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TRIPLE HELIX COLLABORATION: A SOLUTION FOR STARTUPS IN LEBANON?

by
PAMELA EDDY ATALLAH

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Approved by:

[Signature]	
Dr. Alain Dou, Assistant Professor Olayan School of Business	Advisor
[Signature]	
Dr. Hiba Khodr, Associate Professor Department of Political Studies and Public Administration	Member of Committee
[Signature]	
Dr. Jay Joseph, Assistant Professor Olayan School of Business	Member of Committee

Date of thesis defense: April 24, 2019

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AN ABSTRACT OF THE THESIS OF

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Lebanon is not considered an entrepreneurship-friendly environment. Many challenges exist that hinder startups from turning their ideas into businesses. The origin of all the challenges is deeply rooted in the Lebanese government's weak public institutions. Few actions have been taken by separate sectors to support entrepreneurship, but nothing is serious and official. In 2013, the Lebanese Central Bank decided to take the initiative by issuing Circular 331 as the first official action taken in the country toward entrepreneurship. The Circular represented the main funding mechanism for startups, mainly in the technology sector. However, money is almost done, and a new strategy should be adopted to enhance the entrepreneurship ecosystem. In order to understand the current Lebanese ecosystem, a Triple Helix approach is adopted. The core idea of the concept is to foster collaboration among government, academia, and the industry to create a sustainable entrepreneurial ecosystem. In the Triple Helix model, such collaboration is referred to as the consensus space, where government, academia, and the industry interact interdependently. Their interaction is based on specific roles performed by each actor as well as roles borrowed from each other aiming at filling a gap in the ecosystem. Applying this into the Lebanese context, this thesis aims at studying the need for consensus space formation to help startups develop in such weak public institutions.

Key Word: Triple Helix, Entrepreneurship, Startups, Lebanese Context, Knowledge-Based Economy, Circular 331.

CONTENTS

ILLUSTRATIONS

TABLES

CHAPTER 1
INTRODUCTION

Lebanon, a Middle Eastern developing country, is characterized by a free-market and a robust laissez-faire economy. It is self-oriented, where banking and tourism are the two main sectors for economic growth (World Bank Group, 2014). Although the government does not confine foreign investment, the investment milieu suffers from arbitrary licensing decisions, corruption, red-tape, high tariffs and taxes, fragile intellectual property, and complicated procedures (Central Intelligence Agency, 2015). During 1975-1990, the country was seriously demolished due to the civil war. After that, Lebanon started rebuilding its financial and physical infrastructure by heavily borrowing money from foreign countries, therefore encumbering the government with a major debt. Unfortunately, the debt has continued to increase until today. There is a need for higher productivity by adopting and applying new ideas and technologies. In fact, entrepreneurship may be a way to rescue the Lebanese economic status.

Even though several actions were taken, and programs were initiated by various sectors with a view to boost startups' development, startups are facing challenges. Having sectors working separately will not lead to promising results. Entrepreneurship takes place at the intersection of three different spheres: academic, private sector, and government. Entrepreneurship is more likely to come about when different perspectives engage with each other, rather than each

one working in silos. In the Triple Helix model, this intersection space is referred to as independent hybrid organizations. The creation of such organizations occurs within consensus spaces, where boundary spanners act as the key drive for entrepreneurship.

Previous papers discussing the Triple Helix only examined the evolutionary relation of the three helices while emphasizing the significant role of the university as the engine for knowledge, and asserting the demand for collaboration among the academia, government, and private sector (Sarpong et al., 2017, Yun and Lee, 2012, Natario et al., 2017). However, they did not clearly explain how that collaboration exists (Kim, Kim, and Yang, 2012). Nevertheless, only formal industrial relations were tackled without considering other forms of interactions among the private sector and academia as well as the government (Istiqomah and Adawiyah, 2017).

Moreover, the role of the helices, their interactions, orientations, and motives for emergence within spaces are not clear (Ranga and Etzkowitz, 2013; Steiber, and Alänge, 2013; Benneworth, Smith, and Bagchi-Sen, 2015; Ranga and Garzik, 2015, Natario, 2017). Also, the formation of the spaces, mainly consensus spaces, is not examined in relevant studies (Ranga and Etzkowitz, 2013; Steiber and Alange, 2013; Westerink et al., 2017). The literature lacks the identification of conditions that boost consensus spaces under a weak economic development status (Ranga and Etzkowitz, 2013; Benneworth, Smith, and Bagchi-Sen, 2015, Antonnen et al., 2018). In fact, the Triple Helix is a new concept, where actors' activities and integration as well as consensus space formation are not given enough attention.

Despite the emerging literature on the Triple Helix and entrepreneurship, very few papers tackled the formation of consensus spaces. Moreover, to the best of our knowledge, no paper examined the context of developing countries such as Lebanon which is characterized by weak public institutions. Thus, the thesis has two main objectives:

1- Understand the role of each spiral in supporting startups

2- Examine the impact of consensus spaces on the startups' development given the current context

Hence, the above objectives lead us to our research question: is consensus space formation needed in the Lebanese ecosystem, where there are weak public institutions?

In order to answer this question, the thesis is organized as follows. The second chapter covers the literature review of the topic. It is divided into three parts: the Triple Helix, entrepreneurship in developing countries, and the linkage between the Triple Helix and entrepreneurship. Since the nature of this question depends highly on knowledge, the first part of the literature review examines the concept of knowledge-based economy. It tackles the importance of knowledge-based societies and the way its sub-dynamics (academia, the public sector, and the entrepreneurial ecosystem) operate. Moreover, the first part discusses the Triple Helix model in depth; it examines its emergence, description, and main principles. Also, it points out the reason behind recognizing academia as the most fundamental institution in the model. Furthermore, it demonstrates the theoretical perspective of the model. There are two perspectives for understanding the Triple

Helix model: neo-institutional and neo-evolutionary. The neo-institutional perspective examines the orientation of the three actors toward one another. Their orientation is viewed through three distinct models. The first one, the statist model, is when the state dominates the other two spirals. The second one, the laissez faire model, gives power to the private sector to drive academia and government. The third one, the balanced model, is where the academia, government, and the private sector intersect and work collaboratively with each other. Lebanon relies on the laissez faire model. Thus, the goal of our study is to turn the Lebanese status quo from a laissez faire to a balanced model. At the end of part one, we will provide some examples of countries that have adopted the Triple Helix model.

Furthermore, the second part of the literature review explores entrepreneurship in developing countries. It provides a background which includes defining entrepreneurship, entrepreneurial ecosystem development, and startups in developing countries. The final part examines the linkage between the Triple Helix model and entrepreneurship. It discusses the formation of independent hybrid organizations. These organizations are formed at the intersection of the Triple Helix spheres giving birth to the boundary space. They are established mainly in the consensus space. The latter is the essence of the three spheres' collaboration. The strategies needed for such integration take place in the consensus space. The boundary space is the engine for entrepreneurial development in the model. Therefore, entrepreneurship exists through the boundary space that is created by independent hybrid organizations existing at the intersection of the three helices.

Chapter three covers the methodology of the research, where the adopted method is qualitative. It goes into the limitations of the study, mainly getting in

touch with the stakeholders in order to conduct interviews for the thesis. Chapter four tackles the Lebanese context of the study. In addition to several challenges existing in the country, it gives background information about Lebanon. Also, it evaluates and describes Circular 331, as a first step initiated by the government toward entrepreneurial activity. Moreover, the entrepreneurship ecosystem is studied after issuing the Circular. The findings are presented in chapter five. The final chapter discusses the findings and examines the objectives of the thesis. Based on the obtained results, it draws a relationship among the three actors, gives recommendations, summarizes the overall paper, and recommends ideas for further research. At the end, a policy brief is presented as an appendix.

Indeed, this research tackles a model that brings new insights to Lebanon. The Lebanese entrepreneurial environment lacks collaboration among various sectors. The Triple Helix model application can help in filling gaps between academia, the market, and the state. Thus, startups would be supported by the three helices, which increases the chance of their success. However, for such collaboration to exist, a consensus space formation might be needed. Interaction strategies will be clearly defined in the consensus space. Also, it will examine the role of each spiral. In effect, if the Triple Helix is well-adopted, one might observe a positive impact on economic growth.

CHAPTER 2
LITERATURE REVIEW

2.1. The Triple Helix

Knowledge is considered an essential feature of the modern economy. The dynamic interchange among research, entrepreneurship, economic growth, and market would not be possible without communicating and relating new data. A new fusion exists between entrepreneurship and science allowing for an interactive network among various systems. The knowledge-based economy is built on the interactions between the economy drivers and sources of knowledge, its management, and application (Lengyel and Leydesdroff, 2011). As a result, knowledge-based innovation systems tend to be non-linear (Krugman, 1996). Systems are geographically distant from each other as they allow for market exchange beyond their frontiers and gain new information as a result of their variance and reciprocal connections (Archer, 1995). Knowledge-based economy arises through recurrently codifying the anticipated input of the implicit arrangements (Leydesdroff, 2001). Entrepreneurship is deemed as the transporter of this emerging approach since it rebuilds and thereby re-stabilizes the alliances among the systems in a competitive form. Thus, in such setting, current configurations should be constantly revaluated. As a result, through providing comparative amendments and advantages to the present resolutions, the knowledge-based system tends to respond to its rebuilding and destabilizing terms.

It creates a reflective overlay establishing connections and sharing pertinent knowledge among the involved groups. Consequently, these groups become more and more aware of their own and others' positions, expectations, and limitations.

The knowledge-based economy has extended its scope beyond just controlling politics and interchanging economic relations (Gibbons et al., 1994). It recently started to not only produce wealth and juvenility through organized science and technology, but also control the integration of both sub-dynamics. Such normative control is demonstrated through private sector administration and public policy-making (Schumpeter, 1939). Consequently, sub-systems composed of academia, the market, and politics operate interdependently in the society through capitalization of knowledge and open innovation.

2.1.1. Capitalization of Knowledge

Markets change spontaneously where the structures within them reform and evolve seeking equilibrium. Since neoliberalism gives a high value for the market as a key driver of information, it tends to perceive individuals as entrepreneurs that come up with new ideas facilitating their adaptation in the competitive market (Lemke, 2002). This is because neoliberalism assumes that the productivity of the state highly depends on the market (Olssen and Peters, 2005). In the neoliberalism paradigm, education undergoes a structural shift and is considered an open system of information eliminating any authoritative delegations (Jessop, 2002). Thus, structures within education no longer progress autonomously, however, they become open to various actors.

Moreover, in the presence of globalization domination, the world requires knowledge and ideas representing various actors and no longer depends on internal institutions and ideas. As knowledge is perceived as a global product, it necessitates the involvement of the government and the industry (Campbell, Pedersen K., and Pedersen, 2001). From a neoliberal view, the generation and diffusion of information are directly linked to academic policies since academic institutions are the place where knowledge is traditionally delivered (Gill, 1995). Further, supporters of capitalization of knowledge assume that since it is perceived as an indirect reflection of the market economy, it is important not to limit the economy to a peculiar knowledge source, location, or territory.

Knowledge requires the integration of the state and the business sectors as it is the core of global capital (Ong, 2006). Besides, the concept of knowledge capitalism demands the state to reallocate its energy, power, and money in a way not limited only to service provision (Etzkowitz et al., 2000). However, the state should focus on generating and applying knowledge encouraging education-industry integration. Moreover, financial capital is concerned with the capitalization of knowledge, since investment and risk management depend on information concerning the market and techniques that may be adopted to overcome any uncertainty (Olssen, 2006). These new techniques replace intellectual property protection with a more advanced inventing mechanism (Inkpen and Tsang, 2005).

2.1.2. Open Innovation

Open innovation is the main mechanism for systems to operate in a society that highly depends on knowledge. Open innovation has two purposes: the intended exposure to external knowledge in order to enhance the internal entrepreneurship, and the outpour of knowledge promoting its outer usage in the market (Laursen and Salter, 2006). It believes that internal knowledge is not enough for companies to innovate technically. Thus, companies should be exposed to and apply external knowledge, which is the best way that leads to the entrepreneurial market. In other words, open innovation assumes that organizations should make much greater use of external ideas and technology on their own innovation activities, and they should allow their internal unused ideas and technology to be available for others to use as well (Chesbrough, 2006). The exchange of ideas, whether internally or externally, is transferred into a system where progression and research are opened to one another (Enkel, Gassmann, and Chesbrough, 2009). In effect, entrepreneurial ideas are not limited to a specific company nor to a specific market, they rather diffuse into each other; this is referred to as an open system (Etzkowitz, 2002).

An open system considers business plays two roles; it attracts ideas and creates them. It is opened in a sense that ideas may flow from various sources and different actors benefiting more than one sector. Thus, the market expands paving the way for entrepreneurship resulting in a cost of efficiency (Dahlander and Gann, 2010).

Inside-out and outside-in benefits:

- Inside-out: by sharing ideas much more widely, the users can construct value chains from suppliers to the final consumer attracting people in different parts of the eco-system (Cassiman and Veugelers, 2006). Alternatively, shared ideas are being used in different areas through participation. This makes development and research more economically sustainable because users do not have to restrict the usage for their own purposes (Gassmann, 2006).
- Outside-in: introduce the cost of activities, where the beneficiaries only pay for the part that they are using (Chesbrough, Vanhaverbeke, and West, 2006). Also, these benefits consume time since there is no need to start from the beginning and find all the loose ends values that come with that specific project. Instead, the work is divided into tasks and implemented immediately.

In conclusion, firms limiting their source of knowledge to internal sources rarely face competitive challenges. To be up-to-date with the ongoing market trend, firms need to absorb knowledge from other places. The usage management of specific actors such as the market, clients, and technologies, is the essence of entrepreneurship. This paradigm diffuses into the outside world with internal entrepreneurship by shedding light on the importance of opening institutional systems to one another (Gassmann and Enkel, 2004).

2.1.3. The Triple Helix Model

2.1.3.1. Emergence

During the second half of the nineteenth century, markets and sciences have started fusing symmetrically. “The scientific-technical revolution” has been recognized by Braveman as the “transformation of science itself into capital” (1974). In fact, Marx himself analyzed this dynamic expecting future industrial growth going beyond simple combinations of business, capital, and land (1953). The institutional differentiation existing between the economy and nation-state foregoes such transformation. Over time, a knowledge infrastructure model is known as the Triple Helix of university, industry, and government relations, has emerged as a result of cross-tabulation of these differentiations.

The Triple Helix thesis arose during the mid-1990s, a period where policymakers encouraged markets and universities to work more cooperatively for the public benefit taking advantage of new information commercialization (Branscomb, 1993; Fujise, 1998). It began as a convergence between Henry Etzkowitz’s deep analysis in figuring out the link between the market and academia, and Loet Leydesdroff’s concern in an evolutionary model, assuming a reflexive integration exists within the activities of various, autonomous spirals. After Etzkowitz participated in a workshop held in Amsterdam and discussed his volume “Evolutionary Economics and Chaos Theory: New Directions in Technology Studies,” he met with Leydesdroff and they collaborated on a paper called “The Triple Helix---University-Industry-Government Relations: A Laboratory for Knowledge-Based Economic Development” (Leydesdorff and Van den Besselaar 1994). This metaphor emerged subsequently in discussions about planning a follow-up seminar in January 1996 in Amsterdam (Sabato, 1975). After that, Etzkowitz and Leydesdroff turned the Triple Helix of academic, government,

and industry relations into a model aiming to study developing and knowledge-based economies (Etzkowitz and Leydesdroff, 2000).

2.1.3.2. Description

Prior studies consider the Triple Helix model as an analytical model describing and explaining the various dynamics of the institutional configurations and policy patterns (Etzkowitz and Leydesdroff, 2000). The core institutions in the Triple Helix model are the university, industry, and government as defined by Etzkowitz and Leydesdroff (1995). In the Triple Helix model, these three institutions supersede power during total state declination or the opening of insular organizations (Etzkowitz et al., 2000). The model not only describes the existing dynamics of the institutional configurations involving the three spheres, but also their communication during the innovation processes (Leydesdorff and Etzkowitz, 1998). It also analyzes diverse reciprocal interactions at various stages in the knowledge generation and utilization process (Leydesdroff and Etzkowitz, 1998). This collaboration between universities, industries, and governments creates a social interaction pattern where new discoveries, usage of valuable data, and fusion of decisions are shared (Etzkowitz, 2008).

