
# A Study of the Business Model of Pharmaceutical Companies in Syrian Arab Republic

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MASTERS OF SCIENCE
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# A Study of the Business Model of Pharmaceutical Companies in Syrian Arab Republic

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**To the great people of Syria…**

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## ABSTRACT

This Study was designed to learn more about the type of business model adopted by the pharmaceutical companies in Syria as per recorded before January 2011. This industry is undergoing rapid changes and an understanding of key issues in the business model as a principle and the pharmaceutical business model in depth could prove very valuable for researchers willing to explore new approaches to this field of industry.

The results found in this study indicate that the business model of the pharmaceutical companies in Syria is considered dynamic and interactive with the surrounding environment. Moreover, the results showed that the studied business model is entitled to the pharmaceutical industry only because of the kind of interconnections with the outer community which they distinguish this business model from its peers.

Finally, it has been illustrated that the business model of pharmaceutical companies in Syria can be generalized on other companies located in the Middle East because of the similarities occur based on many aspects, especially the economic situation.
Data were collected from 47 companies based in Syria and subject to limitations as stated later in this research. All analyses were done through Microsoft Excel 2010 to sort, analyze, and classify all companies based on their profiles in terms of determining the exact position on the business scheme.



**Key Words:**

Syria, Pharmaceutical Industry, Business Model, Value Creation

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## DEDICATION

I would like to dedicate this work of two years of growth, learning, and experience – of course with periods of stress and pressure – to my family, starting with my respected father **Dr. Mohamad Yasser Kassab, M.D.** for his tangible and intangible assistance during the whole period of my study, in addition, my mother **Mrs. Rana Al-Yafi** and three sisters; **Hala, Sana, & Lama**, who surrounded me, even in the long distance, with love, care, and emotions. I admire the tolerance and support you have given me for my postgraduate study and for myself. I wish all of you a blessed, successful, and luxurious life.

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Lastly, to the memory of my grandfathers and grandmothers from both sides, I wish I had the chance to have you with me at my beautiful moments.

**Table of Contents**

## List of Tables

## List of Figures

## LIST OF ABBREVIATIONS

CEO – Chief Executive Officer

EC – Electronic Commerce

FIPCO – Fully Integrated Pharmaceutical Company Model

FMCG – Fast-Moving Consumer Goods

GPT – General Purpose Technologies

HR – Human Resources

J&J – Johnson and Johnson

KSA – the Kingdom of Saudi Arabia

MNCs – Multinational Companies

OEM – Original Equipment Manufacturer

R&D – Research and Development

RCOV – Revenues, Costs, Organization, and Value

SMEs – Small and Medium Enterprises

UK – the United Kingdom

USA – the United States of America

# CHAPTER ONE

# INTRODUCTION

## 1.1 Background of the Study:

### 1.1.1 Business Model Review:

Business Model has become one of the controversial topics within management world despite being used since the early eighties of the last century. In its simple aspect form, business model refers to how companies do business. However authors were uncertain about the knowhow of differentiating between company's strategy and the business model itself. Hence researchers' definitions were varying cautiously on an established link between the business model for a company and its strategic plan. That is why after a long argument between the scholars, they have approached recently to a semi-agreement to recognize the business model based on four main attributes which are; Value Creation, Strategic Investment Options, Value Network, and Value Capturing.

According to the value creation principle, it has become recently one of the essential concerns for authors as well as companies' directors. The belief has been redirected to the ways that create value for companies instead of focusing on profits as these values are interconnected with profits in a chain containing more features to the companies. This chain includes, beside value creation, social responsibility, employees' satisfaction, employees' affiliation, company's reputation and profits indeed.

### 1.1.2 Business Model and Management Activities:

Business model is considered the structure or the framework that is adopted by the management in terms of achieving company's goals over the long run. From this aspect, business model should be interconnected and integrated with management functions and activities in-between the internal departments. This possible integration will determine the form and the limitations of the business model in all departments starting from the R&D and ending with finance.

For over the last ten years, scholars had the chance to face up with business model in their writings, regardless the discipline that they were writing on. We can see clearly how researchers were writing on marketing related cases when they had mentioned how companies create value and for whom, how companies position themselves in the market, how companies made profits and considers the growth rate, and other internal advantages and competencies within the company.

Furthermore, business model has been connected to R&D as well as innovation in a closed linkage as these two practices are able to determine the business model structure. Especially the R&D function and its reliability, it places the company in the business model that suits the company depending on its level of development. For instance, there will be a clear gap between a company following the product business model focusing on little number of products, and a company having efficient technology to introduce categories of products within its supply chain.

### 1.1.3 Pharmaceutical Business Model:

Business model is a generic term and could be implemented in all industries including the strategic ones. Pharmaceutical industry is considered as one of the most important strategic industries because of its essence in terms of the used high-technology in R&D and facilities as well as the assets value. All researches and papers that we have read through were classifying the business models for pharmaceutical companies into four entities which are; Vertical Business Model, Product Business Model, Platform Business Model, and Hybrid Business Model.

Vertical business model refers to companies that facilitate a fully interconnected chain of activities and they are in charge for all activities serving their products, such as R&D, manufacturing, and other marketing practices. While the product business model belongs to companies whom are concentrating on commercializing by selling their products more than their concentration on the level of innovation and clinical and pre-clinical research. On the other hand, platform business model includes all companies which are involved in a well-established technological base with the ability to introduce

subscriptions and licensing for other companies, but with limited margins of profits. Lastly, the hybrid business model helps companies to serve a wide category of products because it is a mixed-model between the product business model and the platform business model.

### 1.1.4 Pharmaceutical Industry in Syria:

Syria has proven its ability as a promising industrial market besides other developing Middle Eastern countries such as Saudi Arabia and Egypt. Because of its diversified economy which relies, for national revenues, on industry, trade, agriculture, and tourism, it has been ranked in top ranking countries in lists of specific industries.

For instance, Syria has been given the fifth rank on the list of olive oil with an average of 5.6% of the global production, for the period 2008/2013, after Spain, Italy, Greece, and Tunisia (The International Olive Oil Council, 2013). Besides that, Syria has gained her seat on the international world rank for textiles, food processing, and pharmaceutical industries.

For over two decades of sanctions and uncertainty in Middle Eastern countries, Syria has been affected closely by all those unstable situations. Companies such as pharmaceutical were under tough position as they were solicited to introduce their products to the local market because of the lack of imports from other countries. They succeed to implement modern and up-to-date technologies to manufacture a wide range of drugs and vaccines for human and animals. In early 2000's, Syrian pharmaceutical companies started to export their products widely to neighboring countries as well as Asian and African countries.

## 1.2 Problem Statement:

Previous works on pharmaceutical business model were taking into accounts the theoretical overview of the science, ignoring any opportunities to generalize the business model on all available industries or the same industry among many countries.

At the same time, despite the stable growth of the pharmaceutical industry in the Middle East in general and Syria specifically, no one had conducted any research or published any article regarding the noticeable improvement of this industry in this part of the world. Meanwhile, many authors had come up with various types of business models regarding the pharmaceutical industry in the United States, European Union, China, and India. This thesis will introduce an overview on the current status of the development approach of pharmaceutical companies in Syria before 2011, except the practice adopted by these companies in terms of creating values and other growth.

## 1.3 Research Questions:

Basically, in terms of clarifying the business model that would be adopted, this study will answer the following research questions:

A. What could possibly be the business model of pharmaceutical companies in Syria?
B. Could the proposed business model be considered static or dynamic?
C. Is this business model consistent with the economic and business environment in Syria?

## 1.4 Research Objectives:

This thesis has two types of objectives which are the Academic Objectives and the Practical Objectives listed as follows:

### 1.4.1 Academic Objectives:

A. To determine the pharmaceutical business models which are adopted by the Syrian pharmaceutical companies within a period from 2000 to 2010;

B. To introduce a comparison between the possible pharmaceutical business model among the Syrian companies and other pharmaceutical business models adopted by other companies from different parts of the world; and
C. To inspect the possibility of generalizing the pharmaceutical business model in Syria to other Middle Eastern countries which are involved in pharmaceutical industry?

### 1.4.2 Practical Objectives:

A. To clarify the exact situation of Syrian pharmaceutical industry as a sophisticated field in the regional market by revealing the export data; and
B. To enhance the efficiency of Syrian pharmaceutical companies by giving them a transparent analysis on their performance in terms of improving their quality on both local and international markets.

## 1.5 Significance of the Study:

Regarding the improvement happened over the last decade within the pharmaceutical companies in Syria comparing to their peers in the region, we have got the urgency to shed the lights on this industry in Syria in terms of stabilizing its advantages and solve all disadvantages faced by these pharmaceutical companies.

This study will take a place in the period before 2011, when the domestic circumstances started to change in all aspect, as this situation impacted the industry's growth and affected the way companies do business.

In terms of setting on the business model for an industry, many factors will be considered both internally and externally. So we will take into account to get clear views from the exact decision makers in these companies, positioned in the senior-level management in the hierarchy to insure assembling real and genuine spotlights on this industry in Syria.

The essence of this study will be achieved when these decision makers realize the importance of acknowledging the business model for their companies as well as their competitors, by defining and detailing the strengthens to maintain and improve them, and to create solutions for weaknesses and dilemmas that they confront, in terms of increase the profitability and the reliability for these companies.

## 1.6 Scope of the Study:

This study will take a place within the pharmaceutical companies which are involved in manufacturing medicines and vaccines for human usages only. Other types of biotechnological companies such as agricultural and veterinary vaccines will not be included. However, these companies should be headquartered in Syria; even they own other subsidiaries overseas or operate in neighboring countries, as this thesis will cover the implementations and outcomes in accordance with the Syrian business environment. The study may check related issues such as governmental legislation and tax policies. That is why there exists the possibility of generalizing the outcomes of this thesis to other pharmaceutical companies in the region.

Among this type of biotechnological companies, all departments will be basically participating, depending on the quality and quantity of data. However, there is the need to assemble and the need to collect more detailed statistics from those departments. For instance, human resources department will be able to provide more specifics on the employees' number, their specialties, and the reasons for their turnover, if any. On the other finance department is the most specialized party for disclosing accurate figures upon the market share, sales volume and the annual revenues, to determine the profitability across different business models.

This study will exclude any data on financing and funding resources or any other pricing policies to avoid expanding in an ultimate frame which it is related to finances issues more than its connection with the business model as an essence. And so on, the study

will not contain any marketing strategies as the aim of to approach the form of the pharmaceutical business model.

## 1.7 Organization of the Study:

This thesis comprises five chapters to introduce the topic and grading the content included in Introduction. This is followed by the Literature Review, Research Methodology, Data Analysis and Results, and Conclusion and Recommendations.

### 1.7.1 Chapter One:

Chapter one contains seven main sub-headings to give a clear overview of the topic to introduce the upcoming chapters. This chapter starts with a background of the study which it contains four topical areas, starting from a review on the business model as a science, and then presenting the interconnection between the business model and other management activities. The third topic discusses the pharmaceutical business model, and finally the pharmaceutical industry in the Syrian Arab Republic.

Next, this chapter addresses the problem statement, which discusses the main issues of the study particularly related to the context of business model. This part also deals with the population and hence, the sample of pharmacies that would be selected to carry out the impending survey. Furthermore, the third point in the introductory chapter highlights the research questions, of which this study will deal with comprehensively.

The fourth research objective attempts to highlight both academic and practical implications of the study. This part assists in developing a list of specific information on the needs that urge the author to work on the problem stated earlier.

The significance of the study takes the fifth sub-heading in this chapter; concentrating on the benefits given to the companies they are willing to share their business experiments on the way they do business and its reflections on the community that they are located in. Meanwhile, the sixth point as the scope of the study is related to the antecedent point

since it highlights the limitations of the study and the exceptions should be avoided. Lastly, an organization of the study will draw the main frame that the study will be located in.

### 1.7.2 Chapter Two:

This chapter includes the potential studies which they have been conducted by the authors for the recent period before this study is done. We read and understood all the articles which we introduced here, trying to generate and pertain a sufficient overview to the reader regarding what have been done by scholars, mostly for the past few years, while it contains articles cited by many authors before as they are considered as the most important works have ever done to the science of business model.

The first part of the literature review contains a summarized brief about the business model from its theoretical side and the debate committed by the authors on the best way to list a definition for business model. Moreover, an overview about the business model takes its place after introducing to the business model's definition, which it covers the business followed by the pharmaceutical companies in many countries such as Germany, France, Netherland, Italy, Canada, and India. From this part, a comparison will be presented in later chapters to inspect whether the Syrian pharmaceutical business model is similar to its global peers.

Thirdly, briefed overviews from various authors will test the possible integration between the business model and other management activities such as marketing, innovation, and finance. This part helps the reader to understand the flow of business model on the company and how it affects other management activities and vice versa. Lastly, summing up the first three parts of this chapter to conclude what have been done besides our point of view for evaluation.

### 1.7.3 Chapter Three:

Research methodology represents the practical side of a study, as it contains the research framework that has been dominated by. It also includes the way that conceptual model

have been developed and the generated model of the conducted research. It gives, as well, a good picture about the questionnaire were distributed on the respondents and the chosen way of collecting these data. At the end of this chapter, a summary is provided to introduce to the next chapter for getting the required results.

### 1.7.4 Chapter Four:

This chapter presents the data that have been collected and data which were missed from the population. It inspects the overall response rate and whether this response were bias or not, in terms of analyzing the secured data and checking the reliability of them in accordance to many theories for reviewing the conceptual framework later on within this study. A brief will be presented on the analyzed data to clarify the research findings.

### 1.7.5 Chapter Five:

In the conclusions and recommendations' chapter, we discuss the results that we have obtained by conducting the research and the contributions that we have achieved on both theoretical and practical sides, to check whether this study attains the objectives that we placed earlier within the limitations surround this study.

# CHAPTER TWO

# LITERATURE REVIEW

The purpose of this section is to discuss the development with a sufficient overview of the recent history of Business Models and Global Pharmaceutical Business Models. Besides that, the possible integration between business model and diversified managerial incentives as profitability, market share and management activities. This review of the literature will provide a foundation for the research model of conceptual framework which are developed and evaluated in this thesis.

