TECHNOLOGY ENTREPRENEURIAL ECOSYSTEM STRUCTURE AND ENTREPRENEURIAL STRATEGIES CONTINGENCY FACTORS

Lect. dr. Alexandru Roja PhD
West University of Timisoara
Faculty of Economics and Business Administration
Timisoara, Romania

Abstract: One of the most important factors of social and economic progress now is the information technology. To develop their new ventures, entrepreneurs need a business environment, we name it entrepreneurial ecosystem, to generate, validate and implement viable business ideas, and resources and services to grow the business. The new venture competitiveness in the field of information technology depends on the entrepreneurial ecosystem structure and their components. The relationships arising between the elements of the technological entrepreneurial ecosystems generate opportunities and advantages for entrepreneurs and businesses. In our research we analyze the structure of technology entrepreneurial ecosystems and the most important contingency factors that influence entrepreneurial strategies.

JEL classification: L10, L26, M13

Key words: entrepreneurship; strategic management; technology ecosystem; entrepreneurial strategies; competitivity

1. INTRODUCTION

Information technology is extremely important for social and economic development and it is the most dynamic area for entrepreneurial ideas. The importance of entrepreneurship in the field of information technology is related to the impact of technologies in economy and society. On the other side, entrepreneurs are attracted by the information technology field because the time for business ideas and products validation is short and they can go quickly on the market. In the field of information technology, human resources skills and competences are the most valuable assets, but the factor that make the difference is innovation. Field of information technology is characterized by a very high dynamic, business start-ups emergence, and the opportunity for entrepreneurs to be competitive through a strategic approach.

Research objectives of this research paper was to analyze entrepreneurial ecosystems structures, the levels and other elements that compose technology entrepreneurial ecosystem and the most important contingency factors for entrepreneurial strategy.

The research is based on two main directions as assumptions. The first line of research is based on the description of technology entrepreneurial ecosystems and its structure. We were interested to find and analyze the most important components of the

ecosystem and the levels of information technology industry. The second direction of research was focused on entrepreneurial strategy contingency factors. For many entrepreneurs the only compass in their entrepreneurial orientation is still intuition and not strategy. When they engage in new ventures in the regional ecosystem, they found few reference points by which to start and grow a startup, a lack of support services to understand the steps and the skills they need in entrepreneurship and business management. For that it is important to understand all the contingency factors that can shape or affect a strategy.

2. TECHNOLOGY ENTREPRENEURIAL ECOSYSTEMS

According to Schumpeter, the most important function of entrepreneurs is to reform or to reinvent the way in which value is generated by exploiting inventions and innovation. Business environment is characterized by globalization, increasing use of knowledge and increasing role of innovation in regional innovation systems and the importance of technological entrepreneurship as a factor in the wealth creation generate the emergence of new types of entrepreneurial ecosystems (Camagni, 1995; Feldman, 1994; Porter, 1990). The reason why some regions are more advanced than others lies in successful use of new technologies and entrepreneurship fostering in information technology.

Related to Therin there are several words and definitions used in scientific articles for entrepreneurship in the field of technology as technology entrepreneurship, technical entrepreneurship, techno-entrepreneurship and technology entrepreneurial ecosystems (Therin, 2007).

The most cited authors Dorf and Byers, define technological entrepreneurship as a style of business leadership that involves identification and human resource high-potential capitalization, technology-intensive commercial opportunities, managing accelerated growth and significant risk taking (Dorf and Byers, 2005). In their definition Shane and Venkataraman see technological entrepreneurship as the processes of assembling resources, technical systems and strategies by an entrepreneurial venture to pursue opportunities (Shane and Venkataraman, 2004).

We can analyze technology entrepreneurial ecosystems or technological entrepreneurship at many levels and from interdisciplinary perspective. We have identified more than nine key elements of technology entrepreneurial ecosystem: new technology ventures, communities, universities, corporations, capital and investments, markets, business sectors, government, professionals, advisors and other components like incubators, accelerators and hubs.

The most important component of technology entrepreneurial ecosystem is the entrepreneur itself, and he is the key catalyst in the process of business sectors emergence and start-ups growth. Technology entrepreneurs have more technical skills and competences than non-technical ones, and they have to acquire also business and managerial skills. One important step in the new venture success is the transformation of the entrepreneurial mind into managerial one. The business will become more complex and entrepreneurs have to understand the business environment, they need a vision and a strategy to make competitive the new venture. Technology entrepreneurs have to understand how the new venture will evolve and the importance of managerial skills, and most important strategic oriented mindset. The most important three

motivational factors of the technological entrepreneurs are independence, opportunities exploitation and value generation (Oakley, 2003). In information technology industry, the networks between entrepreneurs are enhancers of business life cycle stages.