2.1.3.3. Main Principles

Based on the Triple Helix model, entrepreneurship takes place at the intersection of the three spheres. It is more likely to come about when you have

different perspectives engaged with one another rather than one perspective from either institutional sphere.

The Triple Helix thesis has two parts:

1- The university is more entrepreneurial than any other kind of institution because it has constant human capital (Etzkowitz, 2002). New students come in and always bring new ideas with them. Thus, the university plays a leading role in knowledge-based society moving up to become a model in the thesis of the fundamental institutions.

2- As this interaction happens between the three spheres, each will be performing its own traditional role, but they also begin to share each other's roles (Etzkowitz and Zhou, 2007). The university will act a bit like a business. The government will start applying financial assistance to help in forming new firms. The industry will begin to raise its training programs to a higher level, acting like universities when training employees and producing research collaboration through open innovation models. Firms will benefit from the university as a source of knowledge Consequently, knowledge has become polyvalent (Etzkowitz and Dzisah, 2008).

2.1.3.4. Stages

Etzkowitz in "Innovation in Innovation: The Triple Helix of University-Industry-Government Relations," considers four stages for the emergence of the Triple Helix model (2003). Stage one assumes that each sphere undergoes an "internal transformation" where the role of the academic institution is transferred and extended from simple training and research to applying knowledge. Moreover,

entrepreneurial academia omits the traditional borders between the university and the market. This would enable the state to fund research and high-tech offices. The second stage is when one actor impacts others. For example, when the government issues a law that supports entrepreneurship in universities, this results in industrial growth. In stage three, the interactions of the model's spheres create a triangular relation filling the gaps in entrepreneurship and facilitating the emergence of new ideas. During the final stage, the actors' impact on the helix as well as on the broader environment is recursive. This repetition is due to knowledge capitalization because this capitalization alters the way scholars perceive the results of the research and the way academia communicates with the market and the state.

2.1.3.5. University as the Fundamental Institution in the Model

The goal of the Triple Helix model is to fuse the university, industry, and government with each other. It is an engine for entrepreneurship and knowledge is the essential component. Since it is the source of knowledge, the university acts as the fundamental institutional sector in the model. It delivers entrepreneurship into society, transforming it into a knowledge-based society (Schumpeter, 1942). This is because the university has new students coming into it on a yearly basis. These students, with their various perspectives, come up with new ideas smoothing the way to entrepreneurship. In fact, enhancing the role of the university in knowledge-based societies leads to the following developments.

First, universities are becoming entrepreneurial because research is becoming as important as teaching and learning. Universities are working on research to produce new discoveries that can be commercialized and shared among societies. This is recognized as the "third mission" for academia (Etzkowitz, 2003). Thus, universities are hiring full-time professors to produce research and teach at the same time. In this way, they will have the chance to connect with the industry and provide students with training to meet the industry's needs. Furthermore, knowledge and research are no longer limited to the academic profession. The market and the state also make decisions based on the results obtained from research and the theories created by scholars. Recently, funding is going more towards research that benefits society rather than limiting it to a single field (Slaughter and Leslie, 1997).

Second, universities must merge the theoretical approaches with the practical applications of research. This process requires the merging of institutional mechanisms to help companies fit within the high technological era (Etzkowitz, 2008; Etzkowitz, Mello, and Almeida, 2005). For such a shift to occur, it is important for the university to set its own strategic orientations. The university acts as an incubator on the condition that its relationship with the industry remains conventional. Because the university acts as an incubator, it allows the integration of the young generation with the older one. New learners are given the opportunity to interact with professionals, generating a healthy entrepreneurial environment (Etzkowitz and Leydesdorff, 1998).

Finally, for the entrepreneurial region to freshen itself, the basis of information must extend to cover multiple related disciplines and approaches.

Some new features of the entrepreneurial universities include the ability to build new firms and set planned strategies to achieve their goals (Slaughter and Leslie, 1997). For such new features to exist, the emergence of science parks and foundations is highly essential since it allows universities to generate and legally transfer technologies instead of relying only on the informal transfer of technology (Clark, 1998; Etzkowitz, 2003). This means that the university is responsible for extending its emphasis to encompass various areas to improve science and technology.

2.1.4. Theoretical Perspective

Ideally, the model assumes that no actor should dominate the other. Instead, they should work cooperatively to support and strengthen each other. In other words, the university should adopt entrepreneurial approaches in its curriculum and research fields. The industry should value the need for new knowledge and update the latest research examining entrepreneurship. The government can support the other two sectors by funding research and providing infrastructure.

In reality, according to this model, the spirals share unequal power, where one spiral controls the others (Olssen and Peters, 2005). Furthermore, the concept of the Triple Helix can be approached from two different ways: the neo-institutional and the neo-evolutionary perspectives.

2.1.4.1. Neo-Institutional Perspective

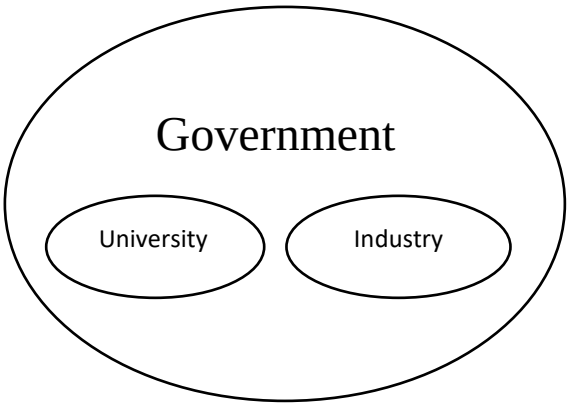
The neo-institutional approach is applied in analyzing case studies, whether national or regional. When adopting a new way of generating knowledge, a variable can be used in case studies to notice the reflective interactions among the three spirals. This variable shed lights on their orientation toward one another and produces three different models of interaction.

- *Statist model*: where government encompasses industry and academia (Etzkowitz, 2003). It moves in a top-down direction, in which academia and market tend to be parts of the government. The state is perceived as the most robust, while the other two spirals are weak and need some kind of control (Etzkowitz and Leydesdorff, 2000). In addition, the statist model assumes that the state should separate its internal technology used in the market from what is taking place in the rest of the world (Etzkowitz, 2008). This means that even though the university has a crucial role in conducting research, it does not interfere in developing enterprises. Moreover, firms deciding to take the lead will not be able to succeed without governmental support (Etzkowitz and Leydesdorff, 1996). This model tends to be constricted since ideas only come from one source. Also, open discussions among society would be impossible under rigid state control.
- *Laissez faire model*: it is mostly an ideological model followed by the United States and Western European countries (Etzkowitz and Leydesdorff, 1998). In this model, the economic intervention of the state is limited, as the industry drives both academia and the government to act as contributory support structures with restricted innovative roles. This model presents indirect cooperation between government, academia, and industry, where the latter dominates the other two spirals (Etzkowitz, 2008). Accordingly, the relationship among spirals tends to be

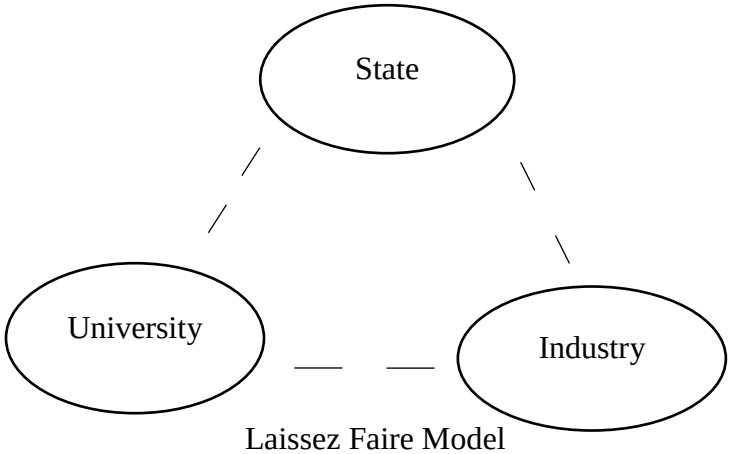
competitive instead of cooperative as a strict dissociation between them exists. This paves the way for stringent limits, complicated regulations for interactions with each spiral, and a narrower definition of their tasks. In other words, research work and training are part of the university role delivering new knowledge to the industry; however, the industry chooses whether to apply it or not (Etzkowitz and Leydesdorff, 1999). This means that until the industry shows it needs research it will not receive any assistance from academia or from the state. Furthermore, regulations complicate the relationship between the state and the market, and this could make the interaction between them quite difficult (Leydesdorff, 2003). Because of the divisions between each spiral, there is an absence of interactive relations. The state's role is restricted to regulate industrial shortage while that of the university to conduct basic research and training. Whereas companies work with the market but work separately from the government (Leydesdorff, 2000).

- *Hybrid/Balanced model*: the actual model where the three spheres intersect taking on the role of each other and working closely together. The relation between them is characterized as interdependent (Etzokiwtz, 2008). Each spiral has its own attributes while borrowing other's tasks. Capitalization of knowledge is the outcome of such intersections. The state is no longer controlling the other two spirals, the university is leading its way toward research for information production, and the industry is taking advantage of the university's role by using the knowledge it generates. Adopting such a creative process continuously boosts entrepreneurship by reforming an endless transition in the way the spheres connect to each other (Etzkowitz and Leydesdroff, 1998). The balanced regime tends to be the best entrepreneurial environment for the spheres' intersections. It is where

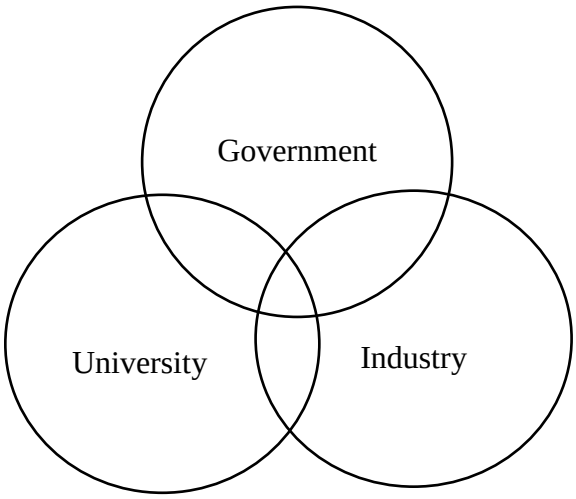
creative interactions arise and launch an “innovation in innovation” process forming a new organizational structure and new locations for collaborative purposes (Etzkowitz, 2003). Consequently, new technologies, relationships, and firms come out in a sustained consistent effort.



Statist Model



Laissez Faire Model



Hybrid/Balanced Model

Figure 1: Models of Triple Helix in Neo-Institutional Perspective
Source: Razak and Saad, 2007

2.1.4.2. Neo-evolutionary Perspective

Taking insights from communication theories, the neo-evolutionary perspective recognizes academia, the government, and the industry as cooperative interacting subsets with social systems. Their interactions are based on an overlay of organizations and recurrence networks that reform their institutional configurations through reflective sub-dynamics (Dolfsma and Leydesdroff, 2009). These institutions foster entrepreneurship in two ways: limiting each other's actions and framing each other's anticipations (Leydesdroff, 2010). Thus, two differentiation processes have to be considered: the institutional dissipation between public and private oversight and functional separation between markets and sciences (Leydesdroff and Meyer, 2006). In addition, new types of structures and links among the spheres are produced due to internal differentiation, such as strategic coalition within firms or industrial nexus offices within universities. As a

result, new network involvement mechanisms are created. Also, the spirals integrate into selected environment, where the selection mechanism is based on institutional connections. This produces modern entrepreneurial environments ensuring system's regeneration (Leydesdorff, Dolfsma and Van der Panne, 2006).

2.1.5. Best Practices of Countries Adopting the Triple Helix Model

2.1.5.1. Malaysia

During 1950-1970s, Malaysia demonstrated a statist model of the Triple Helix. University and industry were in no way connected to one another (Saad, Zawdie, and Malairaja, 2008). The only dominant actor was the government, which dominated the two sectors. It had "state-owned enterprises" leading the market and a Research and Development Institute to supporting farmers and provide them with new technology (Sarpong et al., 2017). The university's task was constrained only toward teaching and learning, and it was highly regulated by the government to ban it from any involvement activity such as consultancy. In the late 1970s, that dynamic shifted considerably as academia's role extended to include research. Although it was not fully independent, the university was permitted to take part in the entrepreneurial transformation. "The National Counselor for Scientific Research and Development" was established by the state as a significant step toward science and technology entrepreneurship (Sarpong et al., 2017). Also, in 1989, the Ministry of Science and Technology created the first science and technology policy. Despite that, industry and academia remained to

perform separately. As the world became more globalized, markets became more competitive, and industry demanded advanced technology, the notion of the "research university" became part of the ninth country's plan (Razak and Saad, 2007). Thus, Malaysian universities were able to extend their research due to funds provided by the government and the economy's need for results implications formed a balanced model of Triple Helix in Malaysia.

2.1.5.2. Poland

Poland is one of the countries that adopted Triple Helix giving value for knowledge produced by academia. The Polish government adopted strategies and issued policies to encourage entrepreneurship during the early 1990s as it wanted to link academia to the market by strengthening their connection (Cooke, 2001). The fact that Polish universities crossed their boundaries and went beyond their traditional role of teaching made a great difference in the milieu of innovation. They started to add research into their curriculums, giving it equal importance to teaching and learning (Ozols, Ozola, and Eglītis, 2012). The Polish universities stepped outside the box to become an enterprise cooperating with the economy. Furthermore, three ministries took the initiative to nourish entrepreneurship in the country and spread it to the region: Ministry of Education and Sports (MENiS), Ministry of Economy and Labor (MGiP), and Ministry of Scientific Research and Information technology (MNiI) (Martin, 2011). The main policies can be viewed in the table below:

Policies	Date Issued	Responsible Organization
Directions to state scientific, science-technology, and innovation policy through 2020	December 2004	Ministry of Scientific Research and Information Technology
Strategy for increasing research and development (R&D) investment in order to achieve Lisbon Strategy Goals Note: Lisbon Strategy: it was launched by the European Union aims at sustaining the growth of the economy in a knowledge-based market.	March 2004	Ministry of Economy and Labor and Ministry of Scientific Research and Information Technology
Proposed directions of science and technology development in Poland until 2013	2003	Ministry of Scientific Research and Information Technology
Directions of innovation policy until 2002	1999	Former Ministry of Economy
Increasing innovation in Poland's economy through 2006	July 11, 2000	Former Ministry of Economy, Labor, and Social Policy
E-Poland: action plan for the development of an information society in Poland	September 11, 2001	Former State Committee for Scientific Research and former Ministry of Posts and Telecommunication
Aims and directions of the information society	November 28, 2000	Former State Committee for Scientific Research and former Ministry of Posts and Telecommunication

Table 1
Title: Policies Adopted by Polish Government Fostering Triple Helix Collaboration
Source: (Martin, 2011)

2.1.5.3. Japan

In Japan, the government succeeded in adopting the Triple Helix model. Since the early 1990s, the state fostered research and development programs to collaborate between the university and the industry (Kagami, 2014). To promote entrepreneurship, internal authorities shifted advanced technologies into Japanese universities and firms. Also, they granted large funds to universities promoting research and usage of new information. For example, large firms in Yamagata and Nagano collaborated with universities seeking economic growth (Leydesdorff, 2012). Also, the Japanese government promoted academia to license its intellectual properties by creating a specialized office for protecting technology right and issuing the National University Corporation law in 2004, a Japanese-style Bayh–Dole Act, to "transfer ownership of intellectual property right to universities" (Pittayasophon and Intarakumnerd, 2017). In 2000, universities were induced to establish business ventures supported by the Industrial Technology Enhancement Act and Hiranuma Plan achieving 1000 "university-originated ventures" in a period of three years (Pittayasophon and Intarakumnerd, 2017). One year later, these ventures were permitted to utilize technical facilities in internal universities. Thus, universities could invest in large firms.