## 2.1 Introduction to Business Models:

During the past few years, many authors attempted to define the term Business Model depending on different points of view, and to reflect each background and the field of business, which they belong to. Chesbrough (2007) referred the benefit of his definition, which contains six parameters that each single parameter can demonstrate where innovation may create new value in the industry (Chesbrough, 2007). These parameters are:

1. Articulate the value proposition, that is, the value created for users by the offering.
2. Identify a market segment, that is, the users to whom the offering is useful and for what purpose.
3. Define the structure of the value chain required by the firm to create and distribute the benefit, and determine the complementary assets needed to support the firm's position in this chain. This includes the firm's suppliers and customers, and should extend from raw materials to the final customer.
4. Specify the revenue generation mechanism(s) for the firm, and estimate the cost structure and profit potential of producing the benefits, given the value proposition and selected value chain structure chosen.

5. Describe the position of the firm within the value network (also referred to as an ecosystem) linking suppliers and customers, including identification of potential complementors and competitors.
6. Formulate the competitive strategy by which the innovating firm will gain and hold advantage over rivals.

Moreover, Teece (2010) also created another definition for Business Model, but it was supported by his overview about how to design the model correctly, figuring out, implementing and refining commercially applicable structure for revenues and costs. He added that it is much a significant and continuous matter to keep the business model viable. Teece said there was no place for business models neither in economic theories nor the business studies as the authors missed its essence about the industry system because it is not potential to capture the value because value does not have to be captured. He discussed later that organizational forms can be an entity of business models, but they cannot be business models themselves. Hence, the study of business models is an interconnected topic which has been neglected despite their essence (Teece, 2010).

Authors such as Casadesus-Masanell and Ricart (2010) contributed an article separating the two close thoughts on business model and strategy. They corrected many previous scholars about the integration that occurred in their writings between business model and strategy and they observed that the business model is definitely interconnected to strategy, but each heads to a block. However, they concentrated on the business model and how it is related to the realized strategy of the firm, despite it is pretty difficult to separate between the two notions in terms of one-to-one mapping which it appears in some competitive situations. In the opinion of Casadesus-Masanell and Ricart (2010), any outbound observer can look and understand the firm well by looking to its business model because the business model give this reflection about how the company works.

The field where there is quite an integrated notion of business model and strategy is crucial that one should be aware of the difference between these two perspectives and when we can use any of them correctly. Magretta, (2002) wrote about this field, trying to shed light on how business model and strategy had converged. According to Magretta, business modeling is the managerial equivalent of scientific method as we start with a hypothesis then testing it into actions with revision when necessary (Magretta, 2002). In her case study, she emphasizes on how executives and managers use both terms business model and strategy interchangeably even if they do not refer to the same thing. Dell and Wal-Mart were her case studies, in both, the experience to use any concept of business model or strategy is becoming more qualified since both definitions have many practical values.

Again, other authors defend the point of "Lack of Definitions"; including Johnson, Christensen and Kagermann (2008). In spite of that, they introduced their own definition for business model. The contribution comes from various four interlocking perspectives which are; Customer value proposition, Profit formula, Key resources and Key processes. They supported their idea with more classifications when they mentioned that Customer value proposition and Profit formula define value for the customer and the company, while Key resources and Key processes describe how that value would be delivered to the customer and the company. So on, they pointed out the consistency between these four elements which it should be as much as stable to guarantee success for the company, and any major change would decrease the efficacy of that company due to changes in the four-element complex (Johnson, Christensen and Kagermann, 2008).

Shafer, Smith and Linder (2005) likewise joined others seeking a definition which it can be generalized to all fields to use it for the term of business model. Even they introduced a well-known literature from many works; they contributed their own definition as an attempt to be integrated and synthesized from that previous literature then contrasting the business model with strategy as well. Besides, they added another principle for their definition that it should be understood, communicated and remembered. Shafer et al.

(2005) structured their definition on four keys; strategic choices, value network, value creation and value capturing. They believe that their business model can be useful for executives to analyze and communicate their strategic decision, as well as for companies to succeed in the marketplace (Shafer et al. 2005)

Another exploration for value creation in e-business was done by Amit and Zott (2001). In terms of defining the business model, they examined how value is created by 59 American and European e-businesses, which have been publicly traded. They created a model which suggests that the value creation potential of e-business depending on the following four elements; efficiency, complementarities, lock-in, and novelty.

Besides, Amit and Zott (2011) refer their definition of business model to included theories of strategy and entrepreneurship and it is consistent with structure, content and governance. To face the arguments arising from drawing the business model, they propose to complement the value chain perspective by concentrating on processes that enable transactions. That is, a business model does not follow the flow of a product from creation to sale, but describes the steps that are performed in order to complete the transactions. They noted that each business model belongs to a particular company. It means that how we can isolate any business model and referring it to a specific company. "The business model as a unit of analysis has a wider scope than does the firm, since it encompasses the capabilities of multiple firms in multiple industries" (Amit and Zott, 2001).

Osterwalder and Pigneur in (2010) wrote the Business Model Generation based on the analyses of 470 experiments from 45 different countries globally. The business model concept has been argued to be a relatively new and potentially powerful concept in Strategic Management literature. They defined the business model as follows: "A business model describes the rationale of how an organization creates, delivers and captures value" (Osterwalder and Pigneur, 2010). They argued that the distinctiveness of a business model is to provide the 'missing link' between strategy and tactics. An often emphasized and important element in this strategic–tactical dynamic is the customer

value proposition. However, presently, the academic research in respect of business models is not well developed with any commonly accepted view.

Osterwalder and Pigneur (2010) criticized other authors as none of the definitions appear to have been fully accepted by the business community. Consequently practitioners appear to be confused about how to use the concept. An explanation for the lack of an accepted view of what business model is as discussed here.

In the next table, a selection of different definitions for the term business model is provided to compare the concept across different scholars.

**Table 2.1 A Selection of Business Model Definitions**

| | |
|---|---|
| Amit & Zott, (2001) | A business model depicts "the content, structure, and governance of transactions designed so as to create value through the exploitation of business opportunities". |
| Afuah, (2004) | "A business model is a framework for making money. It is the set of activities which a firm performs, how it performs them, and when it performs them so as to offer its customers benefits they want and to earn a profit". |
| Shafer et al. (2005) | A business model is "a representation of a firm's underlying core logic and strategic choices for creating and capturing value within a value network" and it is this core logic for creating and capturing value that is the basis of a business model. |
| Zott & Amit, (2007) | "A business model elucidates how an organization is linked to external stakeholders and how it engages in economic exchanges with then to create value for all exchange partners". |

| | |
|---|---|
| Chesbrough, (2007) | "At its heart, a business model performs two important functions: value creation and value capture. First, it defines a series of activities, from procuring raw materials to satisfying the final consumer, which will yield a new product or service in such a way that there is a net value created throughout the various activities". "Second, a business model captures value from a portion of those activities for the firm developing and operating it". |
| Johnson et al. (2008) | A business model "consists of four interlocking elements that, taken together, create and deliver value". These four interlocking elements consist of "customer value proposition", "profit formula", "key resources" and "key processes". |
| Osterwalder & Pigneur, (2010) | "A business model describes the rationale of how an organization creates, delivers and captures value". |
| Teece, (2010) | "A good business model yields value propositions that are compelling to customers, achieves advantageous cost and risk structures, and enables significant value captured by the business that generates and delivers products and services". |

To sum up, and based on the above table, we indicate that how authors were shedding the lights on the business model along with describing its core of creating and capturing the value. However these definitions are diversified, but yet most of them describe the business model from a different aspect. Therefore, simplifying the definition is preferable in order not to converge with the strategy.

## 2.2 Pharmaceutical Business Models:

A wide variety of recent studies on the pharmaceutical business models have been reviewed. Case and empirical studies are included as well, trying to give a well-explained literature about what is going on within the business model area from different parts of the globe.

PricewaterhouseCoopers played the starring role in the pharmaceutical field with their ground-breaking studies series Pharma2020. In the study, they classified the business models into two different classes namely, Federated Model (collaborative) and Full Diversified Model (owned). The federated business model gives a scope of founding merged sets of products and services, with a combination of experience and size. It enables each entity to build a specific area of expertise, establish a competitive advantage as a result of that expertise and sell its products, knowledge or skills, leaving activities that are better performed by others to its partners within the federation. (Cooper, P. W., 2009).

However, the federated model has two types which are; Virtual Variant and Venture Variant. In the virtual variant, mostly all company's operations and processes are through outsourcing and the aimed company acts as a hub, instructing the activities with its partners.

Many firms from different fields adopted this model, for instance, semiconductors, medical devices, besides some strategic industries as aerospace and computers. There are good reasons for pharmaceuticals firms to adopt the virtual variant. Firstly, to take the advantage of managing the value-added functions where it can influence its profits, market share and developing the business. Moreover, this model enables the firm to reduce the initial capital for starting business with converting the fixed costs into variable costs, utilizing resources more efficiently and being more flexible. As by converting the fixed costs into variable ones assist the firm to reduce the static amount of costs which belong to assessments in the budget. Hence, it gives the opportunity for

directors and managers to expand more in the pharmaceutical products series, based on costs reduction. This model has been criticized for being more theoretical, since it assumes that outsourcers are in a static environment where they do not confront any accidental issues as finance, quality and production procedures. This criticism is understandable as the usual business atmosphere is subjected to be fluctuated with both up and down curve trend.

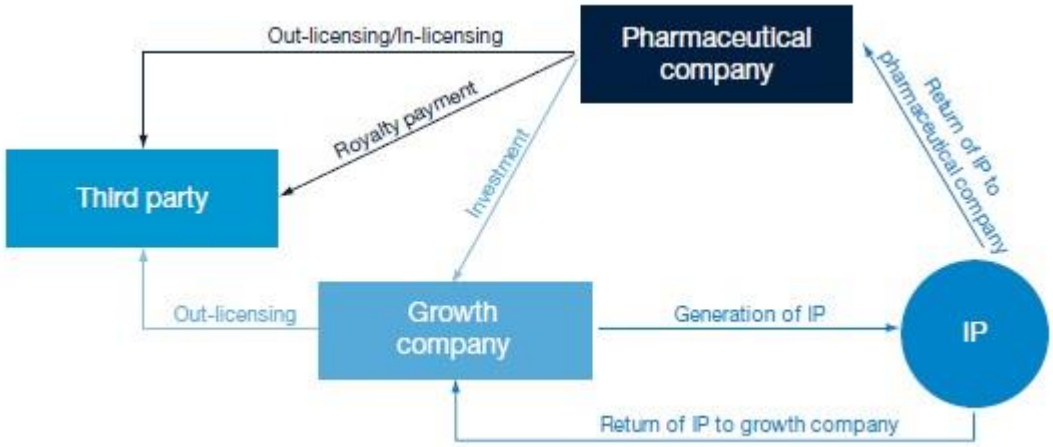
**Figure 2.1 The Virtual Variant of the Federated Model**


**Source: Pricewaterhouse Coopers (2009).**

The other type of the federated model is the venture variant. It requires investing in a portfolio of firms to share intellectual assets and generate a capital growth rather than outsourcing various tasks. Any pharmaceutical firm may choose this model either to specify its operations on single therapeutic area or to spread them into different areas to minimize the risk. At the end of the investment period, the firm can sell the intellectual assets, which it has been in collaboration.

However, the venture variant has many challenges. Firstly, managing a portfolio of firms is an advantage by itself, as the venture capitalists use to realize a return. Secondly, any firm that operates a large corporate venture capital fund alongside its own research portfolio would have to consider the financial implications very carefully, as it affects the taxation policy and the value of the stock market. Similarly, if a company's risk profile increases because it has less control over research that is conducted outside its own walls, its cost of capital will increase.

**Figure 2.2 The Venture Variant of the Federated Model**



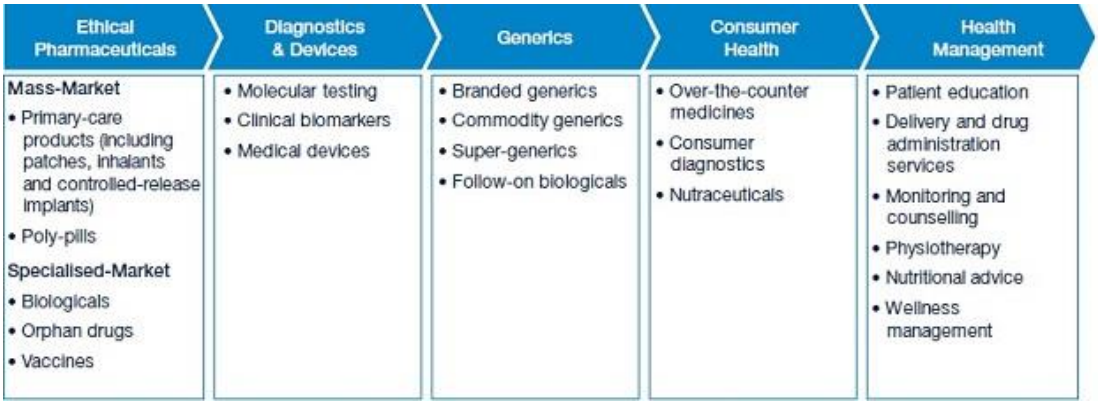

**Source: Pricewaterhouse Coopers (2009).**

Last but not least, the article (Pharma2020, Challenging business models, 2009) of PricewaterhouseCoopers classifies the last pharmaceutical business model as the Fully Diversified Model. The fully diversified model is one in which a company expands from its core business into the provision of related products and services, such as diagnostics and devices, generics, nutraceuticals and health management.

The most significant merit of this model is that it enables the firm to reduce the dependence on blockbuster medicines, and distribute their products chain on other market space. Besides, it pushes in a way to be well equipped to face all possible vitals. It provides a package of service\product as well as the federated model in terms of

concentrating on the prevention rather than treatment. Lastly, it offers opportunities to get more sophisticated brands and to acquire a better company's overview.

**Figure 2.3 The Fully Diversified Model**




**Source: Pricewaterhouse Coopers (2009).**

The term pharmaceutical business model is considered as a key to open a wide flexible field to work and explore in. Gilbert, Henske and Singh (2003) have studied the blockbuster pharmaceutical business model that has been common used in 1990's and a decade later. They declared that the pharmaceutical industry was sieged by its successful past, while the business environment kept moving dramatically and the business model lost its shine. The pharmaceutical business, as any other industry, will confront changes and shifts during the business model transition which it is not easy.