Continuous learning is important for entrepreneurs and also for managers because they need to develop their skills and competences and educational institutions as components of the entrepreneurial ecosystems provide this educational services. The most important role of universities is the educational one as a supplier of qualified workforce. Universities can act as a node in the network between corporations, incubators, research centers, clusters and technology parks. Universities have also an important role of spin-off generators, when research products or knowledge generate values in business environment.

Collaboration between universities, research centers, start-ups incubators, corporations, small and medium enterprises and other regional entities is very important to foster innovation, know-how transfer and human resource development. At the regional level, clusters as a form of collaboration between companies can increase competitiveness of start-ups, and have positive effects on innovation and long term development. The main role of technological parks, incubators, accelerators and hubs is to ensure and enhance collaborative and interconnected environment which increase interaction between communities, resources, ideas and technologies.

Entrepreneurial approaches in information technology industry have become important sources of value generation and growth in Europe due to the dynamics and the value that information technology brings in our daily life and in business. Developed countries have realized the major role that information technology have in society and in economy. Technology can be harnessed by strategies that encourage, ensure and accelerate the creation of start-ups in information technology field. Currently techno-entrepreneurship promises both high profits and high risks for founders and investors.

For entrepreneurs one of the biggest challenges is to validate the value of opportunities and business idea before its realization. The main goals of the entrepreneurial approach is to create and capturing economic value either by developing new technologies or by exploiting them. To achieve these goals, entrepreneurs must develop strategies and business models to recreate new dimensions of socio-economic life beginning from ideas and strategic vision.

The ability to recognize business opportunities is a major skill an entrepreneur should acquire and it will dramatically shape the future of his venture. To our view, despite a thorough understanding of the opportunity recognition process, its determinants of success and failure, quite an important lack of understanding remains as to appropriate anticipative and proactive approaches. The literature in the fields of management and entrepreneurship assumes that entrepreneurs are able to anticipate, to be proactive and to build a credible vision of their business. Proactive thinking is an important ability of entrepreneurs. They need to understand the business environment and the influences of entrepreneurial ecosystem components to new venture strategies. Proactive management enables entrepreneurs to understand and to exploit the first signs of changes and to develop strategies to minimize risks and maximize competitive advantage of their businesses.

Counteracting and minimizing specific risks and negative influences of business environment dynamics require proactive entrepreneurial strategies and plans deployments to make startups competitive, or to increase the competitiveness of existing ones. The relation between entrepreneurs and entrepreneurial ecosystem components is particularly important in the light of opportunities identification, information and knowledge acquired and conceptualization of future business value. Schumpeter (1976) put the emphasis on entrepreneurs as those who, in opposition to traditional capitalists, engage in new activities or ventures that did not exist before and in innovative or creative ones. Schumpeter views on entrepreneurship is that entrepreneurs have to explore new opportunities in order to build a new world order while deconstructing or destructing the old one. Entrepreneurship can be defined as an activity and a process involving the discovery, creation and exploitation of opportunities in order to create value thanks to the introduction of new goods, services, processes and organizations (Therin, 2007).

The way individuals recognize opportunities for business creation is one of the first critical abilities in the early stages of the business development process. Entrepreneurs have to be those people who sense, create and respond to changes and needs regarding a possible opportunity for profit. The literature review highlights different approaches of entrepreneurship. Davidson (2004) argue that in practice we can identify in entrepreneurial ecosystem three main streams of thinking about the nature of an opportunity: the objective approach in which opportunities do exist in the environment so that entrepreneurs can identify them and build a strategy to capitalize them; the subjective objective approach focusing on the ability and individual characteristics of entrepreneurs; and the subjective creative approach where the opportunity is built in the mind of the entrepreneurs using creative thinking.

If we consider that technology is at the core and origin of the new venture we will refer to technology based-entrepreneurship. We have identified many authors that paid attention to the concept of innovative entrepreneurship related to new technologies development. Gaglio, De Koning, Singh and Therin argue that entrepreneurship and opportunities are a social construct and correlated with entrepreneur values, behavior cognitive capabilities, knowledge, competence, skills and connections with entrepreneurial ecosystem and individual motivations (Gaglio, 1997; De Koning, 1999; Singh, 1999).