2.1.5.4. China

After 1978, the Chinese economy observed a significant shift toward incremental independence (Martin, 2011). Prior to that, the government used to completely regulate the market, design production objectives, regulate expenditures and expenses, and allocate most of the resources. During that time, no motivations were oriented toward the economy, which lacked efficiency. And, only some competition existed between the farmers and firms. In 1978, the Chinese government instituted economic reform by starting from farmers that were able to sell part of their products freely in the market without full control of the state (Lu and Etzkowitz, 2008). Moreover, four crucial economic areas were created by the government to promote export and import advanced technological manufacturing. Thus, trading became a vital feature in the nation's daily work allowing the emergence of private firms and the existence of related policies. Accordingly, the Chinese market started operating freely and independently from the state. In 1998, the head of the Chinese university was freed from state regulations and able to perform on its own (Jun and Gui-sheng, 2006). In addition, during the late 1970s, academia's role shifted by creating a market based on technology transfer, which was supported through laws and contracts (Zhou, 2008). Also, the government divided Public Research Institutes (PRIs) into three specialized clusters to reach more than 500,000 researchers as an overall (Martin, 2011). After that, the government continued to support research where the state council provided PRIs with more autonomy concerning property management, finance, global market, and personnel. Universities began to commercialize their entrepreneurial research and involved the industry in their activities. In fact,

academia turned to function freely with industry, and the latter highly relied on the knowledge generated by researchers.

2.2. Entrepreneurship in Developing Countries

2.2.1. Definition of Entrepreneurship

Entrepreneurship is referred to "as an activity that involves the discovery, evaluation, and exploitation of opportunities to introduce new goods and services, ways of organizing, markets, processes and raw materials through organizing efforts that previously had not existed" (Mbhele, 2012). Most importantly, innovation acts as the core feature of entrepreneurship. Based on this definition, entrepreneurs are persons who are cautious about any opportunity to start a business (Kirzner, 1997). They are able to recognize providers and clients while acting as mediators between them to produce a profit (Deakins & Freel, 2006). Entrepreneurs are highly passionate and talented with leadership skills rather than ownership matters. They take a risk in an unstable environment for the aim of generating profit and economic development (Zimmerer and Scarborough, 2005).

Furthermore, an entrepreneurial ecosystem is "a set of interdependent actors" and factors that are synchronized in a manner that creates entrepreneurship (Stam and Spigel, 2016). This concept originates from the 1980s where individualism is no longer the main concern of the ecosystem (Dodd & Anderson, 2007). The perspective becomes much wider and includes several players within the entrepreneurship process. Thus, entrepreneurial activity is an output of such an

ecosystem in a way that the activity results in an increase in market growth or capacity. Startups are the focus of the entrepreneurial ecosystem that differs from large companies in terms of policy-making and formation of ideas. Further, knowledge is essential to the entrepreneurial ecosystem, where it is formally and informally shared among various actors in the network. Although the government, the university, and the market contribute to entrepreneurial ecosystem sustainability, the ecosystem highly depends on startups. According to the Global Entrepreneurship Monitor (GEM), "the rates of entrepreneurial activity in developing countries are higher compared to those in developed ones" (Dhahri and Omri, 2018).

2.2.2. Startups in Developing Countries

Building on Schumpeter's assumption, Baumol believes that re-allocating resources is the essence of entrepreneurship (Baumol, 1990). Such re-allocation may not be productive; however, it can lead to unproductive and even destructive results (Murphy, Shleifer, & Vishny, 1991). Baumol assumes that the institutional framework acts as the core determinant of entrepreneurial activities, and their impact is referred to as the "rules of the game" (Baumol, 1990). The rules of the game encompass financial restrictions, entrepreneurial education, business policies, economic freedom, and the labor market (Cronin, Ryan, and Coughlan, 2008). Baumol also examines the impact of these institutional elements on generating entrepreneurial activities. This can be demonstrated in the figure below:

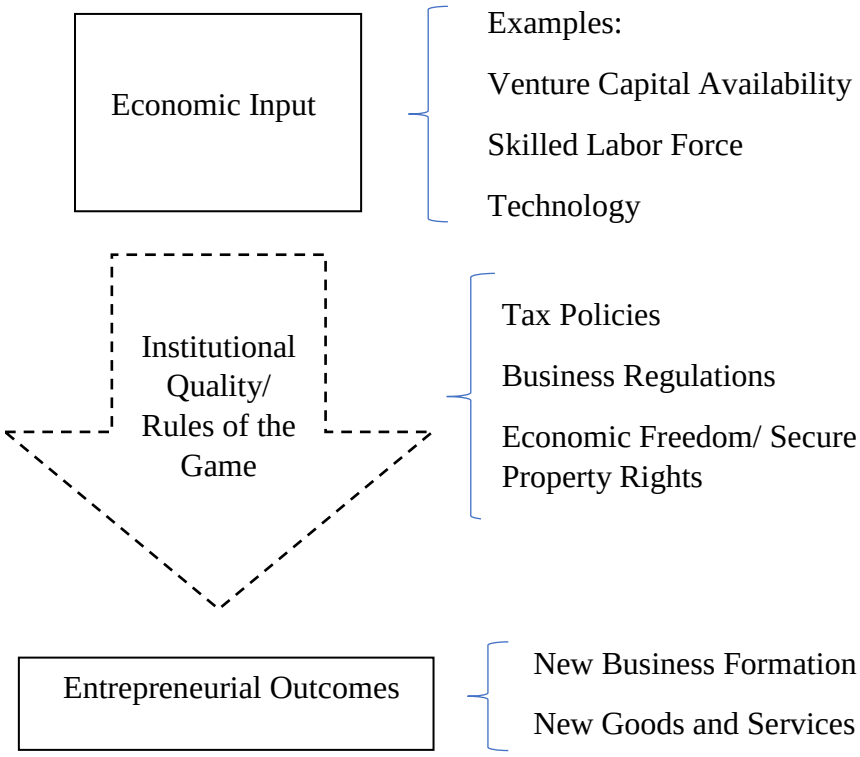


Figure 2
Title: Baumol's Theoretical Framework
Source: Sobel, 2008

According to Baumol's theory, the re-combination of resources in weak institutions results in an unproductive entrepreneurial environment that startups find difficulty to innovate and implement their ideas in, which is the case of developing countries. Indeed, these countries are recognized by weak economic growth, poor living standards, high unemployment percentage, and political and socio-economic instability (Lingelbach, De La Vina, and Asel, 2005). Thus, it is difficult for startups to develop where the nature of entrepreneurial milieu is poor. Also, the scarcity of resources and high illiteracy rates are other facts that limit the

development of startups in developing countries. In the 1980s, as a result of the economic crisis, most of the developing countries altered their market orientation from imported goods toward export goods (Acs and Virgill, 2009). This requires the state's intervention and market's sedulity, by emphasizing the significance of startups activities and their positive impact on the economy. Consequently, the industry has begun to form an open economic space for entrepreneurial development.

Startups in developing countries counter several barriers that hinder their development, such as a frail educational system. Academic institutions lack training programs, entrepreneurial skills, and innovative orientation (Chowdhury, 2007). Moreover, the infrastructure system imposes constraints on startups, where most developing countries run out of adequate electrical systems, feasible telecommunication, and functional optic fibers (Osemeke, 2012). In addition, the political system is described as complex, uncertain, and corrupt in these countries. It is dominated by lots of bureaucratic procedures, and the absence of a political will, accountability, rule of law, and anti-corruption mechanisms (Chittithaworn et al, 2011). Furthermore, the scarcity of entrepreneurial funding plays a crucial role in limiting the growth of startups. Banks in developing countries lack well-regulated and operative capital as well as bond markets, which hamper their development (Mintoo, 2006). Indeed, the growth of startups in developing nations encounters many obstacles.

2.3. Linking between the Triple Helix and Entrepreneurship

2.3.1. Independent Hybrid Organizations

Etzkowitz describes “innovation in innovation” as the third stage for the Triple Helix model (2003). It is when the perception of entrepreneurship goes beyond its classical lens and becomes an organizational output. This model assumes that a robust connection among the university, industry, and the government, and the existing conditions to foster entrepreneurship are positively correlated (Fitjar, Gjelsvik, and Rodríguez-Pose, 2014). The intersection of these spirals forms independent hybrid organizations. This intersection pursues entrepreneurship by establishing science parks, incubators, and enterprise capital. Funds and assets are supported by the state and academia to establish such spaces for entrepreneurship. These independent hybrid organizations tend to be independent in the sense that they are not integrated into a specific sphere.

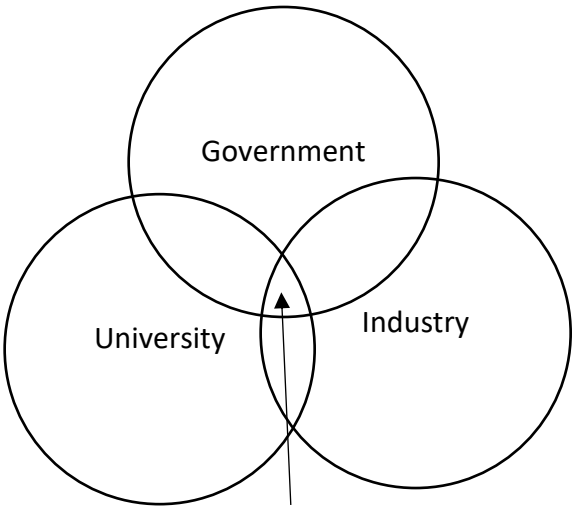


Figure 3: Independent Hybrid Organizations in the Triple Helix Model
Source: Etzkowitz and Leydesdorff, 2000.

2.3.2. Consensus Space: Establishment of Independent Hybrid Organization

Although they are not under the control of any agency, hybrid organizations are accountable to various stakeholders linked to a certain spiral. They are usually established within a "**consensus space**" (Etzkowitz, 2002). The consensus space is referred to as a process of having relevant spirals collaborating with each other by brainstorming ideas, setting plans, and interpreting problems (Etzkowitz and Ranga, 2015). The activities involved in the process produce social and similar principal fostering coordination among the Triple Helix actors. Consensus space is vital for the existence of independent hybrid organizations that encourages entrepreneurship in response to regional circumstances (Mello and Rocha, 2004). The entrepreneurship is generated as a result of integrating several institutions together, rather than an individual effort. When the university, industry, and the government design strategies and congregate resources to execute it, they result in an entrepreneurial impact. The state plays a crucial role in the consensus space because it encourages the private and public agencies to invest their resources in it (Kuhlmann, 2001).

The consensus space has certain characteristics. First, spheres perceive themselves as interdependent because their performance is based on considering themselves as one whole rather than separate parts (Gibney, Copeland, and Murie, 2009). Second, public and non-public actors focus on a governance approach (Etzkowitz, 2003). Third, one observes a reduction in the frontiers where resources are exchanged, and targets are shared in a continually interactive process. Finally,

actors are not accountable to the state, in contrast, they are self-regulated. However, the state steers their interactions indirectly (Guerrero and Urbano, 2017).

2.3.3. Innovative Space: Activities of Independent Hybrid Organizations Take Place

During independent hybrid organizations' activities, an "**innovative space**" is initiated. It indicates institutional entrepreneurship or readjustment aiming at filling a gap in the local development process (Etzkowitz and Rickne, 2009). It is usually recognized during the consensus space. The institutional efforts to establish a new heterogeneous agency are similar to a social movement in the sense that they require individuals, resources, and connections within the Triple Helix model (Lee and Peterson, 2000). Incubators, science parks, and organizational capital are established as a result of the Triple Helix actors' components (Thwaites and Wynarczyks, 1996). The convenient organizational structure relies on the regions' capacities and shortages. Changes occur when one technicality is related to the other via some steps (Etzkowitz and Ranga, 2010). For example, incubators train entrepreneurship, and venture capital empowers incubators. The sequence of steps followed is based on regional conditions.

"Knowledge-based entrepreneurship" is the main feature of innovation space that encompasses the three spheres, where they adopt a certain project and work mutually in order to enhance the entrepreneurship milieu for startups (Etzkowitz and Ranga, 2010). The absence of such milieu prevents organizations from moving forward and surviving in a competitive market.

For the innovation space to keep orienting ecosystems toward entrepreneurship, it has to be directed in two ways. First, innovation space should transfer technology within organizations such as information technology offices in academic institutions, labs in firms, and industrial connection bureau (Feldman and Francis, 2004). Also, places should be dedicated to supporting business like technology and business incubators, and science parks. Moreover, funds are essential for boosting institutional technical development and can be donated from private as well as public agencies. This technical invention is supported by the provision of training programs and financial legitimacy platforms. Second, issuing policies is crucial to enhance institutional establishment and operations (Morris, 1996). These policies involve collaboration between academia, governmental research centers, incubators, entrepreneurs, and public/private funds, encourage the market to play a role in the governmental research priority objectives, ensure intellectual property (IP) rights to promote entrepreneurship, and enhance intensive research positions (Edquist, 2013). In addition, innovation space supports mechanisms that facilitate entrepreneurship such as offering loans, providing funds, and raising awareness about the importance of entrepreneurial activities. Indeed, the integration of the Triple Helix spheres in the innovation space permits a constant expansion space for entrepreneurship (Etzkowitz and Ranga, 2010).

2.3.4. Knowledge Space: Development Sustainability of Independent Hybrid Organizations

In order to sustain the local development, a "**knowledge space**" acts as a bridge for cultivating entrepreneurship. This space constitutes a group of specialized researchers denoting a cluster of research resources through which novel projects and ideas are produced (Etzkowitz, 2003). It exists in all the three spheres producing research and development (R&D) activities as well as art and non-R&D activities. R&D activities include science and technology, art activities that compromise culture, and artistic discoveries, while non-R&D activities lead to a change in the organizational structure, adopt technical skills, and integrate current knowledge in several forms (Etzkowitz and Ranga, 2010). Such activities tend to be vital since they increase the organizational output and competitiveness as well as reinforce entrepreneurship. Various internal resources allow knowledge space to regenerate knowledge in various paths. During the period where R&D and academic resources are frail, strategies are adopted to enhance their development. However, when they are potent, the emphasis is on the way knowledge can be used to elevate entrepreneurial activities and competition in the market (Currid, 2007).

While interpreting knowledge space, two aspects should be used to demonstrate this notion. The first aspect is depicting internal R&D and non-R&D performers and explicating their progress over time and their latest orientations, recognizing priority goals and setting clear agenda, and deciding the scope of their operations (Holbrook and Wolfe 2002). While the other one is coming up with policies and platforms related to human resources, which are relevant to internal R&D in science and arts (Etzkowitz and Ranga, 2015).

Consequently, knowledge space explains the historical interaction between the Triple Helix spirals and the constant restore mode, mainly at the academic level. Universities replicate themselves through hiring new employees with same qualifications as the previous ones (Svensson, Klofsten, and Etzkowitz, 2010). For example, in the computer science department, a professor teaching COBOL got retired. The university tends to hire a new one with the same qualification to teach COBOL. Although this old language is no longer applied anywhere, it is still being taught in order for the university to continue reinventing itself (Emigh, 2001). Thus, universities develop through revising and reconsidering their specialties to be at the knowledge boundary.