The big pharmaceutical companies will not ignore the blockbuster business model easily, as it served these firms for many years. Gilbert, Henske and Singh (2003) introduced the blockbuster model which comprises four fully-integrated blocks.

A. **Shift from opportunistic to focus**: each company created one blockbuster from R&D activity to focus on one fully therapeutic area. This has led the pharmaceutical companies to invest in both R&D activities and pushing up their sales and marketing curve;

B. **Shift from a fully integrated pharmaceutical company model (FIPCO) to using partnerships to manage risk and return:** currently most companies use FIPCO model, but each company going on its own research and development, manufacturing, marketing and sales activities. Most of pharmaceutical companies ought to outsource functions that are not form the core of its business, such as IT and manufacturing. With outsourcing, partnerships should be improved to assure commercial productivity especially in accessing primary care physicians.

C. **Shift from science-driven provision of specific drugs to providing customer solutions**: from an historical point of view, the pharmaceutical industry was based on selling the products that address the disease but not to cure it. The reason is that the high profitability drugs ascertain while they lead to the increase in investment they should also be directed to maintain the already existing franchises or discovering new blockbusters. However, declining the blockbuster business model argues that this aspect may no longer be valid. Within the next few years, the product itself will retain the profit, but the industry in all will be expected to view more shifts in the profits as shifts in the computer industry have been directed to features services; and

D. **Shift from a functional to an integrated business organization model:** big pharmaceutical companies used to operate in one functions line as stages. Each unit to work in its atmosphere starting from the R&D activities till the marketing processes and competing with other units in related functions. According to the grow trend, big firms have started to follow be decentralized as well as big technological companies as Dell and General Electric. Indeed this integration will give the benefits of being competitive by developing pharmaceutical innovation cycles as well as fulfilling the market requirements of the quantity and quality.

Chesbrough (2010) conducted a research collaborating with Xerox to examine deeply the surrounding environment involving around 35 different projects in 5 laboratories owned by Xerox around the world. Xerox's business model in the early 1980's was related to the number of copies their customers print more than the significance of printers' sales. So, they started to modify the business model by developing a new generation of printers can print ever-faster to fulfill the market demand and to approach an advanced stage of profits. That is what Chesbrough refer to as Business Model Innovation.

However Xerox is not a pharmaceutical firm, Chesbrough sees in this study that pharmaceutical firms' business model is in a real crisis as this business model is not innovated yet to fit the new markets' needs. He added that some of the chemical firms, including pharmaceuticals, did spend on their R&D activities for developing new drugs in terms of generating the modern business model after the era of blockbuster model has vanished. Furthermore, Chesbrough appended in a part an experiment of Johnson & Johnson with developing a Velcade drug regarding the changes should be implied for business model innovation as Johnson & Johnson introduced their Velcade to the European health ministries in a conditional deal which is; if the new drug does not impact 90% of their patients, the ministries need not to pay for it (Chesbrough, 2010).

Walters (2004) introduced a brief regarding the contributions and changes occurring which they are impacting the strategies, structures and management styles in the New Economy organizations. Included in this brief, Walters referred to an article of David Champion in Harvard Business Review which was an interview with Mark Levin, the Chief Executive Officer of Millennium Pharmaceuticals. Levin stated that value has move of downstream to the mechanical tasks of identifying, testing and manufacturing molecules used in the end of this shift as drugs they produce. So, Millennium Pharmaceuticals has expanded in these downstream activities across major products (Champion, 2001).

Walters, according to Levin's overview, to achieve Millennium's goal for being pioneer company, which is delivering health care attached with the genetic profile for each patient. That requires an expanding in alliances and partnerships models that have

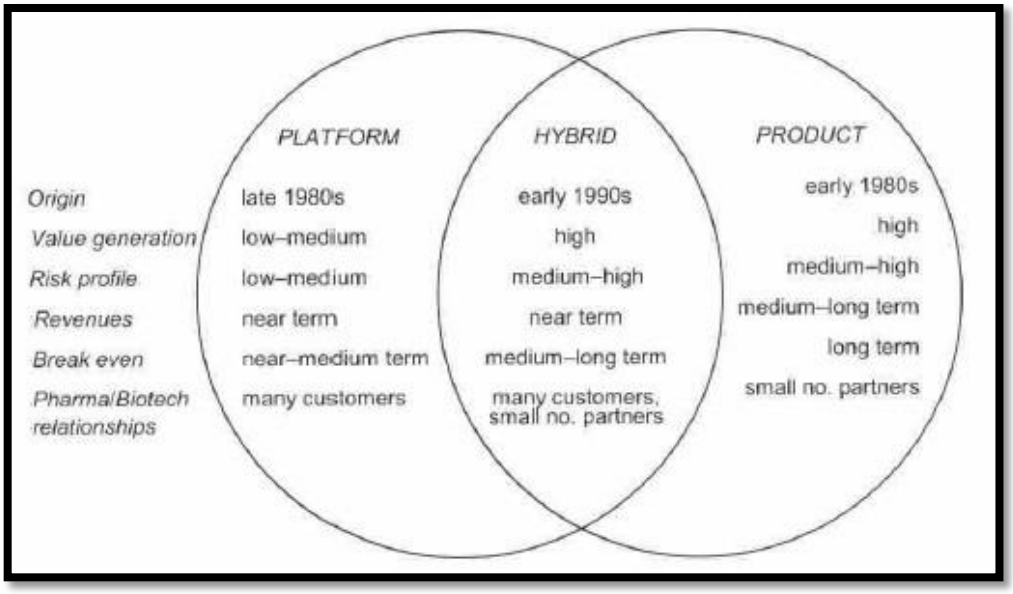
known to be successful. This partnership has started as a contract researcher with Millennium's string ability for R&D activities. Later on, this partnership has become a 50\50 ownership with an immense category of products. According to Levin, Millennium's CEO, the huge investments require $2 billion to $5 billion as R&D activities, that are encouraging the mergers and acquisitions where the small or individual companies lose their identity (Walters, 2004).

Compared to other parts of the world, the biotechnological companies in Europe were the entrepreneurs for prescribing their business model. Fisken and Rutherford (2002) captured a scene regarding the used business models among the European companies. To them, Genentech, Inc. was the first firm founded with a fully-integrated business model for pharmaceutical company (FIPCO) in 1976. For that era, the uses of the vertical integrated model was a sequence as firms were managing and coordinating the full chain of processes. So, Fisken and Rutherford classified the business models into three main classes which are (see Figure 2.3); Product Business Model, Platform\Tool Business Model, and Hybrid Business Model (Fisken & Rutherford, 2002).

A. **The Product Business Model:** this business model is generated from FIPCO which involves in a chain of product processes, in either for licensing products to other pharmaceutical companies or when the company gets a free cash flow in high advancement level to take these products out for markets. The assumed period for companies to reach this model is 10 years at the minimum.
B. **The Platform\Tool Business Model:** companies have started to use this model in the late 1980's. So that makes it relatively modern compared to the previous one. European companies use this business model as a need to compensate the lack of financings and to get short-term revenues similar to their consorts in the United States. The main core of this business model is the highly-advanced technological tools used for licensing, prescription and servicing other companies' drugs. The risk level of this model is basically lower than product business model.

C. **The Hybrid Business Model:** this model combines the product and platform business models into one by moving downstream for using the advanced technology in manufacturing a pipeline of products, or to license these products to other companies. The issue here is that moving forward to this business model is attached with many difficulties as timing and management skills. It is considered to suit pharmaceutical companies that aim a strategic partnership or collaborating with another biotechnological company in terms of competition and development.

**Figure 2.4 The Convergence of European Biotechnology Business Model**




**Source: Fisken & Rutherford (2002).**

March-Chorda and Yagüe-Perales (2008) conducted an empirical-based qualitative research in 2008 on the Canadian bio-pharmaceutical firms in Québec, Canada, working on determining the business model used among these firms. In their survey, they explored the four keys which they proposed in their literature as; Value Creation, Investment Strategy, Business Strategy, and Success Factors.

A. **Value Creation:** among the scanned bio-pharmaceutical firms, 90% were at the small startups level, while 8% of them were at the last phases of the development

and only 2% of the firms were at the harvest level. March-Chorda and Yagüe-Perales claimed that within the fluctuated path of biopharma milestones, which is full of difficulties, only less than 5% of the companies in the startups level can approach the harvest level where they can start to pick the valuable outcomes. Value is usually created when the firm starts to announce about their research advancement. Then more value will be gained during the preclinical and clinical tests besides obtaining all the agreements from authorities to start the marketing process for the product itself. Finally, once the product is ready to be spread-out for crowds, the value will be climbing dramatically.

B. **Investment Strategy:** in bio-pharmaceutical industry, the most resource-consuming stage is the clinical stage which takes 60% of the resources, while the other 40% goes to the previous stage. At the same time, all medium-sized companies will become public-listed companies as they need to pass the diversified development stages. These companies are looking forward for the short-term funding for rapid return. The immense problem with funding capitalist that they are looking to be profit-driven with strict deadlines to ascertain their return. However, it has been suggested to the funders to give more attention to the technical assessment to assure the path that their funds go in.

C. **Business Strategy:** authors have showed that Canadian companies relied on the "One-Product" strategy to start their business. Recently, it was discovered that the strategy also starts with investment strategy, but will change to be pipeline products. This strategy means getting many prospective products but to be chosen one after another. However, new strategies have come up to the surface through the conducted research which are; timing; bio-pharmaceutical industry is high-risk industry, immense return on investment, and lasts for a long period comparing to other fields of industry. Funding by the shareholders or others does not necessarily create sufficient awareness regarding the technological advancement that is brought to the market. Lastly, Authorization and Regulations; as every country has its own rules for licensing new products in the

biopharma companies after inspecting the level of quality and efficiency of new drugs before distribution.

D. **Success Factors:** in this research which it was conducted by March-Chorda and Yagùe-Perales (2008), the findings show that the surveyed population listed the six main keys in term of being successful as follows:

1. Human resources management
2. Partnering and networking strategy
3. Core business and loyalty focuses
4. Awareness of technology
5. Management rules and regulations
6. Investment rules and conditions

On the other hand, Nosella, Petroni and Verbano (2005) conducted an empirical study on the Italian business model for all bio-technological companies which they include the pharmaceutical ones. They characterized the business model for this type of firms and provide an overview of the possible new business models. They introduced the vertical model which it involves in fully integrated organizational company with possibility to be merged in internal activities such as development, manufacturing and marketing planning. Companies which follow the vertical business model are able to set up both up and down flows which they are required for the creative activities as the R&D and commercialization and to cope with high-level risk in operation in terms of getting significant profitability and return on investment.
So that, Nosella et al. (2005), listed five different classes for biopharma companies as follow:

A. **Product Business Model:** this model concentrates on a chain of products by either licensing them or dumping them into markets in term of creating the value, even it has been considered as a risky model.

B. **Platform Business Model:** focuses on establishing a technological base for research and development activities for the drug manufacturing processes. The value is created by licensing; subscription and service fess come from using the technology which let the companies to operate in a moderate level of risk with lowering the profit margins.

C. **Hybrid Model:** combining the first two models to generate the hybrid model which it helps the companies for serving a wide category of products.

D. **Production Process Business Model:** companies in this model are highly involved in manufacturing activities for their own and for other pharmaceutical companies (outsourcing).

E. **Service Business Model:** this model reflects scientific activities that companies are in charge for, like research and development, chemical prescription, preclinical and other tests for other biopharma manufacturers.

**Table 2.2 Profile of the Biotechnological Companies (Pharmaceutical & Diagnostic)**

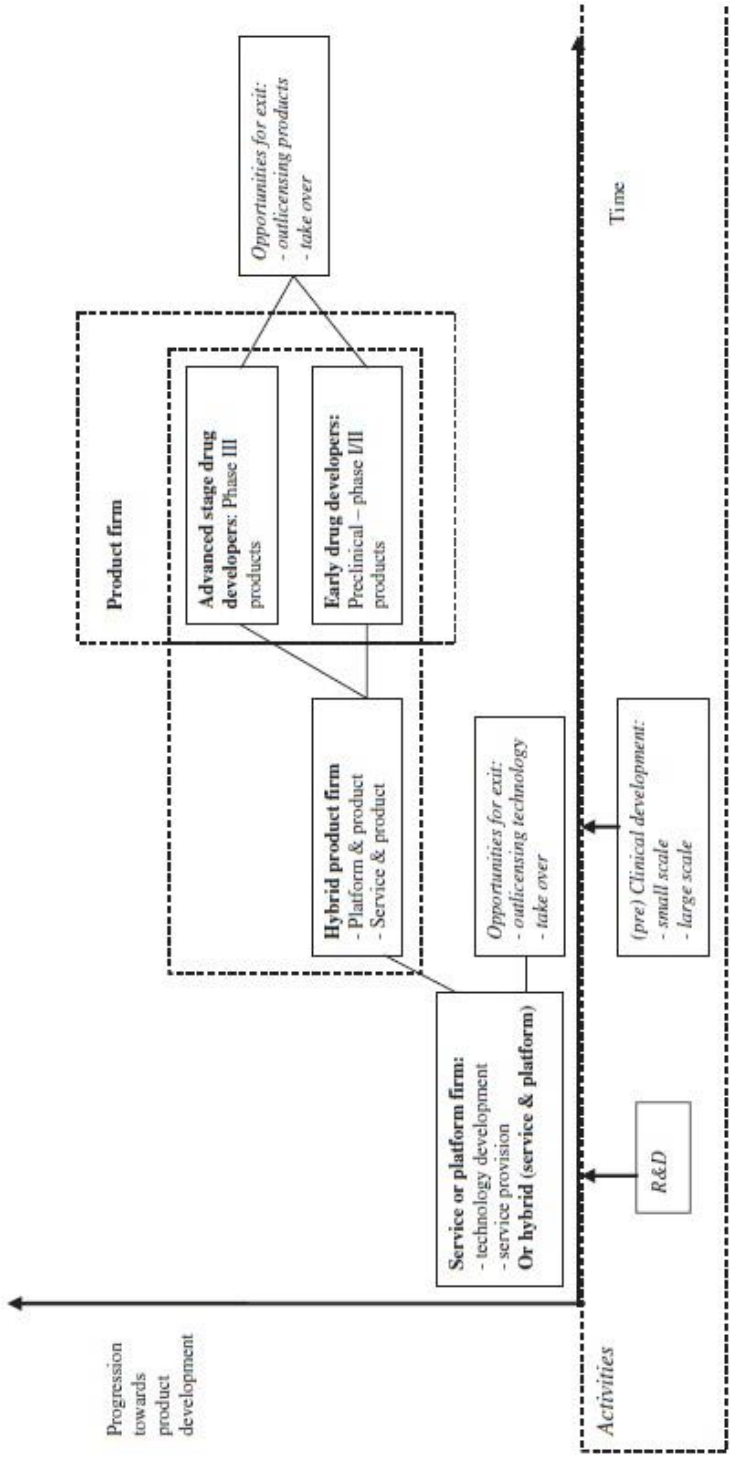
| Industry | Size | Age | Technology Type |
|---|---|---|---|
| Pharmaceutical | 50% up to 20 employees | 34% up to 5 years | New 10% |
| | 6% 21-50 employees | 28% 6-10 years | New & Traditional 71% |
| | 44% more than 50 | 38% more than 10 | Traditional 19% |
| Diagnostic | 75% up to 20 employees | 23% up to 5 years | New 17% |
| | 0% 21-50 employees | 30% 6-10 years | New & Traditional 62% |
| | 25% more than 50 | 47% more than 10 | Traditional 21% |