Technology based entrepreneurship brings in more novelty, innovations and R&D products on the markets. If technology is involved, entrepreneurship consists in bringing important changes into the traditional markets and in society compared to the more traditional entrepreneurship.

For entrepreneurs in the field of technology, opportunity recognition starts with the sensing of a need or a change and ends with innovative solutions in which future potential economic value is validated and recognized. The new venture will generate value for stakeholders and owners if the founder will understand the entrepreneurial ecosystem. Information's and knowledge should have been gathered in order to answer key issues regarding business model, new venture and markets. Techno-entrepreneurs will have to undergo a series of other activities, non-technical ones related to management, including creative thinking, incubating, demonstrating, validating, promoting and sustaining (Jolly, 1997). Entrepreneurs can extend their

knowledge about technology, entrepreneurship, managerial skills and competences through their professional, and all these are limited by their absorptive capacity and ability to understand the entrepreneurial ecosystem. Techno-entrepreneurs will draft and redraft their vision and strategy linking the opportunities with business environment and startup capabilities. Proactive entrepreneurs will understand the business environment opportunities, risks and will innovate their business models, products or services to become competitive.

Collaboration in entrepreneurship is very important because synergies and complementarity can make a new venture competitive in the field of very expensive resources. Technology parks can bring together entrepreneurs or startups with distinctive and complementary capabilities. The main role of technological parks is to interconnect components like communities, universities, governmental agencies and institutions, resources and to foster innovation through collaboration. The most important objectives of technological parks are: to foster innovation and collaboration, to be an interface between science and business environment, to generate value in regional economy, and to provide technical and business consulting services.

Corporations have also an important role in technological ecosystems. In addition to the innovative character of corporate entrepreneurship initiatives in large, medium and small companies can generate spin-offs when employees decide to use their skills and know-how into a new start-up venture..

3. INFORMATION TECHNOLOGY SECTOR MAIN LEVELS

Information technology industry has been in constant evolution over time and the most important changes they underwent were determined by the entrepreneurial innovations and by the social progress that has generated new needs in society. As evolution, over time, we can distinguish several important stages of information technology industry, which is its most important cycles: the time of the first innovations in the field of information technology and first personal computers, between 1970 and 1995; pre-Internet and Internet bubble between 1995 and 2000; users' needs centered technology between 2000 and 2010; cloud computing and internet of things from 2010 to present.

In developed countries, the information technology sector is one of the largest in the economy with a rate of over 10% of GDP. The contribution of technology to economic growth is more important, because of the business sectors complementarity. Information technology is the foundation of development, efficiency and productivity of the developed economies. According to OECD statistics, over 20% of the growth is due to the information technology sector and one third to research and development that takes place in business sectors (OECD, 2014).

Information and communication technology provides fundamental and ubiquitous infrastructure for a modern economies and societies, facilitating processing, storage and transmission of information.

Identifying the main components that are part of a technology ecosystem is a difficult task because the field of information technology is extremely dynamic. The life cycle of high-tech products was shortened considerably. Competitiveness of information technology companies is correlated with innovation and with products and services portfolios. An important thing to consider is the behavior and strategies of

technology companies. Because the field of information technology is relatively new, some companies have developed new niches. The dynamics of information technology sectors is determined by leading technology companies' capacities and capabilities to set the trends. Therefore, the dynamics of the whole sector can be correlated with the strategies of the main players in the field of information technology.

Information technology ecosystems are composed by several levels, each with different characteristics and there is also an interdependence and relationships between this levels. Entire ecosystem dynamics is related to relationships between his constituent elements.

Information technology ecosystems are both technological architectures or engineering structures and economic and institutional models and structures. Technology entrepreneurial ecosystem consists in specific architectural engineering, equipment's, technologies, information resources and economic components like business sectors, markets, organizations and economic services whose operations is based on information technology and institutional framework that regulates and defines business environment. Technology ecosystems should be viewed in terms of the functions it performs and its functionality. Technology industry where entrepreneurial ideas become businesses is a modular system in terms of technical and technological engineering sciences, which is defined by a variety of technological architectures, and from the economic perspective a variety of organizational forms.

A technological ecosystem consists of for main groups of components as follows:

- Level 1: interconnected equipment's and elements, computers, mobile devices, network equipment
- Level 2: communication and telecommunication networks
- Level 3: platforms, applications and content
- Level 4: users and clients of technology ecosystem

At all levels we have a variety of elements that are interdependent and connected. Information technology industry is regulated by laws and rules and this regulations are country specific. The development of technology entrepreneurial ecosystems levels is correlated with the degree of regulations and governmental strategies. Also, the degree of technology ecosystem levels development greatly influence consumer behavior and trends. Competition and innovation are determinants of the direction in which each level which forms the technology ecosystem will evolve in the future. A technological ecosystem is defined by the nature of the relationships and connections between components arising and its levels.