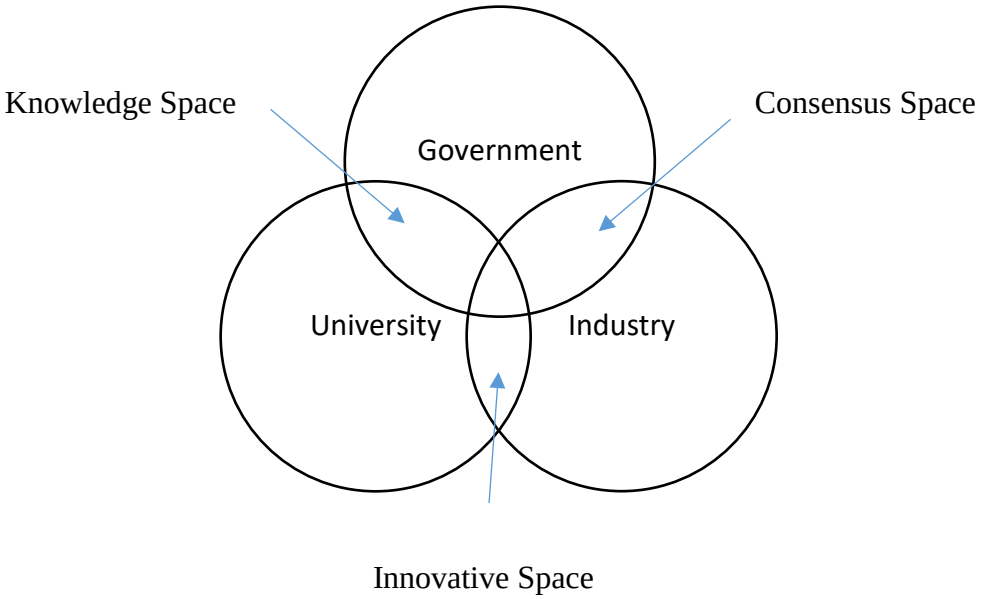


Figure 4: Spaces in the Triple Helix Model
Source: Etzkowitz and Leydesdorff, 2000; Ranga and Etzkowitz, 2012.

2.3.5. Boundary Space: Engine for Entrepreneurship in the Triple Helix Model

The Triple Helix model stimulates entrepreneurship through the creation of independent hybrid organizations. The establishment of these organizations gives birth to "boundary space" (Carlile, 2004). It is not only about their creation, but also their position among the Triple Helix spheres (Carlile, 2004). Boundary space is considered the engine for entrepreneurship in the model. It emphasizes that sharing knowledge within spirals is a must for innovating a new service or product. The concept tends to be dual in the sense that knowledge is shared, and cognitive proximity among actors is provoked (Comacchio, Bonesso, and Pizzi, 2012). Boundary Spanners "are bridging different areas, academia, policy makers and firms. They have a role to articulate different objectives, time frames, logics and cultures. They also have a role within academia to create a dialogue between disciplines and combine different approaches and instruments to propose solutions" (Mangematin et al., 2014).

In the Triple Helix concept, technology and knowledge transfer are not limited to policies issued by the state and approaches learned at the university, they are also linked to the market. Thus, boundary spanner is considered tripartite since it connects the three spirals together (Parker and Crona, 2012). Boundary spanner is analyzed as a practical concept rather than a theoretical one. In order for an individual to act as an influential boundary spanner, he or she should have authenticity as a negotiator and advancing a tendency to involve in boundary spanning (Levina and Vaast, 2005). The efforts done by Camlon, MIT president, in developing a Prototypal Hybrid Organization ARD is directed toward merging market and science through the formation of novel technological ventures (Etzkowitz, 2002). It concluded that particular people can be effective in creating

independent hybrid organizations. This means that individuals can bridge distinct spheres and design components from various spheres integrated by independent hybrid organizations. By doing that, these individuals are acting as a boundary spanner.

The boundary spanner acts as a catalyst in developing independent hybrid organization through attaining three steps (Etzkowitz, 2008).

(i) identifying the existing gap

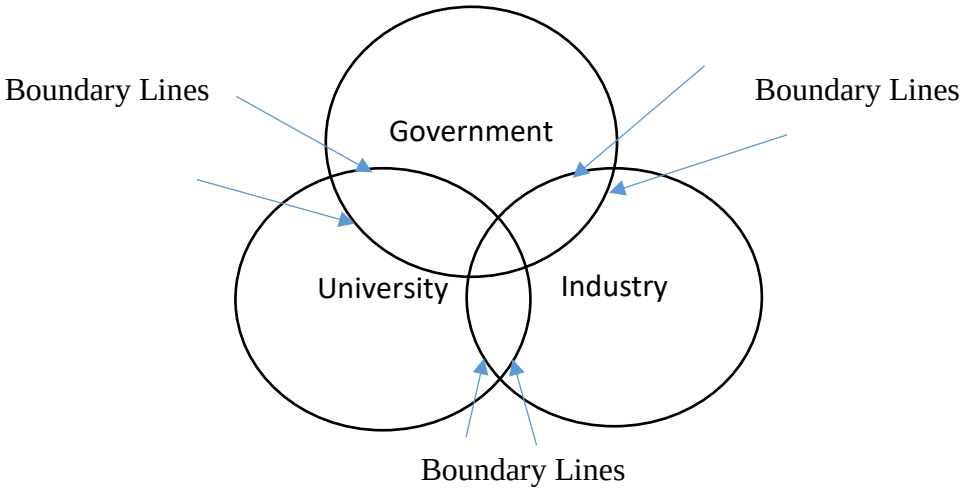
(ii) linking the Triple Helix actors to create a consensus. The boundary spanner gathers representatives of the three spheres and forms a consensus within them. This includes agreeing on a common acceptable formula for the issue, convincing the representatives about the identified gap, and consenting to a solution.

(iii) planning a solution to develop a new entrepreneurial venture. It is involved in the innovative space formation process. Setting a solution requires designing and remerging components from diverse Triple Helix spirals and ensuring the required resources, mainly funds.

Thus, boundary spanner stimulates, designs, and merges elements of the university, government, and industry to create independent hybrid organizations in the Triple Helix. This is referred to as “innovation in innovation” (Etzkowitz, 2003).

In order to demonstrate the Triple Helix entrepreneurship process, two configurations should be considered: Triple Helix I and Triple Helix II. In Triple Helix I, the spirals are distinct from each other, where they integrate only across their obvious boundary lines. Boundary spanning happens only in one spiral, and

technology transfer happens either in the university or in the industry. It is the classical Triple Helix interactions. However, in Triple Helix II, an overlap occurs among the three spirals. This causes boundary lines to be converted into boundary spaces that adhere to them. In these spaces, components from university, industry, and the government combine together forming independent hybrid organizations. In reality, this is described as autonomous accelerators or incubators. This exclusive and distinctive combination permits these organizations to be liberated and not controlled by any helicon. The independent hybrid organizations take the role of the boundary spanner allowing scholars to cross the science-industry boundary.



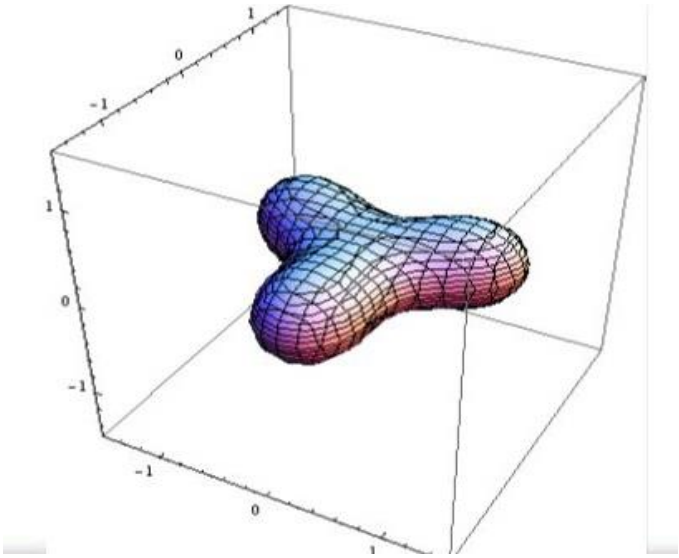


Figure 5: Triple Helix I
Sources: Ranga, 2011.

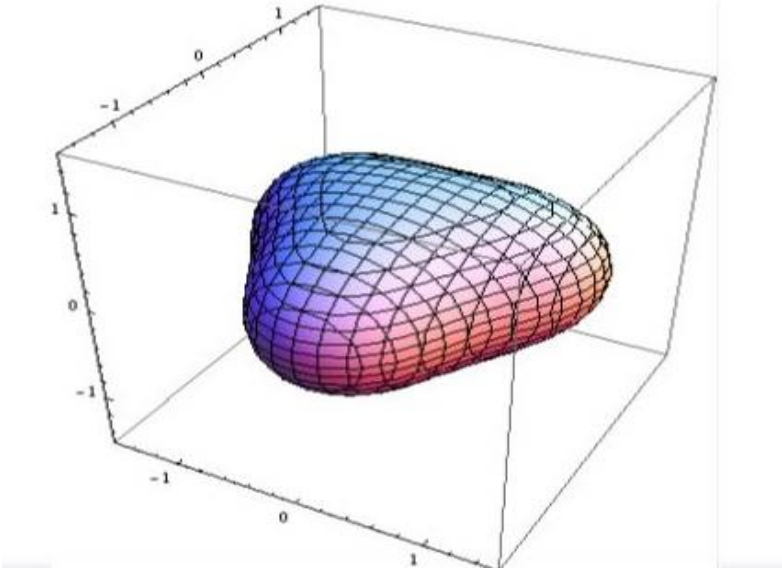


Figure 6: Triple Helix II
Source: Ranga, 2011.

CHAPTER 3
METHODOLOGY

3.1. Research Paradigm

This study relies on qualitative research methods because it relies on in-depth information and understanding rather than numbers and statistics. The thesis also adopts an interpretive paradigm which assumes societies are sophisticated, socially constructed, and not static. Changes always exist. Thus, the researcher's perception is based on the experiences and insights of his/her informants. His/her goal is to collect information via deep attentiveness means. Therefore, interpretive research is more likely to be subjective. It introduces and discusses several ideas within a larger topic, which leads to a further understanding of the topic (Bryman, 2003).

This thesis tends to understand the interaction between academia, government, and the private sector by establishing consensus spaces. It aims at identifying the role each of the spirals can play and recognizing a collaborative relationship between them. The results are based on the experiences and insights of representatives from each sphere. The obtained results are then analyzed in depth.

3.2. Research Design

This thesis uses critical theory as the research design and relies on dialogic design. The critical approach to research design does not only rely on

defining and describing certain concepts. Rather, it challenges leading assumptions. It starts by assuming what is good and asks the interviewees to reflect on and examine their experience based on the values associated with the ecosystem. I observed the current entrepreneurial ecosystem, interviewed actors that are part of that ecosystem, and used reflection and conversational methods when interviewing them. Adopting the critical approach allowed me and the participants to question the nature of the existing entrepreneurial ecosystem and to find ways to address the challenges it currently faces as well as look at ways to improve upon the existing ecosystem (Given, 2008).

During this research study, I assumed that consensus space formation may be beneficial for boosting the development of startups in the context of Lebanon. Based on this assumption, I monitored the current situation and then conducted interviews with different actors from related fields in order to gain insight into the situation based on their experience. In doing so, I am trying to find ways to change and boost the conditions of startups in Lebanon.

3.3. Research Instrument

I conducted semi-structured interviews, also referred to as focused interviews, with members of academia, the private sector, and governmental actors. I prepared a questionnaire including open-ended questions based on the research objectives. These types of questions provide opportunities for the researcher and informants to examine the research subject in more detail. They also give the researcher a chance to allow participants to elaborate in case the

information they provide is interesting or introduces a new inquiry that helps the interviewer reaches the research question.

The questionnaire is divided into four main parts, with several related questions are presented under each topic. The first part aims at understanding the role of the three actors in the entrepreneurial ecosystem. It asks informants about the current role of each spiral, its strengths, weaknesses, opportunities it can offer, threats it may impose, in addition to the way each spiral is supporting startups in the Lebanese context. The second part tends to understand the entrepreneurial environment. It asks interviewees to describe the entrepreneurial situation in Lebanon, state the existing laws, policies, and/or collaborations that can facilitate a startup's journey to success, and identify the key players in the ecosystem. Part three of the questionnaire asks the participants to evaluate the impact of Circular 331 on the country's entrepreneurial ecosystem as it was the first initiative the Lebanese government started to facilitate entrepreneurship. It asks several questions related to the Circular's adoption, analysis, effectiveness, and impact. The fourth and final part of the questionnaire asks the interviewees what policies and laws they would recommend the government to adopt to boost the entrepreneurship ecosystem.

After meeting the targeted interviewees, I recorded and transcribed all of the interviews. After collecting the data, I used the SWOT analysis to analyze the role of each spiral in the Lebanese context. I also examined the need for collaboration among the three spirals.

Another method that is used in the thesis is document review. The study reviews and analyzes Circular 331 issued by the Lebanese government as it is the only initiative the country has taken to boost entrepreneurship. This provides the reader with background about the topic, extends the information covered in the thesis, and contextualizes as a practical one. Document review also traces the changes and progress of the entrepreneurial activity, enriches participants with details that they might have missed, and makes sure the research is interpretative and inclusive. Furthermore, the study incorporates secondary data to understand the research background, the concepts, theoretical framework, the relationship between entrepreneurship and the Triple Helix and provides a framework for the study of entrepreneurship in a Lebanese context. In the end, the thesis conducts a policy brief to set a clear orientation for the actors in the Triple Helix model and interaction in the Lebanese context. The policy brief includes:

- An executive summary of the purpose of the brief, recommendations and target audience
- The problem
- Background on the issue
- Interest in the issue
- Pre-existing policies
- Policy options
- The advantages and disadvantages of each policy option
- Recommendations

3.4. Target Group

The target group of the research includes representatives of the actors in the Triple Helix model. Academia, the government, and the private sector are the three actors that make up the model, so it is important to have participants from these three spheres. I interviewed nine participants for a total of ten interviews. Their input provides this research study with a better understanding of each of their roles, the challenges facing each spiral, and the opportunities each spiral can see or can provide. From the academic sector, I interviewed universities with innovation centers; the universities are AUB, LAU, and USEK. I chose them to better understand the role the academia is playing in entrepreneurship. I also interviewed governmental representatives from Banque Du Liban and Kafalat to examine the role the government plays in entrepreneurship and evaluate the impact of Circular 331 on the entrepreneurship ecosystem. I also interviewed a lawyer to highlight legal issues a startup might face. The participants I interviewed from the private sector are directors of incubators from Beirut Digital District (BDD), Berytech, and Speed. I choose BDD, Berytech, and Speed because we refer incubators to as hybrid organizations. These organizations are part of the private sector, but they can also be a part of the intersection of the three actors. Thus, incubators can provide us with even more information about the three actors and how they can help startups develop.

Code	Type of Organization	Position
Int01	Private Sector Incubator	Program Director
Int02	Loan Simulator (Public)	Senior Officer
Int03	Private Sector Incubator	Deputy General Manager
Int04	Academic	Associate Professor
Int05	Academic	Assistant Professor
Int06	Public	Executive Director
Int07	Academia	Director of Center
Int08	Private Sector Incubator	Executive Director
Int09	Law	Lawyer
Int10	Private Sector Incubator	Deputy General Manager

Table 2
Title: List of Interviewees

While conducting interviews for the thesis, I encountered some limitations. I was unable to reach target interviewees and scheduled several appointments to contact them. I had contacted more than twenty stakeholders in the entrepreneurship ecosystem from various spheres, but unfortunately, most of

them were reluctant to participate. I also attempted to contact them via email, phone calls, and face-to-face visits. However, some did not get back to or even reply to me. The sample size is small because the aim of each interview was to gather in-depth data about the investigated study. Despite the small sample size, I was able to interview key players in the field.

3.5. Strategy Analysis

The strategy analysis in the thesis is based on the concept of consensus spaces discussed in the literature review and insights provided by the interviewees. In the end, we are better able to draw a picture of whether or not consensus space is the main requirement for entrepreneurship in Lebanon. The study focuses on the formation of the consensus spaces because it is the core part of the model. In a consensus space, academia, the government, and the market interact with each other. The interaction occurs with each spiral discussing ideas, interpreting issues, and outlining plans. There is a great emphasis on collaboration where actors are perceived as part of a whole instead of separate entities. The catalyst that allows collaboration between the different actors is the boundary space. It is the driving force of entrepreneurship in the Triple Helix model.