**Source: Nosella et al. (2005).**

Willemstein et al. (2007) conducted an expanded research among the Dutch companies where biotechnology is their core business. They started by exploring the possible sequence of the business model, following other authors and researchers in classifying the business models phases as; service, hybrid and product. Their survey was conducted among 106 Dutch companies then they attach four case studies with this survey to support their views. This survey includes transcription of the firms' age, number of employees, revenue generating activities and the shifts between different business models, if any. Results show that among the 80 firms, 19 firms aged less than 2 years to only 1 firm aged 15 and more. Furthermore, more than 50 firms had between 0 and no

more than 5 employees, while less than 5 have 50 employees and above. According to the authors, the product business model is the most predominant compared to service, platform and other hybrid stages. In terms of clarifying the reason, they relate between the business models themselves and the revenue generating activities which firms prefer to follow. A total of 23 firms quoted the revenue generating activities, results show that 21 of these firms are generating 89.5% of their profits out-licensing research products and selling research and end products.

**Figure 2.5 Possible Sequence of Business Model in the Dutch Biotechnology Firms**




**Source: Willemstein et al. (2007).**

It is obvious that Dutch companies were relying on the product business model in terms of generating bigger profits by outsourcing research contracting and selling end products for service business model companies. However, some of them adopted the hybrid product\service model to get the advantage of selling these products on their own.

Since the biotechnology sector is basically a high profile technology for big firms and SMEs, the number of newly established is significantly increasing. Mangematin et al. (2003) conducted a research among 60 French biotechnological SMEs identifying their business model. This group of firms were classified into two with Group A consisting of the ones with limited innovation projects, but capturing a bigger market share, while Group B includes the ones involved in immense research projects only. Results showed that there was a noticeable difference in many aspects between the above mentioned groups in revenue and expenses; even though they had entered the market almost at the same time. Generally, firms in group A were smaller than firms in group B in terms of the number of employees (10 and 30 respectively). Moreover, group A firms generate their revenue which it covers their expenses, especially the R&D spending, and grow more slowly than group B firms.

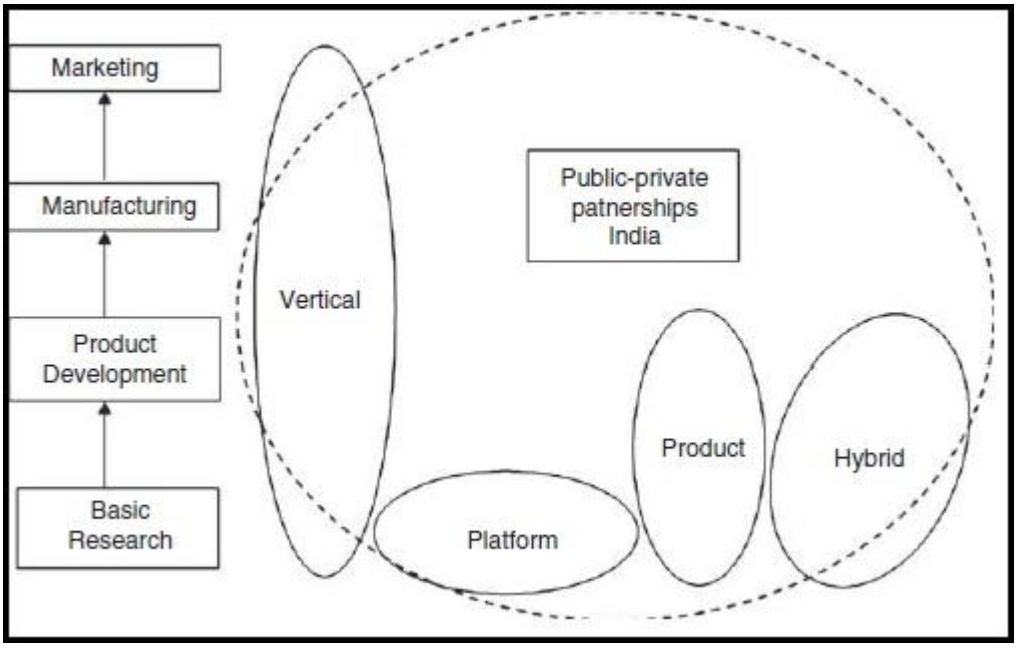
According to Mangematin et al. (2003), all group's A firms have similar financial status and well versed with a good growth rate as well as balanced accounting system, which is a huge duty especially in the early stages of the company before developing its products. Besides that, it is a difficult task to maintain a research team and most of these firms rely on one or two staff in the R&D functions. On the other hand, some of group B firms are remain at the beginning of their life cycle and they are extremely involved in the R&D activities without distributing products into the markets only. This explains the deviation in incomes among the research-based firms and the outsourcing contractors, which they are involved in direct selling (Mangematin et al. 2003).

Moreover, Konde (2008) described, starting from a business base, on the main three components forming a business model which are; Value Preposition, Value Chain Structure, and Revenue Generation. This field of industry is quite imposed by

innovation, which it helps firms to confront various types of difficulties, specifically the economic turns, despite of being characterized by an immense diversification.

Among twenty Indian companies Konde conducted the research on, seven of them were adopting the vertical business model, while six were involved in the hybrid business model, four firms adopted the product business model, and the other three were working in accordance with the platform business model (Konde, 2008).

**Figure 2.6 Biotechnology Business Model Based on the Value Chain Structure**




**Source: Konde (2008).**

This shows that 65% of the Indian biotechnological companies are involved in diversified functions along the chain from clinical and pre-clinical research, product development, renewable resources, besides contract research and activities for revenue generation. While the other 35% of the Indian companies had adapted with the basics of research and product development, with a limited improvement to advanced steps such as manufacturing and marketing activities.

## 2.3 Business Model and Management Activities:

This part shows the possible integration between the business model as aside and other management activities such as human capabilities, marketing, technological level, and the innovation, in terms of inspecting the direct impacts of adopting the business model for companies and the way to modify it frequently to clime the surrounding atmosphere.

### 2.3.1 Business Model and Capabilities:

Many companies failed because they always follow what is supposed to be the right thing all the time. That is why companies were asked to modify their business models rapidly to be adjusted with the economic fluctuations and the intensive global competitions among industries.

In this layout, Doz and Kosonen (2010) developed a three-dimension framework which they are able to change the companies' business models successfully. These three dimensions are respectively; Strategic Sensitivity, Leadership Unity, and Resource Fluidity. Strategic sensitivity refers to the power of comprehension with intensive awareness of the strategic development, while the leadership unity enhance the executive team performance to form clear and rapid decisions without being trapped within the top-management's uncertain policies. Lastly, resource fluidity sets on the inbound efficiency of the management to restructure the abilities and the available internal resources rapidly (Doz and Kosonen, 2010).

**Table 2.3 Accelerating Business Model Renewal: The Leadership Action Agenda**

| | |
|---|---|
| **Strategic Sensitivity** | |
| **1. Anticipating:** | Sharpening foresight<br>- Explore future usage concepts |
| **2. Experimenting:** | Gaining insight- Probing. Discovering 'lead locations,' innovation hotspots<br>- Local experiments, in-market tests<br>- Strategic and reflective use of corporate venturing |
| **3. Distancing:** | Gaining perspective<br>- Nurture an 'outside-in' perspective through a rich network of personal contacts<br>- Hearing the voice of the periphery |
| **4. Abstracting:** | Gaining generality<br>- Restating business models in conceptual terms |
| **5. Reframing:** | Seeing the need for business model renewal<br>- Engaging in honest, open and rich dialogue around strategic issues |
| **Leadership Unity** | |
| **6. Dialoguing:** | Surfacing and sharing assumptions, understanding contexts<br>- Explore underlying assumptions and hypotheses, not just conclusions, developing common ground |
| **7. Revealing:** | Making personal motives and aspirations explicit<br>- Transparency and clarity of motives brings mutual respect and trust, and understanding of positions |
| **8. Integrating:** | Building interdependencies<br>- Define a valuable common agenda that conditions success |
| **9. Aligning:** | Sharing a common interest<br>- Beyond incentives, give deeper common meanings |
| **10. Caring:** | Providing empathy and compassion<br>- Provide the personal safety needed to be playful |
| **Resource Fluidity** | |
| **11. Decoupling:** | Gaining flexibility<br>- Organize by customer/segmentation-based value domains. |
| **12. Modularizing:** | Assembling and disassembling business systems.<br>- Develop 'plug and play' functionality for business systems and processes |
| **13. Dissociating:** | Separating resource use from resource ownership and negotiating resource access and allocation |
| **14. Switching:** | Using multiple business models<br>- Having different business model infrastructures in parallel and aligning |

| | |
|---|---|
| | and switching products between them |
| **15. Grafting:** | Acquiring to transform oneself<br>- Import a business model from acquired company |

**Source: Doz & Kosonen (2010).**

Guo, Zhao & Tang (2013), evaluated the term of Business Model Innovation as BMI, which it points to setting up principles for new methods of conducting economic fluctuations. The rapid steps of technologies have shed lights to the firm on the importance of changing the way of doing business to get align with these changes. "The creation or reinvention of existing business models by proposing new value propositions, designing novel value-creation systems, and building original value-capturing mechanisms" (Guo, Zhao & Tang, 2013).

BMI has become a bottom-line to firms' performance as it represents an efficient tool for organizational transformation, holds with the technological commercialization and improves the firms' performance, especially in uncertainty conditions.

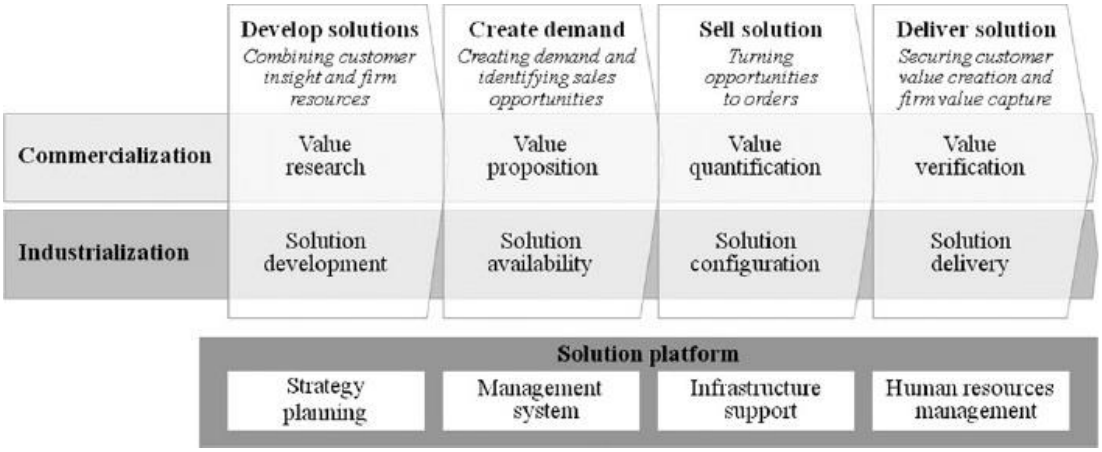
Hence BMI is impacted by human capital and social capital directly. Authors believe that senior management act based on their personalized interpretation for strategic decisions they need to make. These actions are supported by senior management experience, values and personalities, which they influence a wide range of processes related, in the long term, to growth and profitability of their organizations. "Present research investigates the influence of top managers' human and social capital on BMI, a key factor in firm survival and growth". (Guo, Zhao & Tang, 2013)

Researchers urge that human capital shows managers' inherence and learned skills with abilities, expertise and knowledge among two significant aspects; managerial skills and entrepreneurial skills. Both managerial and entrepreneurial skills boost up managers' ability to inspect new business opportunities and build new competitive advantages.

Storbacka (2011) initiated a few procedures to be implemented within the companies called Solution Business Model. Among a group of multinationally-operating companies, he drew his thoughts about the solution business model based on empirical data and classified them into four deeply integrated and interactive levels. First level starts from developing solutions by assembling customers' views in order to establish a

solution dossier. Secondly, communicating to generate solutions to clarify the sales opportunities, this level called creating demand. Meanwhile, sell solution refers companies to get involved in a process that turns opportunities into exist deals. Lastly, deliver the solution and securing a long-run business relationship by creating values for customers (Storbacka, 2011).

**Figure 2.7 The Solution Business Model Framework**




**Source: Storbacka (2011).**

Storbacka defended the work as the contributed work went in three ways. Firstly, introduce solutions as processes and not as compilations of various commodities, services and knowledge elements. Added that these processes needed to create repeatability and sustainability of solutions, and moreover concentrate on the role of the solution platform capabilities as limitations for sustainable success in solution business.

Secondly, Storbacka introduced a better briefing in order to align cases between products, marketing, sales, and operation management to design the solution business model well.

Hence, assembling the capabilities and management practices into twelve capabilities categories give the companies a framework to handle the capabilities gap and to confirm the resources allocation for management functioning.