The first level of information technology ecosystems is a fundamental one and brings together all equipment, components, computer systems, network equipment, mobile phones, tablets and other devices that generate, access and process information. The development of communication and telecommunications networks in the 1990s was made possible through innovation, the adoption of global standards and integration of a large number of network equipment. The principles that govern our economy in this times are based on networks, relationships and interconnected resources. It is a trend to integrate all equipment's and resources in global networks. The next-generation networks will be the Internet of things, cloud computing and big data infrastructures. All this trends will transform the businesses and social life.

Items of the first level, are interconnected at the second level. At this level we find communication and telecommunication networks, which ensures the integration of fixed and mobile components and equipment's of the first level and information transmission between them. Communication and telecommunication networks and services are key components of ecosystems because provide the ubiquity of information. The second level of technology ecosystem can be regulated by governmental and institutional rules and laws. In the first stages of the emergence and development, these networks were separated by standards and by different needs addressing on the market. In the first period of their emergence, communication networks have been unbundled by telephone networks, cable television and satellite networks. In the last decade we have seen a tendency to unify the networks, communication services. The services become substitutable or complementary and was adopted a strategy of unification of the technological standards and protocols. The convergence of technologies and standards generate a profound change in the technological ecosystem. The impact of technology products and services in economy and society is much higher and competitiveness of technology companies increase steadily. As evolution in time, the second level has undergone significant changes. In the first stage of their development, communication and telecommunication networks were subject of continuous regulations which had the effect of increasing the dominant position on the market for the large companies. The conceptual framework on which were built telecoms regulations has not considered important the endogenous innovation capacity of companies to remain competitive. In addition, specific markets and network effects, mainly favors those companies that have a high number of users and clients. The greater the number of users in a network, the lower will be the operating costs. The network effect increase the network capacity expansion and thus increase revenue. Therefore, at this level of technology ecosystem have developed with a greater extent those companies who have been privileged by dominant position on the market. Over time, the regulations that governed the telecommunications sector have limited or encouraged competition. The central focus was both on companies and on the end user following the principle of balance. According to this principle, competition in the sector ensures maximum benefits for users.

On the second level of the technology ecosystem we can find a very important component, especially if we consider that the main role of the ecosystem is to provide access to information. In the technical literature we can found the concept of "middleware" which means those applications and services which provide the possibility to use and manipulate information, that assure the connections between databases and knowledge, and operating system interfaces to provide users access, storage capacity and information processing systems. Basically, what we meant by "middleware" is a bridge between information owners and users through communication networks and computing systems. Currently, online applications, mobile devices and services provides much of the global access to information. The platforms are those facilitating the handling of the data, information and knowledge.

It is important to note that the third level of technology ecosystems acts as a veritable platform for innovation. At this level we can see entrepreneurial initiatives, many of them innovative with high impact in economy and society. The initial investment required to start a business at this level of ecosystems is not very high and

investment funds have a high interest to support entrepreneurs who have innovative ideas for products and services. Products and business models can be validated and scaled easier on the third level and for an entrepreneur this is very important. Another argument that we can bring to the attractiveness of this level, is that entrepreneurs are in a direct relationship with customers by understanding the trends and needs of society. We are currently witnessing a trend of increasingly high technology role in human life. Technology is responsible by a big part of the business and human activities. Augmented reality, extending human senses and information ubiquity, as technology trends have led to an increased interest of entrepreneurs to start new ventures, and the development of a large number of applications.

With the support of Internet service providers, middleware platforms came to be used on a global scale. Major global technology companies have built their platforms and standards for online content and services using the Internet infrastructure and services from the second tier of technology ecosystem, as well as applications and resources from the third tier. Currently, most companies working in information technology have changed the strategy providing online services and applications for mobile devices and sensing the accelerated trend of development of the third level.

Functionality and operability of all the for levels, connectivity, access to global Internet network, services, products for information browsing and searching and middleware platforms that represents innovation platforms, offer full context and instruments for the end user. Users can use applications and services to access, manipulate and generate data, information and knowledge, and all for levels of technology ecosystem will cooperate in this respect. The concepts like content, applications and services is the essence of social and economic activities and outputs that are generated through the use of technology. The concept of content refers to information provided by networks, by global Internet network or stored on various media. An application means a program or group of programs designed and used by users, which include a number of features.