CHAPTER 4
LEBANESE CONTEXT

4.1. Background

After the civil war, Lebanon invested a great amount of effort in rebuilding itself socially and economically; however, Lebanon's weak public institutions prevent any effective reconstruction of the country (Fakhoury and Benoit, 2015). Since the late 1950s, there has been no attempt for the reform or enhancement of Lebanese public administration. When the ministries were being set up, no one used or referred to strategies and master plans. Thus, as the existing regime developed, it represented a perplexed botchery of overlapping tasks and responsibilities (Jamali, 2004). Consequently, this resulted in inconsistency and instability in terms of policy-making and execution, weak public accountability, and the erosion of the government's reputation among its citizens. Then how is the Lebanese public administration going to deal with reforms and reconstruction plans if it is not as effective as it should be when tackling the simple responsibilities assigned to it?

Furthermore, the presence of weak public institutions threatens different sectors. It affects the performance of civil servants who are responsible for agencies, frameworks, and regulations. Weak public institutions prevent them from going about their tasks effectively and efficiently (BouJaoude and Ghaith, 2016). As a result, Lebanese citizens suffer because of poor service quality,

inconsistent policy-making and implementation, corruption, red tape, and patronage. In addition to that, the private sector then suffers from poor infrastructure, escalating debt, and inconsistent, non-transparent, and incompetent regulations (Gonzalez et al., 2008). When the performance of private agencies is partially paralyzed, foreigners will most likely decide not to invest in Lebanon.

4.2. Challenges

4.2.1. Administrative Challenges

The Lebanese public administration faces many challenges. First, people perceive Lebanese public institutions as overburdened, and most of the assigned responsibilities and duties they have may not lead to an effective, efficient, and responsive state (Government of Lebanon and UN Resident and Humanitarian Coordinator for Lebanon, 2017). Private firms and non-governmental organizations (NGOs) would better perform many of the tasks assigned. However, even though the Lebanese state has limited capacity and resources to accomplish and respond to the required tasks effectively, it also restricts other actors from performing specific duties (Haase, 2018). Second, public administration in Lebanon is centralized, and when central agencies have the authority, there is no power delegation among other regional agencies (El Saad, 2001). This negatively impacts the quality of service, government responsiveness for citizens' needs, and resources' mobilization and creativity (El Zein and Sims, 2004). Finally, the public policy-making process is weak and outdated (Bou Khater, 2012). The

quality of data and analysis used in the process is poor because of management information systems are absent. Policymakers issue policies, regulations, and laws with minimal consideration for the latest modifications and developments. Also, the Lebanese public administration has inadequate potentials and competencies for policy-making and is a need for strict supervision, accurate evaluation, and objective feedback (Ahmad and Al Maghlouth, 2016). Thus, public institutions have little opportunities to learn new lessons that benefit their future development. They issue some policies without taking the overall vision of the country into consideration. Such policies solve short-term problems while creating many other long-term confusions (El Zein and Sims, 2004).

4.2.2. Human Resource Challenges

The Human Resource Management (HRM) system in Lebanese public institutions has serious malpractices. This is because they do not base the institutional framework on integrity principles and HR policies and strategies stray away from ethical considerations. The absence of integrity and code of ethics in the overall HR system reflects certain deficiencies in different functions. First, HRM planning unit does not operate as expected because public institutions do not stick to a specific HR plan related to performance, analysis, evaluation, and workload (The Lebanese Transparency Association, 2014). Moreover, the information on opening vacancies, employees, work conditions, and job description for each unit is not systematic (Haddad, 2014). Furthermore, the HRM system lacks policies that increase compensation and merit (Ahwash, 2018). The HRM system's lack of planning reflects red tape, duplication, unclear tasks,

congested bureaus, and low compensations. As a result, corruption results in the form of a fictitious civil servant phenomenon. This occurs when that public employees receive multiple wages from various public agencies even though they do not show up for their assigned working hours (Ahwash, 2018). Second, the HRM recruitment policy does not give proper attention to fairness, transparency, and competency (Schellen, 2017). As a result, candidates are not treated equally because although they may have similar qualifications, HR prefers some over others. One observes discrimination or limitation in the instructions given to potential candidates. For example, HR professionals do not openly announce job vacancies at the public agencies, and they may exclude from the recruitment criteria (Schellen, 2017). In addition, the recruitment process does not ensure accountability (Kisirwani, 2000). For example, applicants are not fully notified about position requirements, and sometimes they choose a specific individual before preparing the job vacancy application form (United Nations, 2004). However, to comply with bureaucratic procedures, HR professionals prepare a job application form that can be filled in by several applicants. This discrimination leaves negative implications on the performance of public institutions as it reduces the possibility for the government to attract qualified individuals. Third, the HR system does not manage employee performance effectively. In most cases, public agencies do not set clear, mission-oriented objectives and outcomes for their employees (Blunt, 2004). As a result, HR professionals need to supervise and measure the execution of responsibilities precisely (Blunt, 2004). In addition, they do not always provide feedback to ensure continuous learning and development among employees.

Finally, since they do not spend the training budget wisely, the training and development unit is considered corrupt. Plus, the office responsible for assigning the trainer and trainees accepts bribes (United Nations, 2004). The office manages the training content so they can extract the most benefits for themselves. For example, the responsible office may increase the training budget to get personal profits (United Nations, 2004). Hence, the allocation of government resources and the training programs' competence, effectiveness, and budget can be misused.

4.2.3. Political Challenges

Sectarian divisions dominate the Lebanese political system which weakens its institutions as the state no longer holds power (Zahar, 2005). The system bases governmental representation and the allocation of state resources according to different sects. The confessional regime impedes political unity as politicians' main concern is to attract supporters and strengthen their base, and sectarian public officials spread fear among the Lebanese population (Choucair, 2006; The Economist, 2018). This reduces the chance of the state working on and improving other concerns and challenges facing the country. The Lebanese political system differs from the one most Arab countries have as it provides freedom of speech and democracy (Hudson, 1969). Thus, it is difficult to have a robust dictatorial regime ruling the population because citizens can express different points of view and spread various opinions on several political issues (Hudson, 1985). However, many countries can wield their influence on Lebanese

political state by empowering sectarian political leaders (Stiftung, 2018). The state's decisions are not made independently and do not prioritize public interests; however, they satisfy the interest of internal and external leaders. In sum, weak governance and friable political institutions make policy-making and execution complicated.

4.2.4. Economic challenges

Since 2018, Lebanon has witnessed little economic growth, and this reflects an unhealthy economic situation. According to Banque Du Liban (BDL), the Gross Domestic Product (GDP) increased by two percent, while based on the International Monetary Fund (IMF) it increased only by one percent (Barakat, 2018). For the country to increase the employment rate, the GPD has to increase by at least six percent annually (Barakat, 2018). The economic growth measured by BDL indicated that it was halved in the last five years, and the real sector indicators predict a further shortage of economic growth. (Barakat, 2018).

The main challenge for economic growth is political uncertainty, particularly the sluggishness of the cabinet formation (Kamel, 2018). The delayed formation of the cabinet has four different effects. First, it has a negative impact on private investment as investors feel skeptical about investing their money in a country with an unstable environment (Zouhaier and Karim KEFI, 2012). Second, it harms investing in public infrastructure through CEDRE conference pledges because they are afraid of losing them (Habre, 2018). Third, it adversely affects the anticipated fiscal reforms to restrain Lebanon's accelerating debt and shortage

ratios. Finally, it hinders capital influxes that are in high demand to finance the Lebanese external debts.

Another crucial challenge for the Lebanese economy is the Syrian crisis. Lebanon hosts the largest number, relative to its population and country size, of Syrian refugees, compared to other countries. This influx of refugees has depressed the country's economic activity. Furthermore, conflicts have emerged among the Lebanese officials and population as the sectarian divide in the country intensified (Cherri, Arcos González, and Castro Delgado, 2016). This led to several fights and violent attacks because of political factions. Since then, political uncertainty and security instability has deepened diminishing the opportunity for foreign and national investments to take place. Moreover, there is a sharp increase in the unemployment rate because of the refugees' influx as Syrians are competing with the Lebanese for job opportunities (Cherri, Arcos González, and Castro Delgado, 2016). People hire Syrian refugees because they accept much lower wages and longer working hours while being deprived of any social security benefits. As a result, the Lebanese President, Michel Aoun expects the unemployment rate in the country to rise to an alarming rate of forty-six percent (Daily Star, 2018).

Growing public debt is yet another factor that has a drastic effect on the country's economy. The main concern of the Lebanese government is to recover its financial status. Consulting firms expect the public debt ratio to increase and surpass one hundred fifty percent of the GDP and ranks the third globally (McKinsey, 2019). Also, the fiscal deficiency ratio represents ten percent of the GDP (McKinsey, 2019). Thus, one needs to demand reform to save the Lebanese

economy. The country does not have the luxury to postpone and wait for financial reforms, so it is important for policymakers to take the lead and make tough economic decisions.

Lebanese tax regulations are another factor that hinders economic growth. Rather than redistributing wealth among the Lebanese population and seeking justice, they are put into place to increase government revenues. The government revenues rely highly on indirect tax, which is referred to as Value Added Tax (VAT) (Chaaban, 2014). Eighteen percent of the products' cost that citizens buy in Lebanon is considered an indirect tax (Chaaban, 2014). This percentage forms seventy percent of the public returns and eleven percent of the GDP (Abdel Samad Najd, 2018). Hence, poor people are negatively affected by these regulations. They pay a huge portion of their income as tax, while rich people are not affected. Unlike indirect taxes, direct taxes reflect only six percent of the GDP (IDAL, 2016). This means only a very small percentage of both a person's income and a company's income goes to taxation. Unfortunately, both a millionaire and a poor person pay the same percentage of taxes in Lebanon. From an entrepreneurship angle, taxes are even more unfair as a startup pays taxes ranging up to twenty-one percent, while a bank making an annual profit of around two million dollars pays only fifteen percent (IDAL, 2016). As a result, the current tax law hampers innovative activities that may stimulate economic growth in the country. Thus, currently, taxation law does not promote fairness, equality, and justice, but rather poses economic challenges for the country and its people.

Lebanon has weak public institutions due to several challenges.			
Administrative Challenges	*Human Resource Challenges*	*Political Challenges*	*Economic Challenges*
- Overburdened public institutions - Centralized public administration - Weak and outdated public policy-making process	HR system lacks integrity principles and code of ethics, which leads to: - Ineffective HRM planning - Unfair, nontransparent, and incompetent recruitment policy - Absence of performance measurements - Corrupted training and development system	- Sectarian divisions - Great extent freedom of speech and democracy	Unnoticeable economic growth due to: - Political uncertainty - Syrian crisis - Huge public debt - Unfair tax regulations

Table 3

Title: Summary of the Challenges Behind Weak Public Institutions in Lebanon.

4.3. Academia

Although they are not yet considered entrepreneurial, academic institutions are attempting to build an entrepreneurial mindset among students. They do so by launching innovative centers, organizing entrepreneurship competitions, planning conferences, and introducing entrepreneurship courses. Inaugurated in 2011, the Darwazah Center for Innovation Management and Entrepreneurship at the American University of Beirut (AUB) is directed toward

boosting innovative activities in the business ecosystem. It focuses on research, student contest, market collaboration, and the inclusion of innovative management courses in the graduate curriculum (Darwazah Center for Innovation Management and Entrepreneurship, 2019). Also, at AUB, Maroun Semaan Faculty of Engineering and Architecture (MSFEA), established in 2017, launched an entrepreneurship initiative that trains students to build their own startups. It encompasses entrepreneurship track practices and a Final Year Project (FYP) accelerator program. The entrepreneurship track is included in the undergraduate program, where it introduces innovative courses, provides internships with various startups, and organizes hackathons. However, the FYP helps seniors to transform their final project into an actual startup business (Maroun Semaan Faculty of Engineering and Architecture, 2019). Moreover, Olayan School of Business and the Continuing Education Center at AUB offer innovative and entrepreneurship courses in an attempt to provide its students with a practical basis for developing businesses. In addition, in 2013, AUB focused on enhancing knowledge by forming a Center for Research and Innovation (CRInn). This center provides students the chance to discuss their ideas with specialized people, find teams for their startup ideas, and access places to discuss their ideas. The CRInn also hosts competitions such as Hult Prize international competition to encourage creativity and innovation. In addition to innovative centers, AUB has a research hub that fosters resources for students such as libraries, computing centers, offices, and labs.

In addition to AUB, Saint Joseph University (USJ) also has a vital role in entrepreneurship development in Lebanon. For example, Berytech, established in

2002 by USJ, acts as an incubator for startups as it offers a dynamic milieu for building and developing entrepreneurial skills by the adopting research, technology, and innovation (Berytech, 2019). They incubate, accelerate, and prepare the students to reach other incubators such as Berytech. Accordingly, Berytech is signing agreements with different universities and faculties. For example, Berytech has signed an agreement with the Faculty of Economic at USJ launching the "Coaching Transformation Program" to target startups and assist them in developing their business through interacting with professional advisors and coaches in entrepreneurship ecosystem (Berytech, 2019). USJ also has a research center, which aims at enhancing research impact and improving the educational experience. This center believes in the significance of transforming knowledge outside the university walls to reach the community, as well as the industry. Several laboratories exist at the university campus to facilitate innovation and research (USJ, 2019).

Furthermore, yet another university, Beirut Arab University (BAU), is adopting a project for enhancing innovation and research. The project is titled "Innovation and Development of Academic-Industry Partnerships through Efficient Research Administration in Lebanon (IDEAL)" (IDEAL, 2019). It seeks to foster innovation, entrepreneurship development, and research by involving industrial and governmental agencies as an essential part of the academic experience. IDEAL's target is to reinforce the Lebanese economy as well as the worldwide market competition.

Likewise, Holy Spirit University of Kaslik (USEK) initiated the Asher Center for Innovation and Entrepreneurship (ACIE). ACIE endorses innovation

and entrepreneurship among the university community by facilitating the necessary resources. Its objectives are: to fill the gap between the university and the market, interact with other actors, and intensify the economic growth (The Asher Center for Innovation and Entrepreneurship, 2019). Moreover, the Lebanese American University (LAU) has created the Center for Innovative Learning to promote an exchange of knowledge and ideas and is currently offering courses that prepare students to launch their own startup (LAU, 2019).

Moving towards academia collaboration, AUB, USJ, BAU, USEK, and LAU have signed the Technology Cooperation Agreement for Research and Education (TechCARE) on 28th May 2018 (Muller, 2018). This agreement imprints the formation of Lebanon's National Research and Educational Network (NREN). TechCare will work on integrating not only Lebanese universities, but also universities on the global level (Muller, 2018). The research will then be transferred within universities leading to the enhancement of knowledge. Therefore, the agreement's aim is to promote cooperation between universities, so they become even more entrepreneurial.

Although Lebanese universities are investing efforts to boost research and innovation, a gap still exists in academia: in research. It is not enough for the government to be the only driver that helps academia establish R&D centers. Rather, it is essential that academic institutions hire professors with vast research and entrepreneurial experience to promote and prepare students to become innovative. Moreover, it is important that funding comes from both the government and the private sector to help entrepreneurs excel in the new market. In fact, one can observe that academia has no real spinoffs, no real research and

development, and little convergence between academia, government, and the private sector.

Even though most universities have entrepreneurial classes and competitions, they do not promote spinoffs (startups that emanate from university research, either lead by students or professors) in Lebanese universities. This is because spinoffs require the cooperation of academia, government, and the private sector. Spinoffs are a key element in some of the most innovative universities in the world such as Stanford, Harvard, MIT, and KULeuven, and are very important for economic development. This is because transforming academic research into actual inventions would generate high revenues, increase the employment rate, and establish new technological services. Moreover, university spinoffs would set a strategical plan for firms to commercialize innovation with a high level of uncertainty. In addition, university spinoffs may act as a mean to hire and retain faculty members. It can assist them financially by investing their salaries in their own firms.