As we believe, any company and the surrounding environment have a two-ways effects, business model is also affected by the culture existed in, which may changes its structure

and flexibility. Companies usually are aware about getting a strategic flexibility, which it refers to the ability of shedding lights on innovation chances. Bock et al. (2012) conducted a research on 107 multinational companies, aiming to get CEOs thoughts about the strategic flexibility during business model innovation. They found that CEOs understandings on structural simplification are connected to strategic flexibility during the business model innovation. Decentralizing the decision making spots in well-merged atmosphere with strategic flexibility. In the same time, creative culture affects the outcomes of strategic flexibility while reliance on peers is not. They approached to a point that the amount of commitments for innovating business model moderates the connection between reconfiguration and strategic flexibility.

Bock approached to a point that when companies get involved in rearrangement, higher levels of business model innovation trials release the unfavorable effect on strategic flexibility, because of the redirection happens from attention of company's activities to reconfiguration efforts. Basically, managers are energetically looking for extending their organizations by discovering crude opportunities. In this way, reconfiguration negatively affects strategic flexibility outcomes, and it may prevent these managers to discover the novel opportunities (Bock et al. 2012).

### 2.3.2 Business Model and Innovation:

Many authors have proven that business model is usually existed as a dynamic model. So that business model would evolve internally through planned re-structure, enhanced by the enumeration of development within the organization. These changes may cause instability and uncertainty on the business model hierarchy.

There is a belief among scholars that business model and innovation are interconnected and almost integrated in some cases, because of the tight relation between the business model and the level of R&D activity in the company.

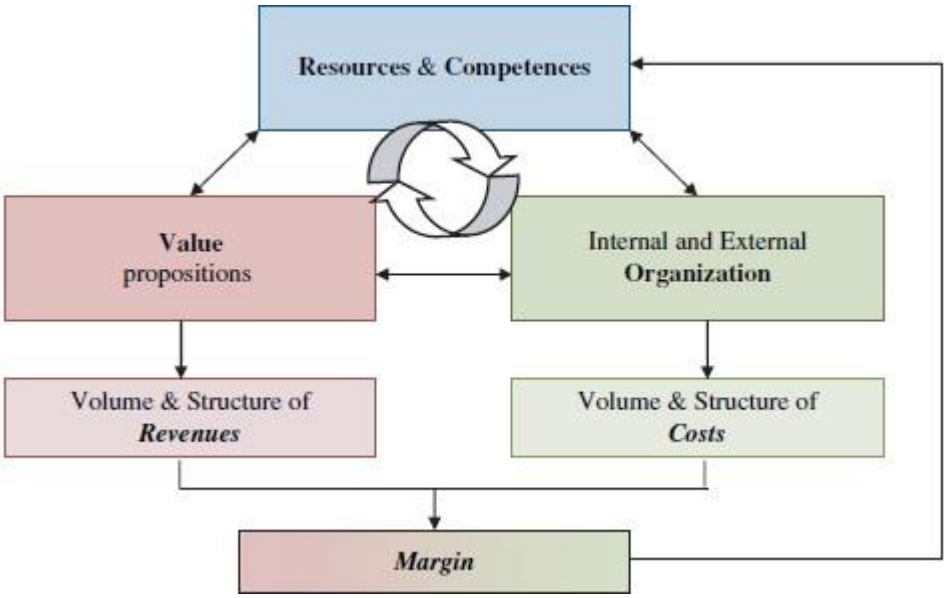
George and Bock (2011) introduced the connection between business model and the innovation based on Chesbrough and Rosenbloom (2002). “A coherent framework that takes technological characteristics and potentials as inputs and converts them through customers and markets into economic outputs, the business model is conceived as a

focusing device that mediates between technology development and economic value creation" (Chesbrough and Rosenbloom, 2002).

An adoptive framework for innovation suggests that business models adjust in parallel to the firm's life cycle evolution (Andries and Debackere, 2007). According to George and Bock (2011), more than 90% of the survey participants attempted to answer the question of: what is a business model? And also provided a response to the question: what is your firm's business model? Respondents got the belief that the business model reflects a related concept, connected closely to company's efficiency and growth, and highlight the opportunities that company take advantage of them (George and Bock, 2011).

Many views are not clear yet about the business model evolution during a period of time to explain whether it is static or dynamic model. Demil and Lecocq (2010) differentiated between the static and the dynamic business model depending on the uses for each. Static business model refers to the connection which defines and links the components of the word "model", which it means a plan or structure of the functions and activities adopted by the organization in terms of generating value for end customers. Meanwhile, the dynamic business model, or the "transformational" according to Demil and Lecocq, defines a tool to identify changes in the whole organization or the business model itself, to concentrate on innovation. Demil and Lecocq adopted Penrose's model (1959) of RCOV framework, which it refers to the main business model components and their relationships. RCOV stands for revenues, costs, organization, and value. Any company achieves a remarkable growth which it comes from the integration between resources, organization, and reliability to gain new values-generating opportunities in the market.

**Figure 2.8 The RCOV Framework – Business Model Components and Relationships**




**Source: Demil and Lecocq (2010)**

In this model, dynamicity comes from the interactions between and in-between the model components. These interactions will introduce to develop new value proposition, to make improvements in the organization system, and to impact other components' sub-elements. Basically, changes within the value chain will generate changes in the resources and competencies. Moreover, business model dynamicity comes also from changes in resources/competencies set, which it may, accordingly, change other elements of the components' combination, as value proposition may create efficient changes for related value functions (Demil and Lecocq, 2010).

Many studies showed that business model's innovation had been one of the most sustainable and challenging topics to conduct researches on. Both academicians and executives want to adopt a successful business model to achieve a glory to their organizations until they face dilemmas with both exploring and implementing the new business model which it rarely suits the organization at the beginning.

Behavioral theories argued that organizations are learning from their past experiments and they follow them as routine activities. Sosna et al. (2010) studied the business

model's innovation based on the Naturhouse chain stores (one of the biggest FMCG stores in Spain with more than 1500 outlets nationwide and overseas). They classified the business model was followed by the Naturhouse into our stages based on learning and innovation. First stage comprises how to initiate and test the new business model by the owning management with assistance from the top management team based on their existing knowledge to get more estimation on the market. Second stage, the owning management and top management team develop their business model by involving in trial-error learning and including new mental skills in terms of reducing the negativity of the initial-implemented business model. Thirdly, the implementers start to institutionalize this model with scaling up by interpreting the leanings into organizational routine, processes, and decision making, as well as exploiting the new business model on the remaining departments. Lastly, fourth stage plays a role in sustaining the growth among the organization wide learning by integrating the past experience of the organization itself with acquisition of modern expertise from the peers (Sosna et al., 2010).

The innovation of a business model should exceed regardless the organizations' size and the field of industry. Innovation could approach to retailers, forming the retail business model, which it indicates how the retailer creates value for clients and so on the market as it becomes crucial for sustaining competitions in this market.

Retail business model, according to Sorescu et al. (2011), is characterized by two main entities. First of all, retailers mainly sell products of others, whom are manufacturers, so they are not always eligible to get authorization for selling this variety. This means products will not be having competitive features as long as they are available elsewhere. So the successful retail business model concentrates more about how retailers sell more than on what they sell. On the other hand, retailers face a big number of their end customers directly, which requires them to optimize the direct interactions with their direct end customers. This leads to transforming from focusing on selling the commodities to ultimate number of customers, to influencing the customers' experience and behavior.

Sorescu et al. (2011), defended their views of innovating the business model in retail industry that profits can be quoted from this innovation would equal, or even pass, the ones come from product or service innovation. Despite of that, adopting a specific business model for all companies in the same industry is a difficult issue, so the best procedure to be considered is to keep it up-to-date with the surrounding-environmental changes. Also, regarding the business model's components, the organizational structure across the departments can assist the retailers to last stand in the competitions (Sorescu et al., 2011). As stated business model should be framed with one of the dynamicity perspectives to be ready for any modification or impaction on its structure or activities. Even online firms will be available to change the way they do business and to be unique among their peers.

Pauwels and Weiss (2008) introduced within their study the consuming behavior for web-paid services and the marketing actions that impact this behavior. Customers who are having this behavior are the paying subscribers for content providers. The essential drivers for this consuming behavior are the consumers' characteristics such as content value or could be related to competitions as market concentration and company characteristics like marketing decisions.

Moving from free to fee changes the company's advertising revenues from fee registrars. As the result of Pauwels & Weiss this move decelerate the growth among free users and decrease the efficiency of marketing communication in generating new free users. Among websites the word "free" appears which aimed to remind the customers or the users about the value of the service they are acquiring, while reality says companies are looking for customers who are ready to pay for their services (Pauwels and Weiss, 2008). Regarding the innovation of the online companies market, people hitherto do not feel secured to trade with such products or services because of doubting authority and the information security issues provided the hosts (the companies) especially when it is related to sharing confidential information such as bank account and credit card number or even personal details as personal ID code or home address. In the term of business model, companies are asked to reconsider the way they do business even we believe in

the new ways of showing the products and the few authorities which they can issue permissions to both companies and customers to ignore any possibility to dishonesty between traders.

Developing and evolving the business model is still considered as significance after authors agreed about finding a formula for business model to keep it dynamic to match with the surrounding environment.

Morris et al. (2005) were involved in the group of scholars who introduced a summarized review on the business model in generic brief, then moved to review studies on evolving and developing the business model. They demonstrated their views on three main attributes. First, the term of "fit" was introduced which it refers to business model suitability on both internal and external flows. The internal fit contains both consistency and reinforcement between the six components of the business model, while the external fit refers to the consistency between choices in the external environment. Secondly, the emergence and the development of business modes, as many companies start running their businesses with already-formed and incomplete strategies when they start to experience different procedures and techniques to start developing their business model to achieve more by the time. Due to the developing and learning period, a company starts to come up with the best recipe of components to form the most appropriate framework to work on. Basically, it is not a huge matter to put an initial imagination on the structure of business model life cycle as we can predict the model that company may start following it in the initial period. Thirdly, linking the business model to strategic management is the last case introduced by Morris et al. (2005), that business model enhance the entrepreneur to set on the principles of ventures as interconnected choices, to find combined relationships among the model elements, to develop activities to suit the proposed framework, and to secure uniformity between elements of strategy, structure, growth etc. Business model makes the choices particular and specified and it is, somehow, a simple way to border the entities that must be done at the venture starter (Morris et al., 2005).

### 2.3.3 Technology-Related Business Model:

A lot of authors, currently, are concentrating on the growth collected within general purpose technologies (GPT). This GPT term refers to the technology that has many applications. In this lane, Thoma (2009) studied the case of one of the technological companies which was expanding into many markets. Echelon is one of the American companies, those involved in technological field and headquartered in Silicon Valley. The preliminary model for Echelon was depending on some Original Equipment Manufacturers (OEMs) in different application sectors. That model was not reliable for Echelon as those OEMs were not following the standards provided by Echelon, which it reduced the efficiency and competition comparing to the market flow. Next stage comprised a big move to the company by creating an open standard. This step helped Echelon to get over the comparison with other companies and to maximize the market share. Companies are always facing the conflict of being uncertain about decentralized and centralized works. According to Thoma, both generalizing and localizing should be taken into accounts as supplements instead of substitutes; "the higher number of different localized uses, the larger the business opportunities arising from scale and scope economies in different uses" (Thoma, 2009).

It is extremely challenging problem to make a decision to adopt strange investment opportunities and many functional activities as R&D and strategic planning need coordination with the creative efforts to approach with the company to the suitable business model.

Technology is one of the entities that form the business model and change its structure and the way that company does business. Exactly as stated in the part of pharmaceutical business model, the technology there can affect the level of R&D within the company, which means placing the company in different level of business model.

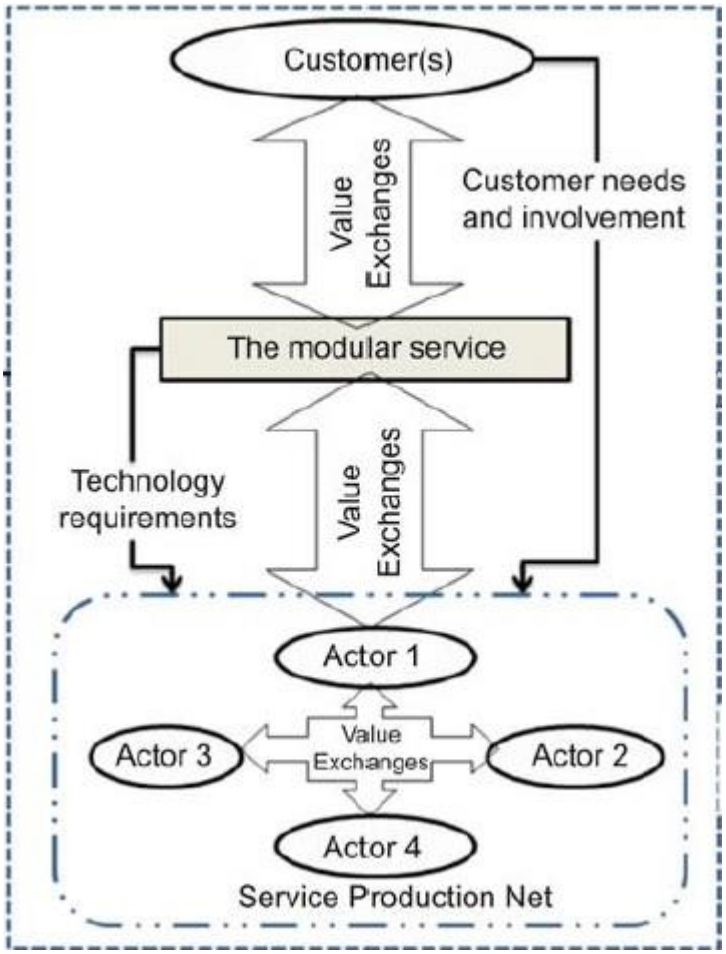
Palo and Tähtinen (2011) studied the business model of technology-based products and called it the networked business model, which it aims to the strategic set of actors involved in developing, producing and marketing the technology-based services and delivering them to the customers (Palo and Tähtinen, 2011). The networked business model explains how strategic businesses create value, as developing modern

technologies needs new skills and resources, besides producers, suppliers, users and middlemen are connected together in one network.