The fourth level of the information technology ecosystem, includes all users who often identify with the end users and customers of the other three levels. Customers have a major role in the industry and most of companies have redefined the business strategies focusing greater on customer relationships and their experiences. This strategic shift has been driven by the dynamics of business sectors and by the increasing role of innovation to gain competitive advantage.

There are two facets of the causes that led to changes in specific technology ecosystems, namely the processes that generate variety and the selection alternatives within variety. Schumpeter considered the changes taking place in capitalism are generated by the four forms of innovation: new or improved products and services, new processes or production methods, new forms of organization and development of new markets.

Developments of technology ecosystems must be analyzed in dynamic over time because the changes of their structures and functions is related to society needs and to technical and technological progress. Technological ecosystem dynamics is determined to a large extent by symbiotic relationships that arise on the every levels and between them. Entrepreneurship reflected by the emergence of new products and services, new business models and processes, new forms of organization and new

markets is determined by the dynamics of ecosystem relationships and connections. Symbiotic relationships arising in technological entrepreneurship ecosystem can have multiple dimensions or features. They can be financial, material or information flows and synergies across the ecosystem.

The effects of symbiotic relationships arising between the four pillars that make up a technology ecosystem are embodied in what is today the impacts of information and technology in society and on businesses. Globalization trends would not have been possible without the support provided by information technology and communications networks. Changes in social and business activities, generated by increasing role of information are made possible by the smart devices, by the capacity of increasingly large communications networks and by new innovative platforms that are promoting Internet of Things principles. Technology has profoundly change the way in which entrepreneurs and organizations carry out their activities. Business processes, tasks and activities now underway through applications available online on the Internet, and via mobile devices. Mobile information access services provided by communications and telecommunications networks had profound influences on the business environment. Online services and mobile applications have stimulated the organizations. Organizational flexibility, mobility and agility have become conditions that can be provided through access to information in a ubiquitous manner.

The relationships between the third and fourth levels of technology ecosystems, namely between technology platforms, content and applications and end users will generate the context in which entrepreneurs will develop the new ventures. It is important also for entrepreneurs and for sectorial strategy makers to understand the relationships between components of the ecosystems levels.

4. ENTREPRENEURIAL PROCESS AND STRATEGY CONTINGENCY FACTORS

In entrepreneurship, business strategy development is closely related to the entrepreneurial process. Entrepreneurial process is often associated in the literature with business life cycle and includes functions, activities and actions associated with the recognition of business opportunities, generating, evaluating and validating new business ideas and innovations. All this are included in a business model, entrepreneurial strategy and a business plan. In the entrepreneurial process, the entrepreneur must take into account the influences of the business environment and contingency factors that can influence entrepreneurial strategy.

Entrepreneurial process, as we can see in the figure 1, from our perspective include four main steps: the first step is the opportunity recognition and generating business ideas and innovations; the second step is the feasibility and validation of the business idea and business model; incorporation of the idea into a new venture; growth stages. The four stages of entrepreneurial process are defined by objectives and activities established and undertaken by entrepreneur and his team.

The first step, we name it prefeasibility is to identify the feasibility of business opportunities, generating business ideas or to achieve innovations. Recognizing opportunities is a complex process that involves a passive or active scanning of business environment and markets. Scanning the business environment offers many

alternatives in terms of the types of opportunities. Opportunity is a business idea and it's potential to be realized.