4.4. Circular 331

Lebanon has the competencies and human capital needed for an entrepreneurship ecosystem. However, it lacks funding, infrastructure, and legal regulations. Thus, the government has decided to take a big step toward entrepreneurship development. Banque Du Liban (BDL) has taken the initiative and introduced Circular 331 in August 2013 (Akhrass, Barakat, and Hill, 2018). Circular 331 has infused $400 million dollars as an impulse package to the banks in order to boost local entrepreneurial development (Rimington Pounder, 2016). The Circular

offers the private banks an interest-free loan from the government for a period of seven years. Loans can be invested with a seven percent interest rate in the treasury bonds (Rimington Pounder, 2016). The Circular ensures seventy-five percent of the risks for direct and indirect entrepreneurs support in return of half the profit amount. After three years, BDL increased the ceiling to $650 million in order to accelerate the banks' innovative investment (Freifer, 2018). In sum, Circular 331 was granted by the government as an opportunity for entrepreneurs to implement their ideas.

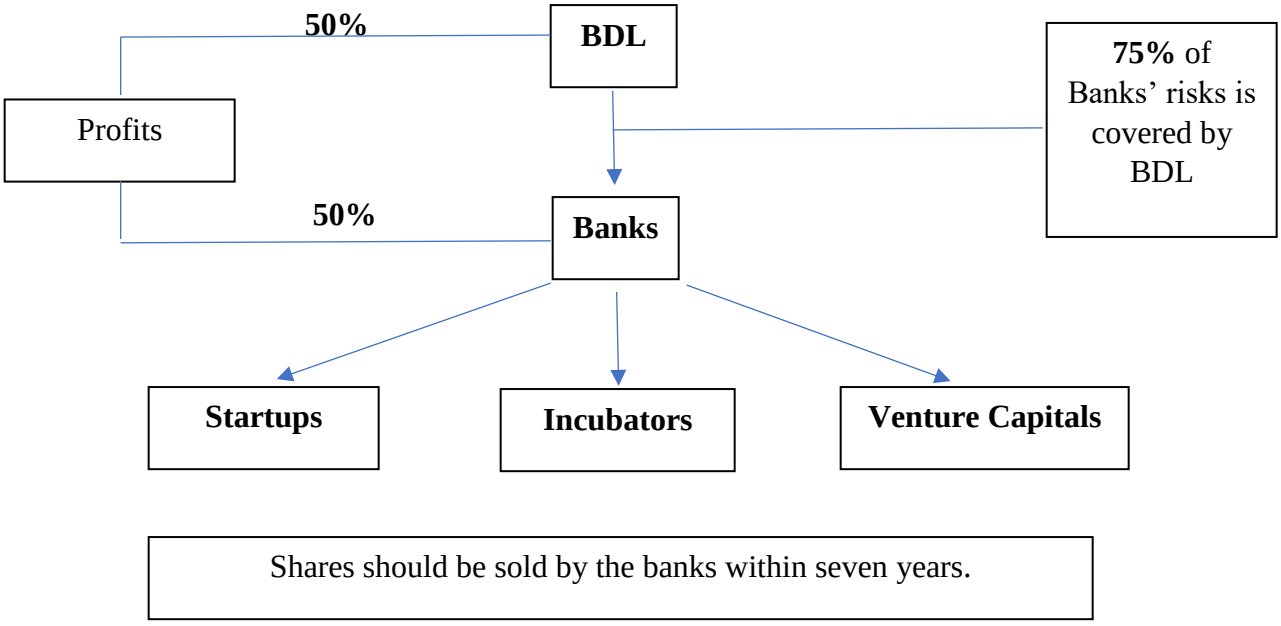


Figure 7
Title: Circular 331 Structure

The main target of Circular 331 is to transform the Lebanese society into the knowledge-based market. This Circular aims to decrease the Lebanese unemployment rate by creating job opportunities. It does so by providing chances for fresh graduates to invest and work in the country instead of working abroad. It

also offers financial incentives and providing training programs and boot camps to enhance the growth of startups. The Circular's impact on startups ecosystem has not been evaluated clearly. Even though one can describe Circular 331 as the first stage for the Lebanese innovative ecosystem, it is not enough. The Lebanese innovative ecosystem is still in its infancy and giving birth to a new market demands to be institutionalization and the adoption of a clear framework. According to Walid Hanna founder and CEO of Middle East Venture Partners (MEVP), Sami Abou Saab, CEO of Speed@BDD, the first acceleration program post-Circular 331, and Paul Chukrallah, managing director of Berytech Fund II, both the market and universities should support Circular 331 (Freifer, 2018).

4.5. Entrepreneurship Ecosystem after Circular 331

Since the initiation of Circular 331 in 2013, Lebanon has witnessed a significant transformation in entrepreneurial development. The Circular has led many international entrepreneurs and talented people to invest in the country. Moreover, after the implementation of Circular 331, worldwide entrepreneurial events and competitions took place in Beirut. Also, Circular 331 has provided startups with several opportunities for mentorship, assistance, and engagement with incubators, experts, and investors from various angles (Yafi, 2019).

Despite its success, an unexpected event, the bankruptcy of Bookwitty, a startup funded by BDL Circular 331, stimulated the need for an in-depth examination of Circular 331's effectiveness. Bookwitty's bankruptcy has spread fear all around the Lebanese entrepreneurship ecosystem because it has been the largest startup bankruptcy since the Circular 331 program was launched (Habre,

2019). The startup's founder, Cyril Hadji Thomas said in an interview, "'No one ever thinks they will fail. Hala Fadel, chair of the venture capital (VC) fund Leap, which gave Bookwitty/Keeward close to $20 million in funding, told Executive in October that failures happen quicker than successes. The Circular has been launched since 2013, and we have yet to witness any unicorns—patience it seems, is key'" (Yafi, 2019). People have released many rumors regarding the reasons for Bookwitty's bankruptcy. Some have said that venture capital is ruling the entrepreneurial ecosystem, while others have said that the bureaucratic procedures of Circular 331 cause startups to not receive funds at the expected time (Habre, 2019). In short, startups find it very challenging to start a business in Lebanon due to several obstacles.

The Lebanese entrepreneurial ecosystem faces various challenges that impede the effectiveness of Circular 331 and the overall development of startups. The first challenge is poor local infrastructure with weaknesses in the internet, electricity, and communication (Freifer, 2017). The second challenge is that the Lebanese government lacks policymakers who specialize in entrepreneurship and able to provide full support for startups (Abou Saab, 2018). The third challenge is the outdated legal framework in businesses. Business laws and regulations are outdated, and the bureaucratic process is inefficient and time-consuming causing delays at various development stages (Executive Editors, 2018). The fourth challenge is the lack of ministerial support for startup development. For example, the Ministry of Education does not support startups because it lacks coding and entrepreneurship training programs (Freifer, 2018). There is a gap between curricular and applied skills at university. Coding boot camps are working on

filling this gap however, they are not enough (Farhat, 2018). Fifth, there is a lack of stock option plans to attract talented entrepreneurs. The Ministry of Finance constrained the usage of convertible notes that Circular 331 permitted. Sixth, few government incentives encourage the transformation to a knowledge-based economy. Seventh, there is a lack of transparency regarding the adoption of Circular 331 because the relationships between the central bank, VCs, and private banks are not transparent (Rimington-Pounder, 2016). VCs are still in the safe zone since they are not taking risks to support and fund early stages of startup development. Instead, VCs only accept risks at late stages (Freifer, 2017). To overcome such VCs-related obstacle, it is important for the Circular 331 to be changed (Rimington-Pounder, 2016). Finally, there is a lack of collaboration because entrepreneurship is seen as a landscape rather than an ecosystem. It is more effective to have actors collaborating instead of competing against one other. Most startups graduating from an incubator fail since they are not fully prepared and mature enough after three months to step into the entrepreneurial world (Mulas, 2017). Someone would have to launch post-programs to assist them (Rouhanna, 2018). Also, startups mentored and assisted by successful startups have a better chance of sustaining themselves (Mulas, 2017). And, the lack of collaboration between universities and the industry limits the role of academia. In fact, universities are not working on innovative approaches (Farhat, 2018).

Lebanese Entrepreneurship Challenges Categorized into Four Areas			
Community	*Skills*	*Support Infrastructure*	*Investment*
- Lack of specialized policymakers - Outdated laws/regulations - Lack of governmental incentives - Lack of transparency	- Unsupportive educational curriculum - Lack of collaboration	- Poor infrastructure	- Lack of stock option plan

Table 4

Title: Summary of Lebanese Entrepreneurship Challenges

Overall, Lebanon is on the right track, but progressing slowly when it comes to entrepreneurship. It is not that far from building collaboration between government, academia, and the private sector. The country has taken a step toward such collaboration by launching the Lebanese Industrial Research Achievements (LIRA) program. LIRA was established under the supervision of the Central Bank, the Ministry of Industry, the National Council for Scientific Research, and the Association of Lebanese Industrialists (Bachaalany, 2018). It allows the private sector to collaborate and coordinate with academia to share knowledge and research production. Recently, LIRA is greatly supporting industrial projects managed by academia. Thus, it gives technological innovation great attention and concern, where ideas pitched by students turn into real businesses (Berytech, 2018). Consequently,

the country has observed an increase in the level of production and competitiveness and job opportunities (Bachaalany, 2018). LIRA aims at transforming the Lebanese economy into a knowledge-based economy through meeting market needs with academic research.

CHAPTER 5
FINDINGS

5.1. Overall Entrepreneurship Ecosystem in Lebanon

When asked about the entrepreneurial environment in Lebanon, the interviewees noted that the Lebanese entrepreneurial environment has improved in a very short period of time. Int01 says: "*advancing as per the world bank last year, which I think is really amazing and all of this start in a very, very short period of time*". Int02 declares that "*it is much better than what is used to be in 10 years ago*". When asked what they think key factors and strengths of the environment are, they considered Circular 331, which was led by private initiatives and stakeholders, the key factor for the growth of the ecosystem. An important strength highlighted by Int01 is the collaborative milieu. Int01 says: "*I think one of the key strengths of this ecosystem is collaboration…collaboration spirit*". The private sector is trying to collaborate with both academia and government to organize internship programs, academies, and raise awareness. The private sector is lobbying and opening communication channels with the government to provide them with what they require. In short, most of the interviewees believe that there is a will for collaboration, but there is still a long way to go.

Although the interviewees all consider Circular 331 and the collaborative milieu as strengths for the ecosystem growth, they recognize various existing

challenges. First, it is not a priority for the government to invest in startups. So, it allocates no budget for R&D, which discourages academia to perform research. This point is supported by Int03, "*there are no mechanisms at the level of government or a nexus approach where we could really work on supporting SMEs or companies and industry to really push more R&D to push more research more spinners*". Second, the interviewees agree that startups require major support, such as statistics and data, to familiarize themselves with the market, legal procedures, and laws. Unfortunately, statistics and data in the Lebanese context are scarce. Per Int06, "*there is a gap between the strength of the government and its application. So, you cannot access and get the data you need*". Int01 states that the "*investor will never invest in them* [startups] *if they are only in Lebanon since it is a very small market. So, this access to market* [information] *is very important for them*". While Int02 says: "*they need statistics to actually study the market. If they want to launch an idea, they need to know who they are launching to… I mean we do not have data, statistic, or anything*". Third, based on the collected data, the Lebanese entrepreneurial ecosystem does not have a problem with funding and support. Rather, the problem lies in finding the right people who have the right talents and are willing to take risks and believe in their ideas. Finally, all interviewees observed that startups face regulatory and operational processes obstacles. "*There are regulatory obstacles, operational processes, access to talent today is a problem. Companies are struggling to find the right talents with the right backgrounds and skills, access to opportunities and to data, access to market*". (Int01)

According to the interviewed sample, the main players in the Lebanese entrepreneurial ecosystem are divided into four categories:

1- Startups, scaleups, and entrepreneurs: talented people with innovative ideas
2- Non-financial entities: incubators, accelerators, and entrepreneurship competition organizers
3- Funding entities: BDL, VCs, and banks
4- Support entities: support across the board such as networking, planning events and competitions, training, accessing media coverage, and highlighting success stories

The interviewees conclude that these players have a positive impact on entrepreneurial development and their role should begin early on in schools and universities.

5.2. Existing Collaborations

According to the interviewed sample, a couple of collaborative measures exist in the Lebanese entrepreneurial ecosystem. Int02 talks about the Industrial Research Institute (IRI), where academia and the private sector work together, and it is now testing the waters. IRI plans to implement an online platform is to facilitate collaboration. The platform will allow the private sector to communicate its specific needs or services, while academia conducts research in order to figure out a way to develop services and meet certain needs. In addition, Int03 and Int05 point out that academia and the private sector are collaborating through the LIRA program which academic research and matches the research to the private sector's

needs. In this way, academic research will resolve the existing problem within the private sector. This encourages the private sector to sponsor and fund ideas spearheaded by universities.

5.3. Government

All of the interviewees think that the government is not playing a big enough role, or at least its expected role, in the entrepreneurial ecosystem. The government has taken some actions to support the ecosystem; however, they are not enough. "*It is not very involved, but it has been trying to be active*" (Int01). Int01 and Int07 consider the establishment of the Investment Development Authority of Lebanon (IDAL) as a means through which the government is "*trying to be active*". IDAL aims at filling the gap by accessing information and reports. Also, Int01, Int03 mention that the Prime Minister's Office (PMO) is somehow supporting the entrepreneurial ecosystem. The office is working on introducing relevant laws as well as bringing visibility and exposure of entrepreneurship by organizing activities like the summer of innovation camp. In addition, Int01 thinks that the establishment of a Ministry for Information and Communication Technologies (ICT) as a good step towards entrepreneurship.

Furthermore, according to the interviewees, the Lebanese government is working on funding mechanisms to support startups. Most of them refer to Kafalat as a vigorous step led by the government. Int03 introduces Kafalat saying, "*they are doing a full-fledged strategy for startups through offering grants. For example, you have Kafalat, which is a loan from the World Bank to the*

government. Kafalat is managing a government program focused on launching in the nation an amount of 2.5 million dollars". The Ministry of Economy and Trade (MET) has also taken up another potent plan, as mentioned by Int03. It formed a semi-strategy to support startups. The strategy has been planned and developed, but not implemented yet. Moreover, all of the interviewees believe that the key initiative that presented a turning point in the Lebanese ecosystem was the issuance of Circular 331 by the Central Bank, a governmental entity. All of the interviewees believe the Circular boosted the Lebanese entrepreneurial environment tremendously.

"*If it is not for the Circular, there will not be any entrepreneurship activisms or players*". (Int07)

"*The Central Bank creates the push for the ecosystem to go forward*". (Int10)

Indeed, per the interviewed sample, the government is investing in some efforts to become more involved in the ecosystem. Nevertheless, most of the interviewees assume that the government should play an even bigger role in the environment than it is playing now. Int03 says, "*it is few steps forward, but we need more*". Int06 claims that "*the government is more theoretical rather than practical*," while Int07 mentions that "*the government has a lot to do*".

Despite the small actions the Lebanese government has taken, the interviewees claim that weak public institutions represent the major obstacle for the entrepreneurship ecosystem. They point out that the Lebanese government lacks a proper regulatory framework, which makes it very difficult for startups to grow and there are no laws that promote entrepreneurship. The Lebanese

ecosystem lacks an IP law, a bankruptcy law, a law that secures startups' failure, an appropriate National Social Security Fund (NSSF) law, a law that allows a company to close, feasible export and import policies, a clear vision, and paperwork procedures. Int07 considers the lack of "a *legal system and governmental system*" as the main challenge startups face. Per the findings, the lack of infrastructure is the reason why the Lebanese government has weak public institutions. All of the interviewees recognize that entrepreneurship ecosystem cannot exist without adequate infrastructure provided by the government. Besides, they add that it takes startups a long time to open a business due to very complex, bureaucratic procedures. The interviewees also shed light on the fact that the government is not providing any incentives to enhance entrepreneurship. Plus, the corruption that exists in the Lebanese government makes it unproductive and unresponsive to entrepreneurs' basic needs. In addition, Int05 thinks that the government is not providing a safety net for entrepreneurs to develop their businesses.

