementation and involving different actors to enrich the analysis with different point of views. In addition, four categories of organizational learning are described in the book "Firm resources and sustained competitive advantage" published by Barney J in 1991, which perfectly match the learning modes by which startup creates business knowledge starting from the GUEST Methodology implementation, test generation and development process. These four learning modes introduced are summarized in the following points, which have been adapted to the startup environment:

- **Innate learning**: it is the initial knowledge embedded and incorporated mainly into startup's founders. The knowledge can be constituted also by the stakeholders' contribution involved directly and indirectly in the business. It is knowledge developed and collected in the business model built by implementing the GUEST Methodology's documents. It constitutes the hypothesis set by the startup's network which needs to be tested in the market to verify the effectiveness of the value proposition offered through the product/service and the business model. It contains business, technological, commercial, operative, marketing, and much more, knowledge and competences characterizing the entire network.
- **Experiential learning**: it is the learning mode characterizing the test phase of the methodology and the lean approach by an operational point of view. Indeed, it can be defined as "learning by doing" or "learning by failing". This "trial and error" approach is the core concept by which startup validates its internal hypothesis and set the activities required to increase production's efficiency and collaboration between all the stakeholders. Experiential knowledge can be divided into exploration and exploitation learning (March 1990). Exploration learning is pursued by implementing new internal activities and new routines, instead exploitation learning is reached by repeating the same activities and routines in order to improve the activities' performances.
Both modes are adopted at the beginning of the startup lifecycle because of its need

in discovering, integrating, and implementing continuously to grow and scale the economy.

- **Vicarious learning**: it is the learning mode included into "learning about customers" building block. Indeed, vicarious learning is defined as the learning acquired by an external source by scanning or focused search. The Learning Canvas prioritizes the second option by target customers as external source to implement new activities, resources, competences, pivot decisions related to the ones generated in the previous phases of the development process. It depends heavily by the absorptive capacity because of its own definition, as it has been described previously.
- **Learning by grafting**: it is defined as the learning gained by acquiring external human resources or another organization with their integration. Obviously, this learning mode requires wide financial resources for acquiring and integrating the identified learning. Human Resources acquisition with the related target knowledge pursued by the organization is a necessary activity concerning startup in order to grow and scale the economy.

As it has been described, the learning canvas is focused on representing the vicarious knowledge developed through customer's feedback and response in the "learning about customers" building block. At the same time, experiential learning enhanced by the test implementation provides additional knowledge about customers by implementing internal activities that impact them. This combination of learning validates the customer hypothesis stated in its building block. In the next paragraph, the guidelines to fulfil the building block are briefly presented and described.

5.4.6.2 Learning Validation - Guidelines

During the first four phases of the GUEST Methodology, hypotheses about the entire business model have been set through the documents and tools described in the previous chapter. These hypotheses have been elaborated, summarized and target to a customer point of view in the "Customer hypothesis" building block. As it has been discussed, the falsifiable hypotheses contain specific quantitative and qualitative information that makes them easily to be proven false or true. Indeed, the "Learning about customer" building block presents a strong correlation with the "Customer hypothesis" building block to produce graphical and conceptual continuity in the learning process. "Learning Validation" building block presents an easy-to-use and synthetic structure. It is divided into two sections, as represented by figure 49:

1. Validated Hypotheses
2. Unvalidated Hypotheses

The numerical performances generated by the test implementation are collected in the building block and compared with the forecasts set in the "Customer Hypothesis" building block. Indeed, the "true justified beliefs" produced by the GUEST Methodology are validated or not based on the real performances reached by testing them with a specific customer segment.

Hypotheses are validated if the received feedback exceeds the initial expectations. The process validates empirically the hypotheses through a system that can be considered scientific. In this way, business actors avoid accepting false theoretical beliefs that constitute a common trap for the startup environment.

Learning coming from the fulfilment of this building block, combined with the analysis of the causes of failure and success, set the knowledge base required to plan and prioritize the future activities, aligned with the objective of the next iterative step and the business mission and vision, to structure the decision process characterizing the GUEST Methodology continuous improvement approach.

Figure 49: The Learning Canvas - Learning Validation

5.4.7 Prioritized Activities

5.4.7.1   Prioritized Activities – Background and Guidelines

"Prioritized activities" is the last building block of the Learning Canvas model. It plans at a strategic high level the activities which would be developed in order to modify and evolve the business model with the relative product/service. It considers the future time horizon in which the business will operate in order to improve its as-is status, after having set and test the business model hypothesis. They represent operatively how the learning acquired about customers principally, but in general about the overall business model, is going to be implemented to meet more efficiently both customer and business requirements. The process is aimed to grow and scale the economy by evolving and implementing new solutions.