Newly-established markets' networks are still getting ambiguous forecasts about their business future, while the developed models have good general overviews and prediction from the scholars because of their ultimate access for information and key activities. Strategic value-creation systems are the fixed sets of activities that create value and they are connected to each other strategically and contain stream of information, money, materials, and well-established connections.

In Figure 2.9, a description has been introduced about the elements of a networked business model with interactions in both short and long term as well as the external environment, besides the past experience.

**Figure 2.9 A Framework of the Elements of a Networked Business Model**




**Source: Palo and Tähtinen (2011).**

Moving one step back, business model innovation, for the current time, comes in accordance with upstream and downstream businesses and industries across the overall structure. Recently, it has become more important when the business model gets involved in trading with intellectual assets.

Gambardella and McGahan (2010) argued about general purpose technology GPT and the way it can be implemented within the industry structure. Evolving the technological licensing reflects a bigger issue including business model innovation and the intellectual capital. Selling this intellectual property through market dynamicity influence the innovators to generalize the technologies and push the actors or the doers to achieve specific expertise in the specializing procedures. Many products and services were developed to shed lights on customers' needs and that mirrors the main headline of solution providers for technological evolving.

For the current situation, products and services are mostly pushed based on scientific and technological base and in accordance with the business mode design applications, a side from customers' inquiries. Furthermore, thoughts are becoming more scientifically-based and implemented technology issues specific applications. Initiated technological insights are more generic and not inherent, which allows opportunities in the market. Business model innovation is not a systematic and organized operation, and the upcoming business models will be more flexible to solve the problems that may be faced by the company. Therefore, imagining the form of business model requires creative business insights and entrepreneurial attitudes from leaders to emerge over the forthcoming years major elements, of course based on breakthroughs of the past (Gambardella and McGahan, 2010).

The term of internet business is known, based on Electronic Commerce (EC) term, as a new way of doing business on the electronic communication network. Basically, both terms of electronic commerce and internet business do refer to the same content. Authors argued about referring the term to the content it represents, so some of them went to through simplifying the definition by determining all businesses utilize media, while others said that it comprises businesses performed through internet only (Han and Han, 2001).

Specifying the characteristics of value for customers in the internet business is a different method from the traditional businesses. Han and Han (2001) defined the customers value in internet business as; "the benefits to the customer from the transactions with internet business for scarifying the costs. The cost includes all the efforts, time, and money required to gain benefits" (Han and Han, 2001).
There are two factors that bring the differences between internet business and conventional one. First factor is the characteristics of digital media which it is featured with low cost, wide connectivity, and direct channel with capabilities. On the other hand, the second factor of differentiating the traditional and the internet business is the digitalization of transaction and content, as many of physical products could be digitalized as photos and documents. Some of the newly-digitalized products could be remanufactured again without extra costs and that enhances companies to introduce a new type of value for customers, and may become more effective comparing to its conventional peer (Han and Han, 2001). That does not mean ignoring other types of business models and strategies that companies used them in the past. It influences executives and strategic planners to implement the internet business as another channel of doing business by creating value for customers and enlarge the aimed market by approaching new destinations.

## 2.4 Summary:

The research on business model has approached to various insights and thoughts. All of these thoughts and studies have been developed in North America mainly, besides the European Union, China, and India. The role of each country's business model and the structure which it has been formed in explored closely. In these studies, business model is considered to be specified for each country, even with some similarities can be notified. One of the primary studies about the generic business model defined in 2007 by Chesbrough. Nevertheless other studies done by other researchers in terms of specifying a definition for the term of business model with expected convergence with regards to the concept.

On the other hand, many studies have taken the pharmaceutical business model as a core with explaining further about different views on many countries. One of the most notified works was done by PricewaterhouseCoopers organization as they played a major role for introducing modern insights about the pharmaceutical business model, referring to three kinds of business model as the federated model in its two types; the virtual variant and the venture variant, besides the fully diversified model.

Following the country-based business model of pharmaceutical companies, Nosella et al. (2005) gave a perfect introduction for the pharmaceutical business model in Italian biotechnological companies pertaining to five different business models as; product business model, platform business model, hybrid business model, production business model, and service business model. They conducted their study (published in two different articles) on 100 firms based in Italy and involved in biotechnology business, introducing their profiles by grouping and clustering them accordingly. The usage of the vertical model allowed them to conclude that companies with vertical business model set up the flow of activities both ways to get significant profitability, even with a higher level of risk.
As per above, and based on the analysis done in chapter four of this study, the study of Nosella and others match some of the companies in Syria regarding adopting the vertical business model in managing their investment.

Another example from another country is the work of Willemstein et al. (2007) in their study on the biotechnological-based companies in the Netherlands. Studying 80 companies allowed them to divide these companies on various groups based on their business profile. It starts from the service\platform business mode, passing by the hybrid business model, and ending with the production business model. It can be noticed that they placed, as a later stage of the business model, an opportunity for the companies to exit the business by selling the running business as it is or out licensing to newly-established companies, or by turnover the business.

Lastly, we cannot avoid the essential importance of the interconnection between the business model and other management activities. All managerial activities and functions are taken into consideration to save companies from failure and exiting the business at early stage. I framed also the sensitivity of using unworkable strategy and showed the role of good leadership in setting on the right and suitable business model of their companies.

Therefore, and based on the literature review introduced in this chapter, we noticed that no study took a generic and comprehensive overview on the business model of pharmaceutical companies in a country, considering the importance of this industry segment as one of the significance sectors for any country.
This means that this literature review enhanced and enriched the significance of this study to capture a clear status of the pharmaceutical in Syria to benchmark this sector with its peers in other emerged and emerging markets.

So on, the technological improvement happens on comparatively-short basis could be considered also, especially with a strategic and sensitive industry like pharmaceuticals.

# CHAPTER THREE

# RESEARCH METHODOLOGY

## 3.1 Introduction:

This chapter provides an overview of the research method employed in this study. The beginning is with the aim beyond choosing the quantitative theory to be a general framework of this study. Besides, to highlight the reason for using descriptive case study for this type of researches and developing the conceptual framework and generating its entities using the research questions. So on, stating the data collection method and its following procedures, and then defining the participants and the way of recruiting them.

## 3.2 Research Framework:

In sciences, quantitative research term refers to the implementation of mathematics and statistics in organizing a practical investigation to figure out all conditions and statuses about phenomena. This can be done by using the mathematical models and practices to introduce for a framework presenting this phenomenon, as these models illustrate the connection between the empirical findings and mathematic quantitatively, represented by figures, digits, numbers, percentages, and graphs.

This study follows the quantitative method in its generic form; notwithstanding using a questionnaire follows the semi-structured model. This model was used to introduce a general overview about the pharmaceutical industry in the Syrian Arab Republic as a descriptive explanatory case study, explaining many aspects of the industry itself and the base starts from. Nonetheless, researchers use the descriptive way on investigating to explain and show a case of company or an organization.

Hence in this case, the theory of descriptive study had been generalized to cover the whole field of industry because of the consistency exists among these companies as in production, human resources, marketing strategies and so on. So on, the usage of the

quantitative method, as per above, helps the readers and scholars to understand and cover the business model of pharmaceutical companies in Syria and the techniques they follow running their businesses, besides defining their position in the business world.

However showing numbers and figures clarify the case from many aspects, using the semi-structured questionnaire assisted to get familiar with the industry based on the notes and guidance of the respondents about tiny details which made notified information for better understanding.

## 3.3 Research Development:

This part includes the theoretical foundation as a starting point in order to establish a well-maintained base to pertain the conceptual framework which it has been adopted for this study.
As long as the study is closer to be an explanatory study, no hypotheses were assigned here as there is no a set-on theory or finalized view on this regard. Besides, this study introduces to the business model of pharmaceutical companies in Syria on both academic and practical aspects.

### 3.3.1 Theoretical Foundation:

This foundation is written to support the conceptual framework featured for this study. The theoretical body of this study follows the descriptive statistics to study the case of the pharmaceutical companies in Syria before the crisis of 2011.

Descriptive Statistics are implemented to illustrate the fundamental specifications of data in any case study. These data conclude the measures and the instrumentations to approach to simple-describing graphics introducing a wider overview about the case quantitatively.
For this case of pharmaceutical business model, it cannot be logical and rational to use Infernal Statistics as this study describe what data show and not approaching to explanation of human behavior or inspecting a new market for consumer's behavior to

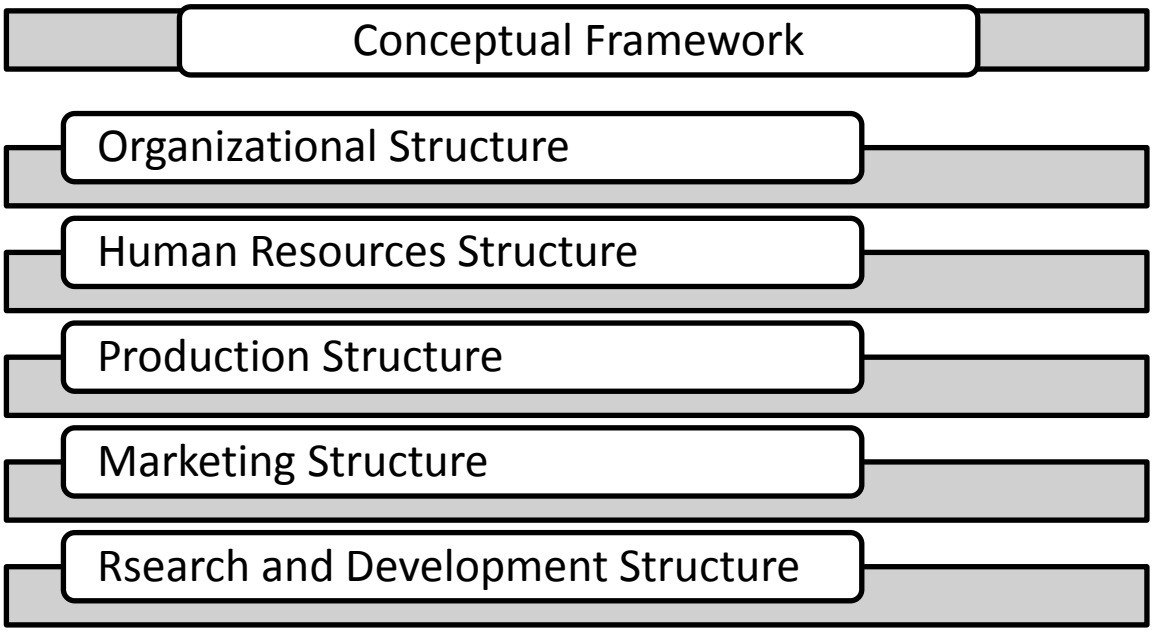
dump new products. This means that infernal statistics are involved more into exploring data for generic situation, while descriptive data are characterizing the actuality of these data.

To state further, and as long as the descriptive study is used in-parallel with quantitative data, it helps the scholars to provide more sensibility to a larger amount of data, as it decreases lots of data by grouping the response of many clusters to simplify the findings, and to avoid the possibility of data being distorted by many indicators.

The work in this study relied on the usage of the descriptive statistics to shed the lights on the pharmaceutical companies in Syria, illustrating the business model where companies are positioned, and the way they were doing business before 2011.

**3.3.2 Conceptual Framework:**

This part defines the variables used in this study in order to create a well-structured overview for the pharmaceutical business model of Syrian companies. Variables are five including organizational structure, human resources structure, production structure, marketing structure, and research and development structure.



#### 3.3.2.1 Organizational Structure:

This variable illustrates the organizational procedures of pharmaceutical companies' foundation pertained by the date of establishment and date of production start, besides the place where companies are established (location's province). Apart for the location, some companies have founded overseas branch, mostly in neighboring countries and under different name and different management team, of course owned wholly or partially by the same Syrian shareholders. The shape of ownership allows the researcher to partially compare the Syrian business model of pharmaceutical companies with their peers in Middle East as well as other countries, based on the literature reviewed in chapter two of this study.

#### 3.3.2.2 Human Resources Structure:

Data supporting this variable were collected based on questioning the respondents about the number of employees involved in the long chain of processes, starting from the blue-collar employees and ending by the white-collar ones, passing by the number of laboratories pharmacists and engineers. This variable also checks the possibility of having international employees (foreigner) within the company.

Human resources structure should be taken into consideration for reviewing a business model in terms of framing the contribution presented by HR towards their employer, and assigning the right position of this employer on the business model figure.

#### 3.3.2.3 Production Structure:

Identifying the production structure as a variable helps the scholars to define the correct position for the company on the business model scheme. This can be done through knowing the total number of products and categories they belong to. Categories here identified as the dosage forms as each dosage form requires a specific production line and distinguished finishing procedures for the final goods. Hence, these manufacturing lines show the level of company's productivity within a period of time and this productivity reflects the sales amount and company's profitability in a way or another.

This variable, however, explains whether a company is interconnected with any upstream related industry, supporting the company with creating its final products.

These upstream related industries may be glass industry, plastic industry, paper industry, pharmaceutical packaging industry, or even raw materials re-formulation.

#### 3.3.2.4 Marketing Structure:

This variable works out with indicators describing the marketing strategies obtained by the pharmaceutical companies in Syria. These marketing strategies are represented by the approximate annual revenues showed in million dollars, regardless the period of 2011 onwards (during the Syrian crisis).

Moreover, this variable introduces to the nationwide sales volume (local sales) and the companies' efficiency to export their medications to overseas markets. So on, the number of importing countries advises how many countries the Syrian medications are approaching over the exporting companies. Lastly, in this variable, data show the chance for pharmaceutical companies in their interconnection with other business fields through the downstream in their supply chain. These business fields can be specified as the involvement in retail business (pharmacies), wholesaling (drugstores), or logistics (transportation and delivery services).

#### 3.3.2.5 R&D Structure:

Data collected to this variable support the explanatory indicator of research and development policies among the pharmaceutical Syrian companies. These statistics are shown through many entities starting from the level of R&D activities in companies individually. Respondents disclosed, based on their experience, the level of their companies from their point of view in the research statuses and development conditions using a scale from one to five.

Moreover, they identified the number of quality certificates had been obtained by the companies and the types of these certificates based on the approving institutions, as believed that the number and the type of quality certificates reflect the companies' efficiency in following the global standards for medicines manufacturing, besides the ability to promote their products in overseas markets.