"*We have a lot of laws not issued yet… shutting up the company is difficult… the procedure takes time*". (Int09)

Indeed, interviewees consider several threats that a weak government imposes on entrepreneurs. First, a weak government leads to political and economic instability. Not only startups are afraid to open a business in the country due to the poor economic conditions and the unstable political situation, but also investors are reluctant to invest their money to fund startups. Second, startups are constrained by the large amounts of bureaucratic paperwork and have difficulty catching up with them and filing them. Although startups mature in a very short

time, they will not be able to develop and succeed if it takes them around one year to register themselves. Also, the government lags behind in basic requirements for entrepreneurship and entrepreneurial development. Third, the government does not take into consideration the consequences of startups face if they fail. Finally, Circular 331 imposes limitations on startups. The government, mainly the Central Bank, does not provide funds in a timely manner. When startups set plans, they assume money will be available at a specific time; however, they often receive money a few months after the expected date. In addition, the Circular neither funds early startups nor does it fund companies other than SAL or SARL. In conclusion, interviewees deem that startups in Lebanon encounter certain threats on the governmental level.

"*The challenge is that political instability does not attract funds in Lebanon*". (Int10)

"*Government does little to cushion the risk for business starters*". (Int04)

"*There is a lot of scrutiny and restrictions on how the money is spending*". (Int08)

Furthermore, the interviewees suggest various ways the government can provide to support entrepreneurship. All of them agree that it is crucial for the government to work on improving its infrastructure and introducing proper regulations. According to Int 04, the government should "*create a proper environment for technology transfer (within the country: university to industry) and between Lebanon and other countries*". Some add that the government can help startups by funding their early stages as well as implementing projects that

encourage entrepreneurship. Int01 says: "*It will be nice to allocate a certain quota of the budget for early startups*". Int08 also mentions that it is good for the government to "*provide some kind of early funding for people working in this and safety net*".

Government			
Strengths	**Weaknesses**	**Opportunities**	**Threats**
- IDAL - Prime Ministry office - ICT Ministry - Kafalat - Semi-strategy - Funding mechanism, basically Circular 331	- Lack of proper regulatory framework - Lack of infrastructure - Lack of incentives - Corruption	- Proper regulations - Infrastructure - Early stages funding - Project implementation	- Economic instability - Bureaucratic paperwork - Not securing startups' failure - Circular 331 limitations

Table 5:
Title: SWOT Analysis for the Role of the Government

5.4. Academia

All of the interviewees think that academia plays a huge role in entrepreneurship. As per Int05, "*academia has a lot to do more than government*". Int06 mentions that "*academia is the starting point for startups*". Although the Lebanese educational system is good, the interviewees believe that it is not

performing the way it should. Int03 asserts that "*academia has a huge role to play and they are playing a very small role".* Thus, the government's role proves to be much bigger than the other actors in the ecosystem based on the results of this research study.

"*I believe actually that academia has a lot to do… to work on and it starts not only at the university level. It should start much earlier*". (Int07)

Int01 believes that the students and professors involved in academia are talented. According to the findings, academia is promoting entrepreneurship in various ways. For example, it is organizing competitions for startups, planning entrepreneurship workshops, offering entrepreneurship courses, exposing students to business ideas, and funding startups with high potential. Moreover, the interviewees consider the accessibility of information and knowledge as an essential asset of academia that will improve entrepreneurship. Plus, the interviewees recognize the creation of innovative centers within some universities as a turning point for academia's entrepreneurial role. According to Int02 and Int05, Berytech, which has been launched, hosted, and cherished by USJ has brought the entrepreneurial role of academia to a new level. They believe that Berytech has stimulated other universities in Lebanon to take part in the entrepreneurial ecosystem and shed light on their innovative role. As most of the interviewees point out, AUB, USJ, and USEK are attempting to play innovative roles by organizing competitions and acting as accelerators and incubators for entrepreneurship. Even though academia influences on entrepreneurship tremendously, at present, the interviews describe its role as very minimal. Unfortunately, AUB and USJ are the only universities that have technology

transfer and IP rights policies. "*And for now, we have a couple of universities who have a clear policy on technology transfer and valorization. One of them is AUB, the second one is USJ*." (Int03)

Also, interviewees do not believe that academia is fully performing its entrepreneurial role. They attribute the main reason for not becoming innovative is that academia assumes it can play its entrepreneurial role without collaborating with the private sector. Academic institutions believe that they have full knowledge of the ecosystem, unlike the private sector, and academia is setting boundaries for its mission. According to the interviewees, academia presumes no need for any external knowledge, advice, or experience. It does not realize the need to collaborate with other actors in the private sector. Thus, according to the interviewees, academia has a direct, influential, and vital entrepreneurial mission, which requires openness to the outside world. "*They are not doing it a lot…they are not linked a lot to the outside world. They are closed to their academic narrow…*" (Int02)

Moreover, in conformity with the findings, the academic curriculum is outdated. All interviewees signalize that academia is rigid and theoretical. Int07 claims that "*we are still old fashion in the way we teach*". Students are not gaining soft skills, which will allow them to adapt to market changes. Int06 says, "*very theoretical…it has to be more practical. Students should get exposed to research-oriented methods*". Furthermore, interviewees draw attention to the fact that academia does not properly allocate a portion of its budget for R&D. They state further that academia does not supervise its R&D budget. "*R&D but all the way into the D…into development not just R but starting from the R*" (Int02). Also,

when research is conducted on a small scale, on the departmental or professorial level, it does not benefit the ecosystem. Another weakness the interviewees consider is that academia undermines the importance of entrepreneurship. Int05 explains that entrepreneurship concept is understood by the students when they graduate and enter the work field, which is too late. Also, Int05 claims that academia is failing to teach entrepreneurship as the current mindset of teaching business contradicts the concept of entrepreneurship. Int05 believes that students are taught how to be employees and how to search for jobs rather than how to create jobs and become owners. In addition, as per some interviewees, the bureaucratic process in academia is complex. According to Int01, "*the changes that universities are going to make take a lot to be approved by the board*".

Furthermore, the interviewees shed light on some academia's threats that are negatively impacting entrepreneurship. First, the idea that academia does not need to work with the private sector is limiting its entrepreneurial role. Int05 gives the relationship between USJ and Berytech as an example.

"*There are policies happening today between USJ and Berytech. Berytech has started within USJ, within the school of engineering, and now there is a big disagreement at the administrative level and at the budgeting level. So, if there is a mechanism to produce the model of Berytech with every other major business university in Lebanon however making sure that its extension parts continue to operate within the framework of academia rather than being rejected by it and become agonistic and destructive. They aren't cooperating anymore. Right now, there is zero cooperation between the school of business, school of engineering, and Berytech*". (Int05)

Second, interviewees understand that academia's development is very slow when it comes to entrepreneurship and innovation. If that continues, however, the ecosystem will lose talented startups. According to Int01, "*academia is stealing startups. If they do not get on the train very fast, the talent will be lost*". Third, building upon information provided by the interviewees, academia does not give credit to its students, all while claiming ownership of their projects. As a result, students will not have any incentive to develop their business ideas. Finally, interviewees assume that academia shuts the pioneering spirit down on both the student level and professorial level. On a faculty level, it teaches professors to stay in their safety zone by sticking to agendas, setting long-term plans, and avoiding risks. It also teaches students to seek minimal goals. They just learn to achieve their target grade, nothing more. "*No incentives, but beyond the incentives, the university environment dulls the pioneering spirit and the risk-taking potential of an academic…*". (Int05)

Nevertheless, interviewees propose many opportunities academia can offer to boost entrepreneurship. Int01, Int04, and Int05 believe that academia can work on building talented startups with all types of skills. Int06 believes that developing a strategic approach toward innovative education is essential. All of the interviewees recommend organizing more entrepreneurship competitions, clubs, and hubs as a part of academia's mission. Some of them even suggest funding for research as one of the things academia can provide startups. Moreover, they see research as the key to academia's entrepreneurial role. According to the interviewees, it is crucial to encourage the development of research into a real business and extend its scale at the university level. According to Int02 academia

can achieve this by improving the technical capabilities of academia as "*there is still a lot of work that academia can do, maybe on the technical level…*". (Int02)

Academia			
Strengths	**Weaknesses**	**Opportunities**	**Threats**
- Good educational system and good talents - Entrepreneurship promotion - Knowledge accessibility - Innovative centers	- Closed mindset - Outdated curriculum - Lack of R&D - Pioneering spirit suppression	- Talents and skills development - Entrepreneurship promotion - Research funding - R&D and technology advancement	- Not opened to the external world - Very slow development - Projects possession - Pioneering spirit suppression

Table 6:
Title: SWOT Analysis for the Role of the Academia

5.5. Private Sector

Per the interviewees' opinion, the Lebanese private sector has a wide network and market presence as well as experienced professionals. Interviewees state that the private sector contains all of the knowledge, data, and statistics about the market. Int06 comments that "*the data they have acted as a main strength for the industry. The more you have data and statistics, the decisions are better*". Also, results show that some large companies have R&D teams that are funding

specific research. These advantages will allow the sector to perform its entrepreneurial role.

Despite its strengths, the interviewees believe that the private sector's role in entrepreneurship development is not developing as fast as it should be. According to Int07, the private sector does not play a role in providing support for entrepreneurship. According to the findings, one of the main issues that the sector faces is the failure to deliver technical support. In addition, there is a gap between the market's demands and the startups' technical capabilities. Per the interviewees, startups are not specialized enough to feed a specific market as they lack the necessary skills to create solutions for that market. Therefore, the private sector lacks advanced technologies and skilled interventions for entrepreneurship. "*There is a gap between understanding the needs of the industry and the capabilities of the entrepreneurs to technically be specialized in that industry and to provide a solution*". (Int02)

In addition, the interviewees consider that the Lebanese private sector does not operate based on a nexus approach. As per the results, the absence of interrelations and interconnections between different actors leads to an infertile entrepreneurial ecosystem. For example, a professor may act as a consultant for a specific private firm. Yet, his/her research will only benefit the firm, but not the university nor the ecosystem. Hence, the private sector lacks a mechanism that promotes R&D and spinoffs. In order to fill the gap, interviewees agree that incubators, accelerators, and scaleups are supporting startups in several ways as a part of the private sector. They train them, give back to early phase, and raise awareness among universities. "*There is no linkage in the nexus approach. So, the*

professor with a researcher would wear a hat of a consultant and we do the research for the industrials his own time, but it will not benefit the university. It would not benefit the students. It will not benefit the rest of the ecosystem…". (Int03)

Furthermore, interviewees explain that the private sector is reluctant to take serious risks. It does not support the seed and early stages and would rather take part in a successful business only, which hinders startups at the beginning of their journey. Another weakness of the private sector is its "legacy" as it is becoming very solid, traditional, and inflexible. As per Int05, "*they would blind their perspectives and if somebody will challenge the status quo then there is a big problem*". Over and above that, interviewees point out that the private sector seeks immediate profit. It works on projects and plans that generate money in a very short period. However, entrepreneurship does not generate immediate profit. Int05 describes the private sector as "greedy".

According to the interviewees, the private sector threatens startups because it does not trust them. Most of the interviewees mention that the sector views startups as its competitors. Int06 clarify that by saying: "*they think that the external exposure is wider… the foreign experience is more important. They think they have ideas that might help them more… it is viewing startups as competitors*". They are missing opportunities that startups can add to their survival within the market. Referred by Int07, "*I do not think we have the mindset of the private sector to look for startups and buy it out for example or to partner with it*". Additionally, the private sector has a competitive economic scale. As a result,

startups do not have the potential to compete in the market and end up with low-quality performance and high costs.

Despite these weaknesses, all of the interviewees find that the private sector can provide great opportunities for collaboration. It all depends on the mindset of the sector perceiving other sectors as beneficial sources of knowledge and experience. Int02 reveals, "*plenty of opportunities if they collaborate with academia"*. Int05 recommends corporate entrepreneurship as another opportunity that the private sector can adopt to boost entrepreneurship. Although the private sector may fund several types of research when generating new products or services, if most of them fail, the return of one success would be large enough to cover for all the other failures. In conclusion, interviewees believe that it is essential for the private sector to be more involved in the ecosystem of entrepreneurship.

Private Sector			
Strengths	**Weaknesses**	**Opportunities**	**Threats**
- Market knowledge - Existence of R&D teams in big companies	- Lagging behind - Lack advanced technology and skilled interventions - Lack nexus approach - Reluctance to take serious risks - Legacy - Immediate profit seeker	- Mindset change through accepting collaboration and recognizing opportunities - Corporate entrepreneurship	- Perception of startups as competitors - Competitional economic scale

Table 7

Title: SWOT Analysis for the Role of the Private Sector

CHAPTER 6
CONCLUSION

6.1. Discussion

6.1.1. Consensus Space in the Lebanese Entrepreneurship Context

In reference to the neo-institutional perspective of the Triple Helix concept, with the exception of Circular 331, Lebanon currently adopts a laissez-faire model. The Lebanese government is not involved in the entrepreneurship ecosystem. Knowledge production is strictly limited to academia. There is no direct cooperation and interaction between academia and the private sector, which views startups as competitors instead of opportunities. The fact that the country lacks a regulatory framework that supports entrepreneurship negatively influences the interactions among all three. In effect, adopting a Triple Helix application in the Lebanese context would transfer it to a hybrid/balanced model. This would mean that interaction would exist among government, academia, and the private sector. It would encourage each sphere to start acting a bit like the other. After adopting the model, the private sector would no longer drive academia and government. The three separate spirals would instead be perceived as one whole, where coordination, exchange of resources, brainstorming ideas, plans development, and problems interpretation take place. As a result, such interaction would pave the way for capitalization of knowledge, which in return would boost entrepreneurship.

Based on the data collected from the interviews and the policy brief, a collaboration between the government, academia, and private sector is seen as a precondition to enhance the entrepreneurship ecosystem. This collaboration is referred to as a consensus space formation in the Triple Helix concept. The relation of the three spirals is perceived to be interdependent. Each has a particular entrepreneurial role, while at the same time borrowing the role of other spirals in case a gap exists. In order to form a consensus space within the Lebanese context, it is important to clearly understand the role of each spiral.

6.1.2. Understanding the Role of Each Spiral in Supporting Startups' Development in Lebanon

6.1.2.1. Government

Ideally, the Lebanese government would be involved in the entrepreneurship ecosystem by providing infrastructure, funds, proper regulatory environment, and incentives. It is highly recommended for the government to provide infrastructure in order to create an entrepreneurship-friendly environment. Internet, communication infrastructure, and hardware infrastructure act as basic conditions for entrepreneurship. Moreover, one of the perceived roles of the government is funding academia. When financially supported, academia can extend its entrepreneurial role through doing R&D. Thus, the government role would no longer be limited to providing services. An outcome of this shift would be that the government would take the initiative toward knowledge capitalization.

In addition, it is essential that the government enacts laws that facilitate the development of startups. First, a proper IP law can be enacted to promote ideas and inventions. Startups will be more encouraged to come up with new technologies and discoveries when they ensure that they will own what they create. Second, bankruptcy law is needed to protect funders as well as entrepreneurs. It makes it feasible and clear for bankrupted startups to repay their debts in a professional, structured way. Third, the government may pass laws that provide compensation in the event of a startups' failure. Such laws would encourage entrepreneurs to take calculated risks and turn their innovative idea into a real business. Finally, a law allowing business closure is recommended. In Lebanon, there is no law that states a company can close, unless it no longer operates for at least five years.

Furthermore, one of the roles of the government would be to offer incentives to reinforce entrepreneurship. Modifications on the National Social Security Fund (NSSF) might incentivize startups. It is unfair for small firms to pay the same amount as for big companies. It will be much better if they are charged based on their size. The government can incentivize big companies to fund startups, especially early stages. By offering them tax breaks, big companies will be encouraged to allocate a portion of their budget toward entrepreneurship. Also, simplifying export and import issues will help startups. It becomes much easier for startups to expand their business. Indeed, the Lebanese government can play a basic role in creating an entrepreneurship-friendly environment.