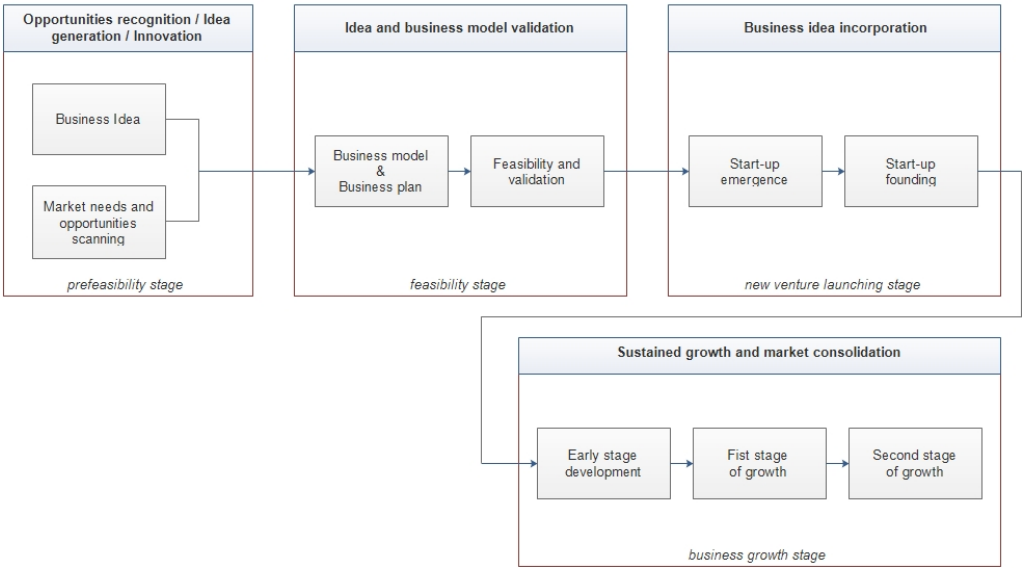

Figure no. 1 The four stages of entrepreneurial process

The second stage of the entrepreneurial process is when business is defined through a business model and a business plan. At this stage of development a strategy is very important. Business idea is embodied in a business model whose main role is to identify the way in which the new venture will generate value for stakeholders. The business model is reflected in a business plan that describe in more details the most important aspects of the business. The second step is validating and analyzing the feasibility of the business idea or the business model. At this stage the business idea, prototypes and products can be tested with specific tools. It is important also for entrepreneurs to validate the capacity of business model to generate value for stakeholders.

The third step is to launch the new venture. The growth stages require investments and financial capital and entrepreneurs have to identify and attract the most suitable resources for the business. At this stage, the characteristics of the business environment and influences of the contingency factors are extremely important and may affect to a large extent the entrepreneurial process. Implementation of the business plan into a new venture involves identifying and acquisition of needed resources, defining organizational structures and assessment of any legal aspects of the organizational activities. At this stage, the new founded organization becomes visible within the business sector. The strategy developed in the second stage begins to be carried out, start-up defines its organizational boundaries, and the next step is to start to combine available resources in order to achieve strategic objectives. Entrepreneurs have to build organizational structure, the team and human resources skills and competences must be defined and developed. Entrepreneurs leadership styles and soft

skills are very important at this stage because team are formed and are established the values and other organizational factors of new venture future success.

Business idea incorporation and business plan implementation is an independent step in the entrepreneurial process which do not often generate growth or immediate results. In most cases, following the steps of the entrepreneurial process involves increasing the complexity of business activities the entrepreneur will face. Increasing complexity is determined by contingency factors that entrepreneur must take into account in the process of business development. Entrepreneurs have to choose between complexity of business growth and stability afforded by a smaller size of the organization. The reasons for this decision stems from the entrepreneurs desire to maintain control over the organization and informal relationships with team members. A smaller organization such as start-ups is easier to be managed because the organizational structure is flattened and organizational flexibility is higher. Entrepreneurs have to manage the balance between stability generated by the small size of the organization and complexity generated by business grow and development. A lack of growth and development can have adverse consequences on a start-up, while keeping a balance between business development and organizational agility and flexibility is extremely important. Creating this balance depends largely on entrepreneur's skills, competencies and capabilities.

Transition from the stage of new venture formation to business growth stages requires a more comprehensive approach to business and a different view of contingency factors. In the first stage of growth the entrepreneurial strategy should focus on strengthening the organizational structures and identification of the most appropriate funding sources. Entrepreneurial strategy must define which capacities, capabilities and resources organization should develop to be competitive on the market. Managerial skills of the entrepreneur becomes useful during the stages of business growth and a controlling system can be useful for initial and further planning.

The success of business growth stages depends on entrepreneur's strategic vision, entrepreneurial strategies implementation and the way in which entrepreneurs translate the strategic objectives in operational ones. In the growth stages startups will capitalize their potential and the company will be more competitive in the business sector. In this stages entrepreneurs will become managers and complexity of business activities and processes will increase. When a business grow a manager have to manage complex situations. Organizations also evolve in the growth stage and organizational structures and processes become more complex. The core competencies of organizations have to be developed during the launch and growth stages and will provide the strengths for the business to be competitive on the market. Accelerated growth, specific for information technology startups is based on innovation and supported by financial resources that allows them to go through the growth stages.