Furthermore, this variable show whether the companies are involved in licensing agreements with the industries gurus in terms of developing reliable products. Lastly, the

statistics define the countries that MNCs (multi-national companies) have given their licenses to the local companies in Syria.

### 3.3.3 Questionnaire Items:

This study follows a semi-structured questionnaire aiming to collect quantitative data from the respondents who are in a position allows them to know about the status of their companies. The questionnaire has five different sectors which represent the research variable stated earlier in this chapter.

The first sector is entitled as the Organizational Information and includes six questions regarding the follows; the province of the company, the area (neighborhood) where the company is located, the number of overseas branches (if any), the company's ownership type, the date of foundation (establishment), and the date of production start.

Meanwhile, the next sector is addressed as the Human Resources Information and compromises four entities counting the follows; the number of production employees, the number of office employees, the number of laboratories employees, and the number of international employees (if any).

Thirdly, this sector is assembling data from the respondents related to the Production Information and contains four entities which are; the number of the manufacturing lines (machines), the number of production categories (referring to the dosage forms), the total number of products in the chain, and if the company is involved in any upstream related industries.

Furthermore, the fourth sector, which is considered more controversial competitively, represents all Marketing Information disclosed by the respondents and contains four points asked on five questions as; the approximate annual revenues, the percentage of products sold locally, the percentage of products sold overseas, the number of countries the companies are exporting to, and if the company is related to any downstream industries.

Lastly, the fifth and the last sector of the questionnaire include six questions to introduce data about Business Development and Research Information. These components are; the level of company's research and development activities, the main function of the laboratories, the number of global quality certificates obtained by the company, the type

of these certificates, the number of licensing agreement given to the company, and the mother companies of given licenses.

## 3.4 Data Collection:

### 3.4.1 Data Collection Method:

Although the usage of data was under the title of descriptive case study, the mixed method was not conducted literally because of the potential to pertain further horizons for this research. For instance, if the participants got the survey before the discussion occurred, he\she might have been biased by preparing the answers in a drawn way. Therefore, by using the semi-structured questionnaire, we exclude the possibility of getting biased disclosures.

The main insight about not using the fully-structured survey was the need of being closer to the reality and ease down the respondents' anxiety about such data-collection in such bad circumstances impacting the country (Syria) and the field of the industry specifically.

### 3.4.2 Data Collection Procedures:

There was only source of data used in this study. Semi-structured questionnaires served well in this approach. The type of analysis used in this thesis was grouping and classifying the firms of participants into clusters based on the disclosures given by the respondents. The usage of this simple analysis allowed me to clarify the situation as it is and avoided any complexities could have shown in the results.

After collecting the data, I found that all answers were satisfying based on the scanning we did for available data on the web inspecting the websites of companies, chambers of commerce and industry, and the general local trading hubs. This type of double-checking assisted us to revise few cases and conform the show with the given.

The questionnaire was designed originally in English to suit the language that thesis has been written in, then we did translate the whole questionnaire into Arabic as we believed that it would be much convenient to the respondents to advise their answers in Arabic. Later, the questionnaire was translated back from Arabic into English to inspect the reliability of previous translation and to make sure about delivering the same understanding in both languages. The two questionnaires matched 100% and it was ready to be distributed among the participants.

To reduce the time of data-collection and to get the responses quicker, all questions were keyed-in through Google Drive application which mitigated the collection time, even though most of the respondents still live in Syria due to lack of electricity and internet access. The link of Google Drive was passed to the participants individually through email, with an introduction about the study and the attached link. Then a conference call was held during their response to make sure that they were placing their disclosures in their right place, with further discussion about the questions and historical overviews about their mother companies.

### 3.4.3 Participants and Recruitment:

In terms of participants, I collected connections to executives and units' managers from pharmaceutical companies in Syria which their fundamental investment in pharmacology and biotechnology business fields. The executives and managers best suited for this research had, at least, general overview and interaction with various departments in their respective companies.

Basically, the overall number of pharmaceutical companies in Syria approaches to 74 organizations, distributed among the three major provinces, Aleppo, Damascus, and Homs, besides a few companies in smaller provinces such as Hama and Lattakia. Purposely, we limited the studies community particulars (companies) by excluding companies with less than 10 products, or companies which involved in veterinaries and agricultural technologies, or companies produce (only) medications from organic sources (natural-based components medications), or the companies which have

pharmaceutical record in the Ministry of Health in Syria but their main channel of production is to concentrate on complementary products (surgical equipment & medical bandages products). Therefore, the number of my population's companies approached to 47 companies represented by one person (participant) respectively.

The group of participants was knowledgeable about the decision-making activities and the middle & lower level of the hierarchy, and they had roles in assigning companies' strategies on the short and long-run. This level of participants yielded the scholar a better understanding about this field of business by combining perspectives and notices on all managerial levels.

The recruiting process included of contacting this specific group of participants, as above, assorted well by their years of experience and the department they work in, using past connections I have in few companies or by exploring LinkedIn.com search engine. After the first contact made through phone or internet-based applications, to introduce the topic and the procedures, another call had been made simultaneously with sending the online survey through participants' email addresses and start filling up from their side while I was writing down all their comments and notices in order for me to gain wider insights. All information attained from research pertaining to the names of the participants is considered confidential, have not, and will not be published.

### 3.5 Summary:

Using quantitative research as a framework, there is a consistent stream of purposes to form the study as a descriptive study. Since the beginning, we decided to use the quantitative method as it is required to study descriptively the whole field of industry which is difficult enough to do it qualitatively. Then we chose the descriptive statistics in term of better representation through exploring various insights of the pharmaceutical industry in Syria.

As the wide-common way of collecting data for a descriptive study, we wanted to use the semi-structured questionnaire as primary and prior source of data.

The data analysis function took many steps of processes to generate the overall understanding for this aim. Sorting, editing, and grouping were done after we got all scores from all participants as these functions were facilitated based on the linear of each indicator specifically, showing the importance of peaks, and shedding the light on the critical points.

# CHAPTER FOUR

# DATA ANALYSIS AND FINDINGS

## 4.1 Introduction:

This chapter shows data and statistical analysis and the relevance of the analysis to the conceptual framework assigned to this research. Data were collected from 47 participants represent 47 companies with complete acceptance upon responding. The population includes pharmaceutical companies based in Syria, regardless having branches overseas, and owned by Syrian shareholders. Also, these companies are producing more than 10 different products, they are involved in edible medications (for human usage) and not from organic formulas only. Just for the record, 5 out of the 47 respondents were females, which it equals around 10% of the demographics, even though there was no gender impact on the collected data.

## 4.2 Obtained Data:

### 4.2.1 Data Screening:

The process of checking the data for any occurrence of errors and correcting them before the analyses begin called data screening. The data collected for this study were screened individually and in order to confirm that data provided by the respondents were filled up correctly. For instance, if the participant filled up the dates of establishment and production start in a full style (day/month/year), I did key-in the date as a year only as the full date is not required and cannot make any difference. Then I rearranged the questionnaire' scores by sorting them alphabetically following the companies' names decreasingly.

### 4.2.2 Missing Data:

In statistics, especially in social sciences, missed data cause noticeable impacts on the conclusions and can appear obviously in time series and the data flow, causing a disconnection in graphs and charts, and the problem will be bigger when it comes to limited community.

Luckily, using the semi-structured questionnaire and having further discussions with the participants allowed this study to proceed over without missing values, to make sure we am covering the whole population as the studied community is considered comparatively small.

### 4.2.3 Overall Response Rate:

As stated, the respondents answered the 25 questions in the survey which was distributed on the 47 companies representing the field of the industry. This conform the percentage of 100% coverage in order to describe the business model of the pharmaceutical companies in Syria.

However if some of the answers were missed in this study, it would have been considered fine as there would be a room to stereotype and enrich in terms of approaching to clearer outputs.

### 4.2.4 Response Bias:

Conceptually, response bias refers to any impacts or pressure could be applied on the participants to keep them away from accurate and responsible answers. This bias appears mostly on the respondents' self-report like the interviews and surveys.

In this study, there is a doubt about two cases only which the answers have been disclosed away from the research's mainstream. The first case was the number of production employees in Asia Pharma which the number approaches to 1150 personnel, almost 5 times more comparing to the majority. On the other hand, the other case showed some strangeness was the number of quality certificates in Rouba Pharma with no obtained certificate. Both cases presented interjection because of the irregular scores and away from the populations' answers in these two issues strictly. There was no

chance to confirm these two points from an outsourced reliable party to end this controversy.

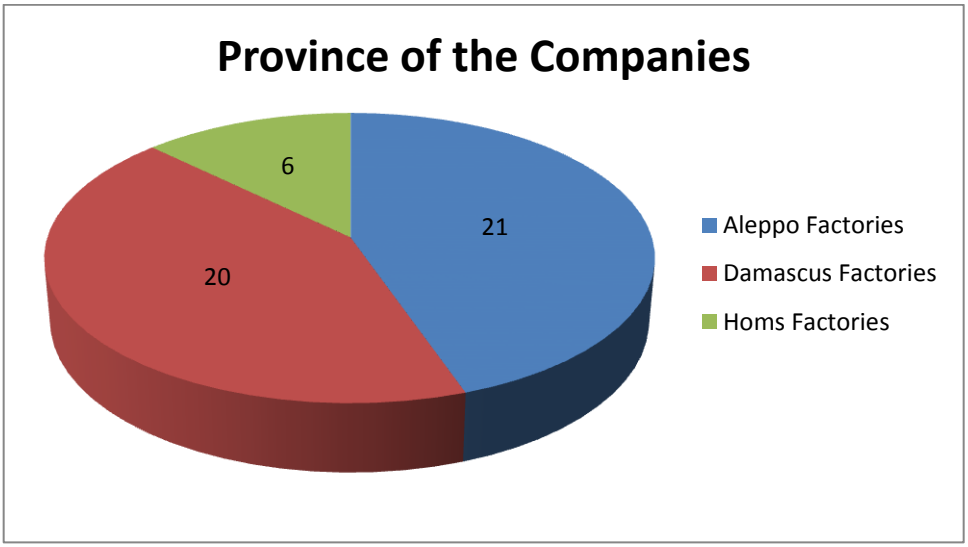
## 4.3 Analyses of Data:

This part illustrates in-details about the pharmaceutical companies in Syria based on the disclosures given by the assigned participants as stated earlier. As per discussed regarding the questionnaire, even the analyses are divided into sections in order for the scholars to gain a wider scene with all materials used here such as tables and graphs.

These sections will be five as the following; organizational information, human resources information, production information, marketing information, and R&D information.

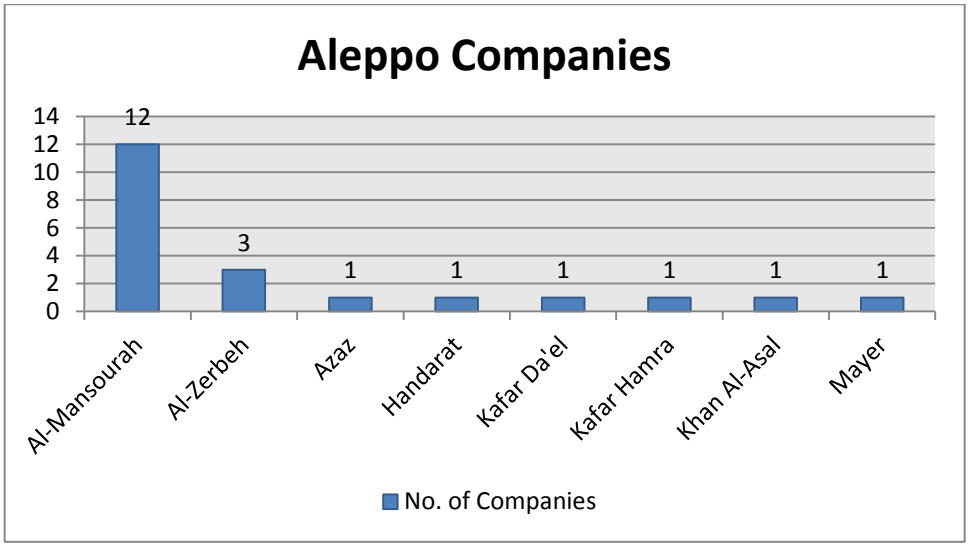
### 4.3.1 Organizational Information:

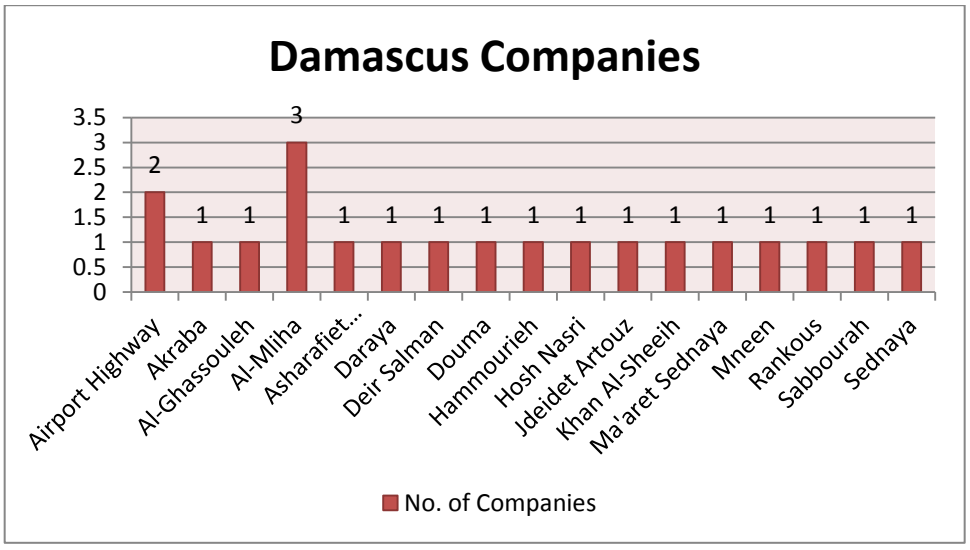
The participants were asked six questions with regards to the general organizational information about their companies. Starting with the province of the company, among the 47 company, Aleppo and Damascus took 21 and 20 respectively, while Homs came lastly with 6 companies only.