In order for startups' process to be efficient, e-government is conceived as a good mechanism to adopt. In this way, bureaucratic procedures and

paperwork will no longer be major obstacles for their development. Moreover, it will not take startups a long time to open their own businesses. On the other hand, the Lebanese government can establish one-stop-shop for startups to refer to. All services that the startups need will be offered at "one stop". Indeed, the Lebanese government would have an essential role in setting the base and incentivizing other spirals to invest in the entrepreneurship ecosystem.

6.1.2.2. Academia

Being the engine for entrepreneurship, academia is responsible to develop a holistic set of skills, R&D, and spinoffs. First, updating the academic curriculum is a wise decision to be taken by academia. Academia can develop a strategic approach toward innovative education. It becomes more practical rather than theoretical and rigid. Thus, students do not face a gap when they enter the private sector. Besides, it is significant to teach entrepreneurship courses as required courses in the introductory stages. As a result, students will be familiar with the concept and able to properly expand their ideas. Also, it is necessary to develop a clear understanding of entrepreneurship concept. Students might learn how to become owners instead of employees. They might learn how to create jobs, not how to search for jobs.

Second, one of the crucial decisions the academia can make is changing its mindset. This means getting knowledge about the private sector's demands and mindset. It is good to collaborate with the sector in order to know the market needs and skills. Therefore, academia can be able to develop an applicable innovative

educational approach and build the right talents to fit in the market. In fact, academia can improve its role by being open to the outside world and benefiting from the private sector's expertise.

Finally, academia can incentivize students as well as professors to become entrepreneurs. It is crucial for students to own their innovative ideas and projects. Also, academia can provide funds for research done by them. The availability of funds promotes students to come up with not only creative ideas, but also studied results. Academia might extend the research scale as well. It is better for research to be done on university level rather than on a professor or department level. This would generate benefits for the overall society. Indeed, a holistic set of skills can be acquired through updating academic curriculum, changing academia's mindset, and providing incentives for both, students and faculty.

On the other hand, academia entrepreneurial role falls largely on R&D and spinoffs. If academia starts with research and end with development, ideas and researches become businesses. In order to be achieved, it is recommended from academia to allocate a specific budget for R&D. To ensure its effectiveness and transparency, a committee can be assigned to not only monitor the R&D budget, but also ensure it is spent wisely.

6.1.2.3. Private Sector

The private sector is perceived to have a vital role in entrepreneurship. This role includes adopting advanced technologies in order to keep up with rapid

technological change. Startups grow very fast and create innovative technologies in a very short period. The private sector is supposed to be opened and ready to follow up with everyday changes. In addition, it is assumed from the private sector to change its mindset. First, trusting startups and recognizing them as opportunities rather than competitors would enhance entrepreneurship. It can benefit from their innovative ideas, applications, technologies, and discoveries. Second, it is pivotal for the private sector to trust academia and collaborate with it through exchanging market needs, skills, data, and statistics. In return, academia can develop the right talents based on the market-driven opportunities provided by the sector. Finally, the private sector might incentivize students to come up with innovative ideas. It can allow them to possess their ideas instead of becoming employees within the field. On top of that, industry's role encompasses funding startups. It is important for big companies to allocate part of their budget for startups' funding. In fact, the private sector support toward entrepreneurship is highly needed.

Role of Actors		
Government	**Academia**	**Private Sector**
- Infrastructure - Funds - Regulatory framework - Incentives	- Curriculum update - Mindset change - Incentives - R&D and spinoffs	- Adoption of advanced technology - Mindset change - Funds

Table 8
Title: The Role of the Three Actors

6.1.3. Examining the Consensus Space Impact on Startups' Development in Lebanon

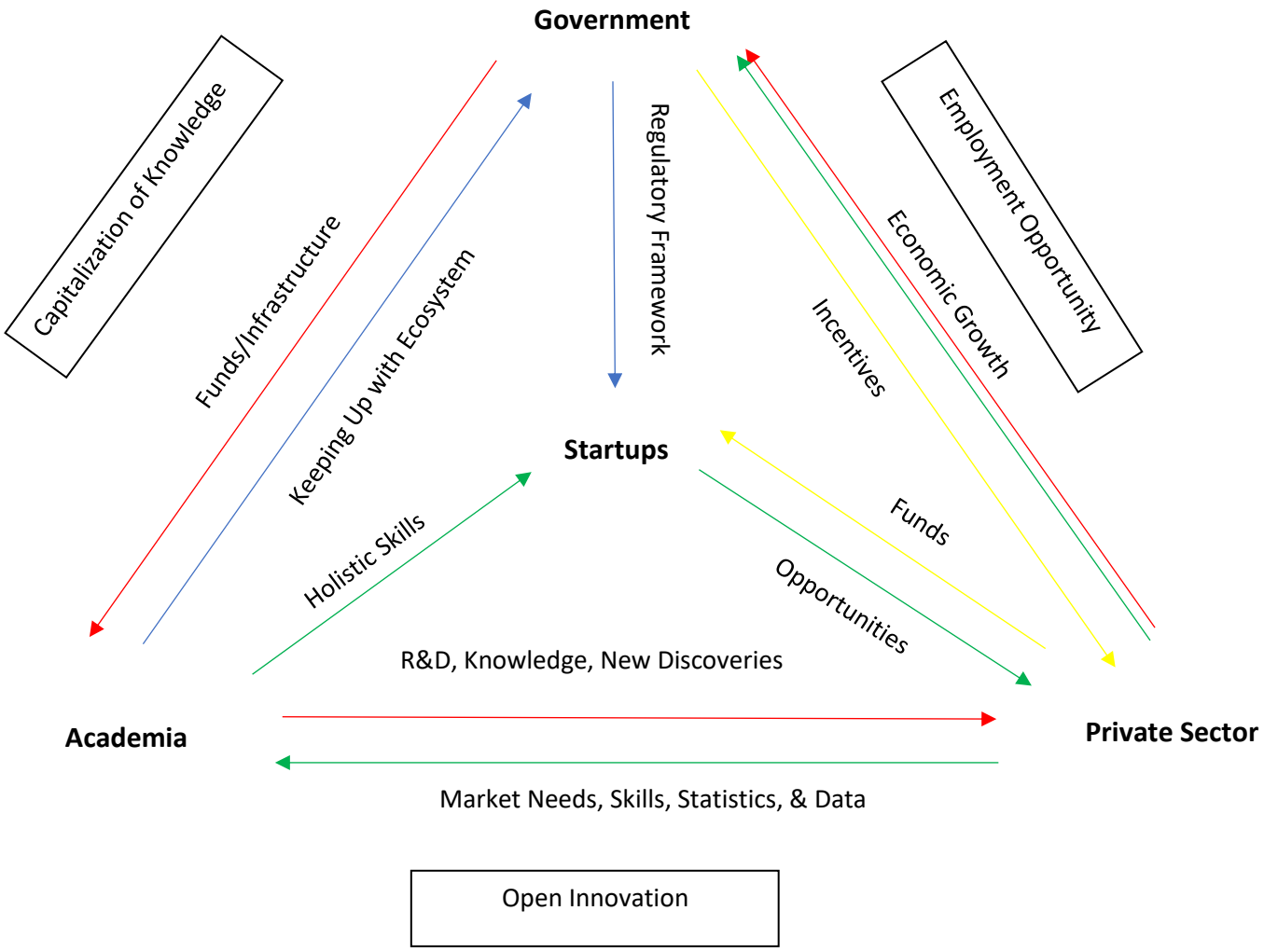


Figure 8
Title: The Relation Needed Among the Three Actors to Form Consensus Space

The formation of a consensus space within the Lebanese context is highly needed in order to create an entrepreneurial friendly environment. Collaboration is a key for startups' development as mentioned by all interviewees. However, for such collaboration to be effective, a clear relationship should exist framing the

way resources are exchanged among the three spirals. Below is a description of how the consensus space can be formed and what impact might it have on startups' development, and then on the overall entrepreneurship ecosystem.

Acting as the base for all the entrepreneurial ecosystem, the government can set a regulatory framework for startups. If it provides good infrastructure as well as funds for academia, the latter can achieve its entrepreneurial mission. The availability for such core preconditions encourages academia to work on R&D, knowledge generation, and new discoveries. In return, knowledge produced might be commercialized and applied by the private sector. As well, academia can omit borderlines with the market by applying new science and technological discoveries. Consequently, the application of new inventions within the market would generate more profit and increase the economic growth of the country. Thus, the employment rate is expected to increase. On the other hand, when academia communicates all its needs with the government, it might be able to set an applicable regulatory framework. The government is supposed to have knowledge concerning what laws and policies are missed. Therefore, startups would be supported by a suitable legal basis, which might encourage them to apply their ideas. Hence, the government can be involved in the entrepreneurship ecosystem as well as it can reallocate its resources to reinforce knowledge generation. This knowledge is assumed to indirectly benefit the economy. In addition, it is suggested from academia to no longer function autonomously. It is encouraged to be open to different players. Under such conditions, capitalization of knowledge is anticipated.

Besides, when the private sector communicates market needs, skills, data, and statistics with academia, it increases academia's ability to develop holistic skills in its fresh students. Since students are perceived as human capital, it can build talented startups. So, it is predicted by the private sector to recognize them as opportunities coming up with new ideas. These new ideas might benefit the overall society and might generate returns to the government. Furthermore, if the private sector receives incentives from the government, it would be encouraged to allocate part of its budget toward startups funding. Incentives may be tax breaks for every company that funds startups. In this way, startups are contemplated to be financially supported to implement their business plan.

Definitely, the alternation of market knowledge with academia, and the private sector exposure to startups ideas is foreseen to reflect an open system. In this open system, shared ideas can boost the country's economic solidity. Also, the time and cost of planning a business can be introduced with investors in the private sector. Subsequently, the omission of all barriers for knowledge sources inverts an open innovation mechanism. In conclusion, this relation is assumed to capitalize on knowledge, open innovation, and increase employment opportunities. Under these circumstances, the Lebanese market is predicted to be transformed into a knowledge-based market.

6.2. Recommendations

Once the role of the three actors is identified, their interaction is best oriented based on the hybrid/balanced model in the neo-institutional perspective of

the Triple Helix concept. Academia, government, and private sector interaction tends to be interdependent, where each borrows the role of the other. No specific actor is in control. Knowledge production is the main target of their interaction. Thus, the capitalization of knowledge results in the boosting of entrepreneurship. In fact, the findings and discussion parts in this thesis conform to the theoretical contributions of the Triple Helix model where academia proves to be a fundamental actor in the Lebanese entrepreneurship ecosystem. It has a crucial role in entrepreneurship through focusing on research, applying concepts, acting as an incubator, and knowledge and technology extension. Indeed, the adoption of an entrepreneurial role by the Lebanese academia can turn the society into a knowledge-based society.

6.3. Future Studies

It is important for future research to investigate the role of boundary spanner in the Lebanese entrepreneurship ecosystem. It is still not understood as to who is responsible to act as a boundary spanner among the three spheres during their interaction. Moreover, nothing was mentioned on how boundary spanner identifies gaps, links spheres to form consensus space, and figures out a solution for a certain entrepreneurial venture. In fact, an in-depth study on the role of boundary spanner in the Lebanese context will add a lot of significance and benefits for Triple Helix adoption.

APPENDIX
POLICY BRIEF

1. Executive summary

The policy brief is done to nuance the entrepreneurship ecosystem in Lebanon. The main audience is startups, government, universities, private sector, and accelerators/incubators in Lebanon. Although the government, academia, and the private sector have the will to enhance and support startups' development, Lebanon is still far away from building an entrepreneurship-friendly ecosystem. The lack of a clear collaborative relationship among the three spirals creates a gap in the ecosystem. Despite Circular 331and the few attempts done by some actors, startups are still facing many obstacles. In order to fill this gap, three policy options are recommended. Taking into consideration different factors, policy option 3 is recommended: Adoption of the Hybrid Model.

2. Statement of Issue

What form should the collaboration among academia, government, and private sector take to enhance the startups' development and the overall entrepreneurial ecosystem in Lebanon?

3. Background of the Issue

Lebanon is lagging behind in terms of entrepreneurship development. It is far away from the knowledge-based economy. The government is not providing the regulatory support needed for startups. Academia neither is focusing on R&D, spinoffs, and students' holistic skills nor it is benefiting from the market professional experts. On the other hand, the private sector is not trusting startups, is not aware of the rapid technological change, and is not collaborating with academia. In fact, the government, academia, and private sector have the will and are attempting to enhance entrepreneurship. However, a gap exists.

Circular 331, issued by the Central Bank in 2013, acted as a turning point for the Lebanese entrepreneurial ecosystem. It is considered a good initiative toward entrepreneurship. Yet, its impact was not as effective as it should be. Certain changes were demanded to increase its effectiveness. Although there are many startups in Lebanon, very few turns it to success. The country is not entrepreneurship-friendly. Indeed, many obstacles hinder startups to grow and develop.

4. Interest in the Issue

Collaboration is the key to creating a friendly entrepreneurship environment. Each actor needs the support of the other. They cannot work on their own. Startups cannot achieve and implement their innovative ideas without having a proper regulatory environment, laws, infrastructure, trained skills, knowledge of market demands, R&D, funds, etc. Thus, startups should be nurtured by government, academia, and the private sector.

5. Pre-existing Policies

Based on the information provided by the interviewees, no actual holistic policy exists that facilitates the startups' journey. There is not any law directly relevant to startups. Only laws stating the steps and regulations required to open a company. Some collaborations between academia and industry are planned to take place. Yet, nothing is well adopted and implemented.

Existing Collaborations				
Name	**Government**	**Academia**	**Industry**	**Description**
LIRA Program		X	X	It funds academic researches and matches them with the industrial needs.
Industrial Research Institute (IRI)		X	X	It is a discussion in how universities and industry can collaborate through research. It is done to test the water.

Table 9
Title: The Existing Collaborations in Lebanese Entrepreneurship Ecosystem

6. Policy Options

Policy 1: Adoption of the Statist Model: collaboration exists among the three actors, where government encompasses the private sector and academia.

Policy 2: Adoption of the Laissez-faire Model: collaboration exists among the three actors, where the private sector drives both academia and government.

Policy 3: Adoption of the Hybrid Model: collaboration exists among government, academia, and private sector, where they interact interdependently.

7. Advantages and Disadvantages of Each Policy Option

Policy	Description	Advantages	Disadvantages
1	Adoption of the Statist Model: collaboration exists among the three actors, where government encompasses the private sector and academia.	- Provision of services not offered by the private sector - Regulations - Rule of law - Accountability	- Lack of open relations and discussions concerning entrepreneurship ecosystem - Suppression of pioneering spirit among young and talented startups that lack experience and money - Limitation on the role of academia and private sector to a very small extent - Lack of R&D, spinoffs, and innovative centers

			- High restrictions on investment - Very complex, bureaucratic procedures - Lack of advanced technical capabilities - Lack of nexus approach toward entrepreneurship
2	Adoption of the Laissez-faire Model: collaboration exists among the three actors, where the private sector drives both academia and government.	- Incentives to innovate and make profit - Market needs satisfaction - Flexibility and autonomy from government bureaucratic procedures and regulations - Investment increase - Lack of taxes	- No benefits from research done by academia - Competitional economic scale - Lack of infrastructure - Lack of R&D and spinoffs - Lack of a set of skills and talents - Lack of nexus approach toward entrepreneurship
3	Adoption of the Hybrid Model: collaboration exists among government, academia, and private sector, where they interact interdependently.	- Opened discussions and relations - R&D and spinoffs	- Accountability issues - Lack of accurate supervision

		- A holistic set of skills and talents - Incentives for young startups - Technological advancement - Cooperative spirit - Nexus approach toward entrepreneurship - Economic growth - Capitalization of knowledge - Entrepreneurship-friendly environment	

Table 10

Title: The Advantages and Disadvantages of the Three Suggested Policy Options

8. Recommendation:

Policy Option 3 is recommended with efforts to clearly understand the role of each actor as well as set an applicable relation among them.

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