Another important factor on which the entrepreneur must reflect is organizational culture. The values promoted by organization, working values, routines, culture of collaboration and performance can bring a contribution to sustained business growth. In information technology organizations, human resource competences are the core values and a very important component of business model which can generate sustainable competitive advantage. Skills and employee competences can hardly be imitated by competitors. Attracting and retaining the most competent employee's, the

progress through continuous learning, creativity fostering and collaboration are factors that can provide organizational development and competitiveness. Employee's distinctive competences can be capitalize through collaboration to increase cohesion and complementarity of skills, which will lead to synergies. Synergistic effects, organizational flexibility and ensuring resources are the most important preconditions to ensure future growth stages. Growth of a start-up is never accidental and is a consequence of the strategic approach and entrepreneurial skills of the entrepreneur. Start-up growth stages, classic or accelerated, are correlated with internal organizational environment and with contingency factors in the external environment. Startup strategic alignment of capabilities, capacities and resources with threats and opportunities of business environment is extremely important. Understanding the business sector and the main structural trends will contribute to the organization's strategic alignment with business sectors, markets and to minimization of internal and external contingency factors influences.

To make a competitive start-up and to grow their businesses entrepreneurs have to understand the contingency factors and their influences. There are internal contingency factors which can be managed by entrepreneurs and the external one. There are various correlation between contingency factors inside and outside the organization. For example, the discovery and exploitation of business opportunities are possible if entrepreneur has the knowledge and entrepreneurial flair. Opportunities could not be exploited if the organization would not have capabilities and capacities through which resources are processed. Only discovering opportunities by an entrepreneur will not be a guarantee of success for start-up. Exploiting opportunities largely depend on entrepreneurial strategy and how entrepreneur will exploit organizational capabilities and the mix of resources. Contingency factors from business environment are the most difficult to counteract and to be managed. In the business environment we can find social, economic, technical and technological factors, governmental, environmental, political and legal contingency factors.

The success of entrepreneurial approach is largely attributed to the skills and characteristics of the business founders, strategic vision and the way in which entrepreneurs make decisions. Entrepreneur's intentions and determination to grow their business are important and reasons to starts a new venture fall into two categories: opportunity entrepreneurs or necessity entrepreneurs. The first category are motivated to develop a new business because they identified a business opportunity that can be exploited. In the second category we can place entrepreneurs who develop their business as a necessity or from emergency situation not from opportunities.

4. ENTREPRENEURIAL STRATEGY CONTINGENCY FACTORS

As regards the external environment, entrepreneurial process, as figure number two reflected, is influenced by social, technological, economic, legal, political or governmental and environmental factors. The level of specialization of human resources is a very important contingency factor for startups in the field of information technology. The level and number of information technology qualification and certifications, and complementary skills are particularly important factors for increasing the competitiveness of a startup. In the first stage of entrepreneurial process

entrepreneurial education and acquired skills and competences are very important, also individual characteristics such as acceptance of ambiguity, critical and creative thinking, open minded and innovation culture promoter. In the stages of business idea incorporation and growth the availability of competences and their complementarity are needed to define the core of the start-up. Culture of collaboration as social value has a significant impact in generating synergies across the organization. In the entrepreneurial process, the social characteristics of entrepreneurs also have an important role.

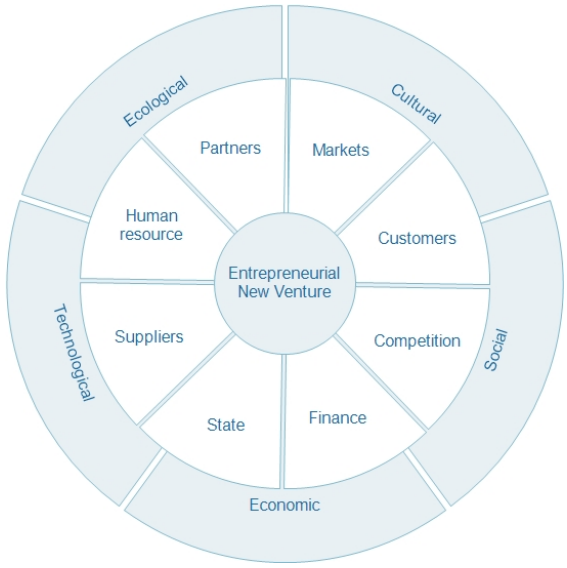

Figure no. 2 Entrepreneurial strategy contingency factors

Values, thinking, behavior, communication skills, socialization, adaptation and interaction with other professionals in the business environment have an influence on how entrepreneurs acts. The space where entrepreneurs manifest themselves is defined by communities' therefore social skills and competencies are particularly important. Social relationships and networking are particularly useful resources and skills that can be used in any stages of the entrepreneurial process.