The prioritization approach characterizing the building block is the same of the one described in the Value Ring document, included in the GO phase of the methodology used to prioritize the business network requirements by considering three time-dimensions: today, tomorrow and next future, and the Ice-Diagram document, characterizing the Evaluate phase in which the prioritization has been applied to the activities identified to be monitored and controlled aligned to the strategic paths set in the Balance scorecard.

As it has been described for these two models in the previous chapter, the activities are prioritized by associating each of them to a colour representing the priority degree:

- Red colour=High priority;
- Yellow colour=Medium priority;
- Green colour=Low priority.

This choice has been driven by the necessity to create continuity and coherence among all the documents included into the GUEST Methodology. In addition, this graphical easy to understand representation communicates how the startup is planning to address the weaknesses and failures emerged during the test by aligning all the actors included in the business network. Indeed, the activities do not concern only the ones related to the startup, but to each business actor in the network in order to feed their involvement in the business project.

Activities selected must take into consideration financial and temporal resources which represent constraints for the following test phase of the business. As presented by figure 50.

Figure 50: The Learning Canvas - Prioritized Activities

At this point, all the building blocks have been analysed in detail with theoretical

knowledge and guidelines developed for a proper application of the tool in the Test phase of the methodology.

The last chapter summarizes the conclusions and the insight gathered during the thesis.

6. Conclusion

Learning is the core principle which leads startups to the understanding of business requirements and developing products or services which really match customer needs. Startups can survive on the market by learning as fast as possible, avoiding useless waste of time and resources, both financial and human capital.

The concrete test of minimum viable products or services is a key activity to gather knowledge on which business hypothesis to validate and those to be pivoted towards new solutions.
In high risk and uncertain environments, learning about the business idea, the operative actions implemented, the performances generated, the value proposition offered to customers and the solutions which are preferred, is the only activity to avoid failure. GUEST Methodology itself is aimed at supporting this learning process though its phases in order to prevent the main failure reasons affecting startups in their entire lifecycle.

The Learning Canvas is the model developed to support the learning validation process in innovative projects, specifically for startups where the risk of failure is very high. It is the result of five years of learning generated by academic studies and the last experience at Accenture. It has been thought to be included in the Test phase of GUEST Methodology to drive business actors across the Build-Measure-Learn ing loop.

It is a visual representation of the iterative process which incentivises organizations to test their business hypothesis. It has a specific focus on customer requirements, as to rapidly develop a product or service with a high level of market fit and a business model which leads a fast market growth and scalability. The model is designed based on the Balance Scorecard document, included in the Evaluate phase, and on the Business Model Canvas developed by Alexander Osterwalder. The latter creates continuity with the previous phases of the methodology and is perfectly integrable with the other formal documents and tools.

The Learning Canvas is composed by nine principal building-blocks that describe:

1. The iterative phase in which the startup is operating;
2. The startup mission and vision;
3. The objective pursued by the startup by gathering the main elements contained in the Business Model Canvas;
4. The customer hypothesis, that include the customer segment and category on which the test is run. These, consider qualitative and quantitative information concerning the business in general;

5. The Test phase, with the information about the product or service provided to the market sample and the channels used;
6. The valuable metrics set to monitor the performances obtained;
7. The failure and success reasons which have been identified as significant during the Learning Meeting;
8. Both the validated and not hypothesis based on the data collected and results performed;
9. The prioritization of the activities required to provide better products or services with the relative business model's elements.

The model collects information stated during the first four phases of the GUEST Methodology, describes the test process developed in a certain iterative phase, analyses the main performances generated by the product or service by validating the reliable hypothesis and, finally, set the activities to create an initial knowledge base to iterate the methodology.

The implementation of the model provides both operative and communicative benefits, that can be summarized in the following points:

- It sets the starting point to iterate GUEST Methodology through the continuous improvement approach;
- It enhances collaboration and cooperation between the different business actors to define and identify the causes of success or failure affecting the business and the direction ought to evolve in;
- It creates an historical dataset of information through the iterative phases due to the implementation of standard guidelines;
- It can be applied by business actors with different levels of business knowledge and competences;
- It can be used in presentations to describe the evolution of the business both internally or externally to the organization;
- It is easy to understand;

GUEST Methodology and Learning Canvas model represent two milestones in lean startup and lean business for innovation management. The increasing number of models, documents, methodologies and approaches will drive startups more and more to success in the market. The support of institutions, companies, ventures capitals funds, incubators, universities will create the innovative context to maximize the social and economic value generated by startups, implementing solutions to minimize their failure risk.

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