For information technology entrepreneurs, analyzing the impact that it has the technology in business development is important throughout entire business life cycle. To understand the business opportunities, an entrepreneur who invests in information technology should know and understand the principles that govern the industry. The pace of information technology industry development is higher. The life cycle of technologies shortened over time due to competition and increasing role of innovation in business development. Competition and the clients' needs diversification on the market, have increased the pace at which organizations should innovate and bringing new innovations on the market shortening the product life cycle. In the previous paragraphs we argue that technology entrepreneurship in recent years are more common on the third tier of the technology ecosystem. This level is application-specific and innovative platforms being closer to the real needs of society and the

initial investment is not so high. Starting a business on the third tier of a technological ecosystem require access to technology, licenses, skills and know-how. Ensuring future growth stages involves identifying all these resources in the business environment in which the entrepreneur operates. The diffusion of new technologies in society is one of the factors that significantly influence the success of a start-up phase since launch. The peace of innovation must be correlated with the degree of absorption of innovative products in economy and society. Countries with developed technological ecosystems have a much greater capacity to absorb technological innovations. Know-how that the founders of start-up can acquire it exceeds the social space and the acquisition of technical skills is related to the technological ecosystem potential to generate all this knowledge.

The influences of cultural factors are manifested as an attitude that society has on entrepreneurship. The image of entrepreneurs in society and society's attitude towards entrepreneurial failure have a significant impact on the number of new businesses. Successful businesses are considered to generate value in society and in economy. A positive attitude about entrepreneurship will generate a positive impact for new startups. A mature business culture offers opportunities for entrepreneurs who failed in their first new venture because failure is considered as part of the learning process. In positive entrepreneurial cultures the failure it is not attributed to personal characteristics of the entrepreneur, but contingence factors and how the entrepreneur was able to make decisions interpreting information from the business environment. In developed countries, technology entrepreneurial ecosystems have an important role in value creation in the economy and society, therefore entrepreneurial culture can and should generate a positive climate for new ventures.

As a correlation with other economic influence factors, creating an entrepreneurial culture that encourages funding is crucial at all stages of the entrepreneurial process. For new ventures the micro-loans, seed funding and business accelerators programs can generate a context in which potential future entrepreneurs have a greater determination to put their business ideas into practice.

Lack of information and knowledge about technology industry is one of the main reasons why start-ups fail. It is necessary for entrepreneurs that before initiating a new company to know in detail the industry and the market, clients and competitors. In this process of researching entrepreneur should seek current and relevant information about the industry, market and competitors and analyze them in depth. There are also very useful information about selling and the dynamics of competitors in the last five years, details about innovation and competitors' business models. Entrepreneurs have their own vision of key factors which influence the relevant industry segment as well as the future trends of the business sector. The forecasting about the sector's ability to grow in the next five years is also very useful in all the entrepreneurial process stages. To be able to develop strategies, entrepreneurs needs accurate and complete information about uniqueness of the main competitors in the business sectors and their capabilities which ensures competitive advantages, potential weaknesses that can be exploited, and other sources of competitive advantage. Any business sector have entry and exit barriers. The entry barriers are specific on the every level of information technology industry. More specifically, an entrepreneur who plans to launch a new business in the first and second level will have to face high legal, financial and market entry barriers.

Third level provides more opportunities and low entry barriers can be overcome easily. On the third level of specific platforms, applications and online services is more easily to launch a new venture because the initial investments are lower than on the first and second levels. Business ideas, products and service can reach the customers more easily through new online distribution channels.

In the entrepreneurial process, an entrepreneur must predict and understand the trends and complementarity of specific information technology markets. There are useful information about attractiveness, market size and segmentation, about the growth potential of the target group, stages and characteristics of the industry, demand typology, operating conditions on the market, the criteria that determine the attractiveness of the market and the factors that have an influence on innovation and technological development.

To be able to develop innovative business models that generate added value and which is difficult to be replicated by competitors, entrepreneur must understand and know in detail the competitors in the sector: direct and indirect competitors, potential new competitors may influence relations arising within it. Proactive entrepreneurs should understand the competitors: information about business models that define strategies, the future directions of competitors' development, customer groups targeted by competitors, competitors the market share, cost structure and competitors productivity and what are the most relevant sources of competitive advantage in the business sector.

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