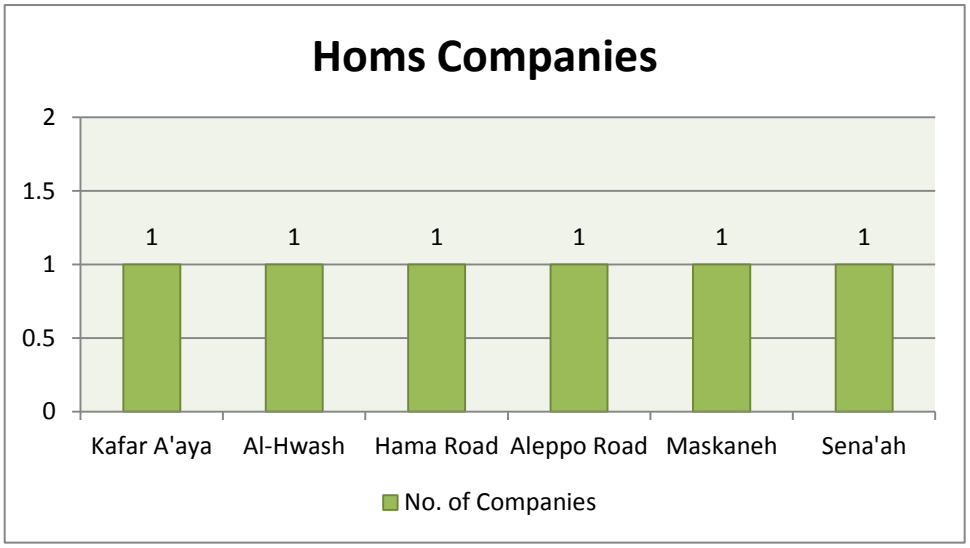
Just for the record, and as this research is framed based on the limitations and concerns stated previously (section 3.4.3), the number of pharmaceutical companies registered in the Pharmaceutical Industry Directorate in Syria's Ministry of Health approached to 74 as in January 2011. Most of these 74 companies are based in the main three provinces; Aleppo, Damascus, and Homs with only two companies in Hama and one in Lattakia.

Moving deeper into each province separately, it can be noticed that 12 out of 21 companies in Aleppo are based in Al-Mansourah district at Aleppo's west countryside. This shows that there was an opportunity to turn the neighborhood into an industrial park as the followed in Europe, North America, Malaysia, and Singapore, with higher standards of quality control and environmental concerns.



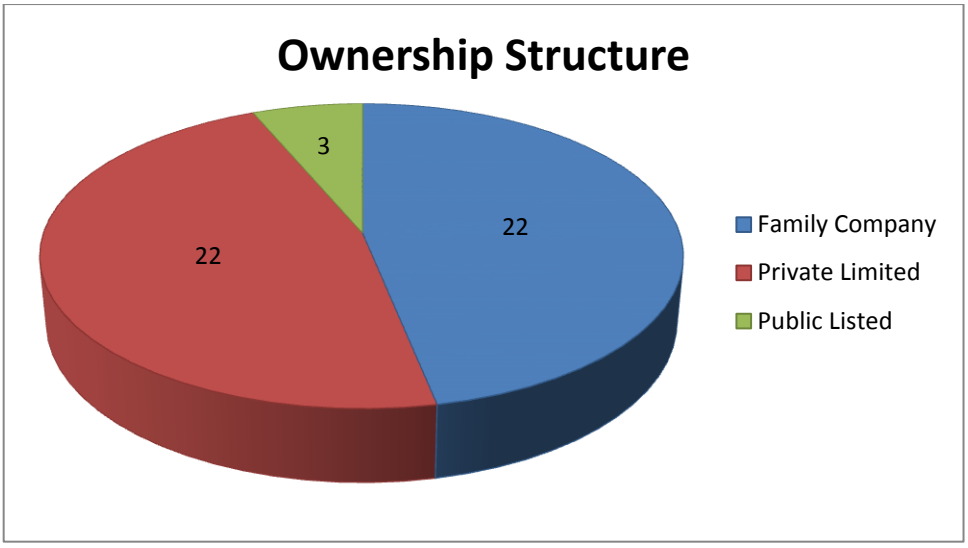
This was not seen in Damascus and Homs, and companies there were distributed on many locations in the surrounding countryside. We can connect this disparity with the industrial renaissance happened in the early 1990's which inflamed the competitions between existed and newly-established companies.



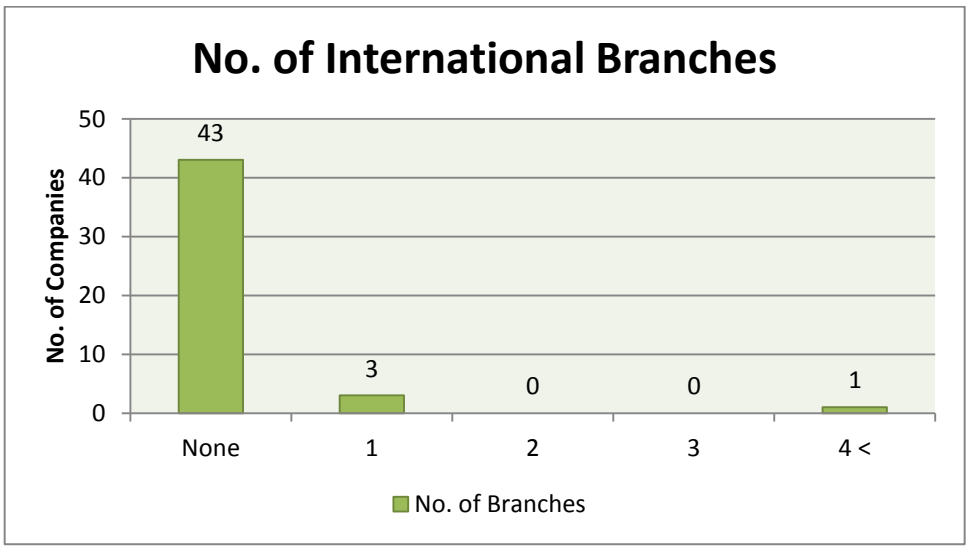

Further to the organizational structure, the type of ownership varies from a firm to another and can impact the business model of the company. In Syria's pharmaceutical companies, we got three types of ownership based on the respondents' answers as; family company, private limited company, and public listed company.

It should be noticed that the family company shares the same number of private limited company with 22 for each, while there are only 3 public listed companies which are; Rama Pharma in Aleppo, Thameco in Damascus (which is a governmental-linked company), and Alma Pharma in Homs.

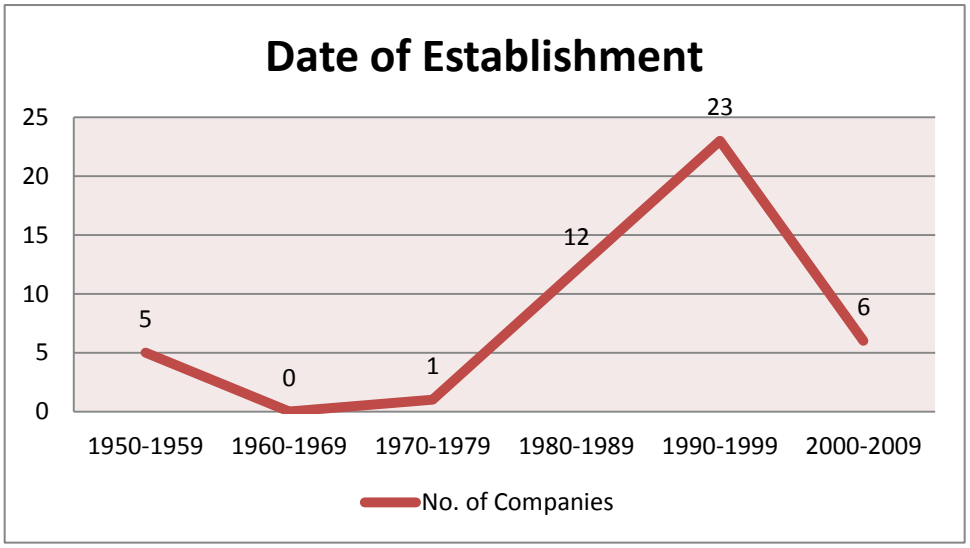
With a deeper look to the private limited companies, I found that the partnerships have been agreed as between families. For instance, Oubari Pharma in Aleppo is a joint between two big families whom they have been in the business for decades, Oubari and Marrach. Another private limited company is Bahri Medical which belongs to Bahri family, one of the old Damascene families who worked in medical supplies and manufacturing chemical derivatives for many years.

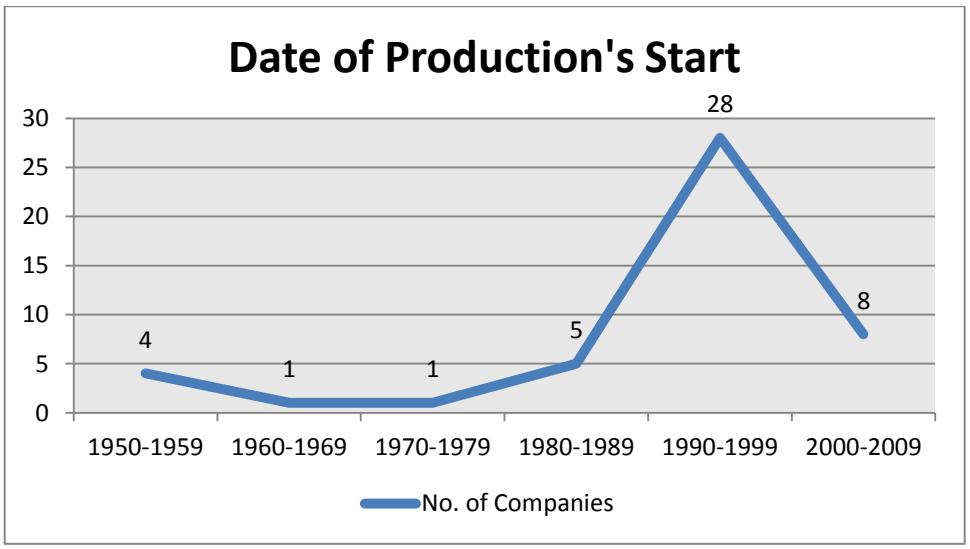



All companies included in the population of this study are national companies of Syria. However, a few companies have their operational branches overseas involved in pharmaceutical industry and serving the regional markets. Shifa Pharma and Al-Razi Laboratories have a branch in the Kingdom of Saudi Arabia each, while El-Saad Pharma has a branch in the territory of Kurdistan of Iraq, and Asia Pharma with their 4 operational plants in Algeria, Iraq, Romania, and Russia.



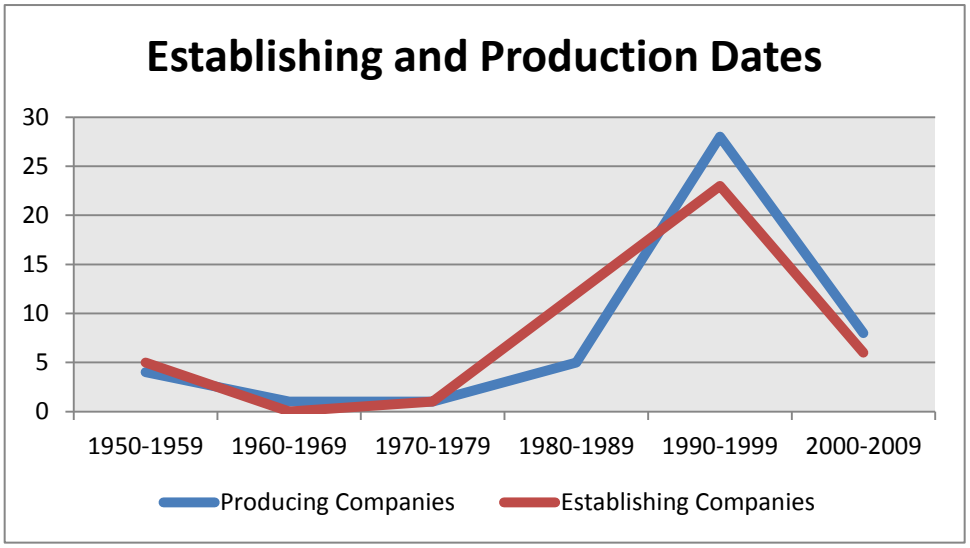
Moreover, the date of establishment illustrates further about the business model of the company and so on the industry. In this study, we decided to differentiate between date of establishment and date of production start in order for the readers to inspect the date of foundation and catch the exact beginning of the production.



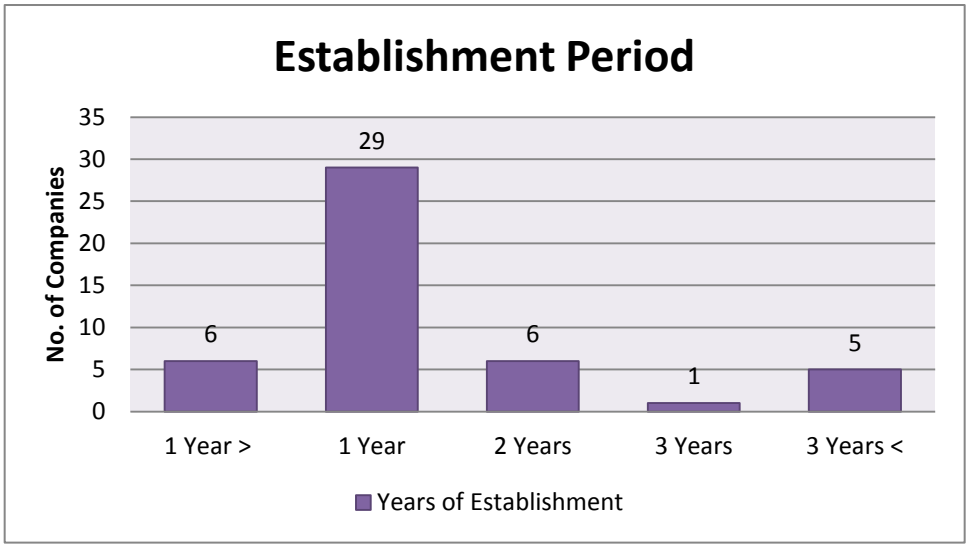




It is remarkable here that companies which were established in the 1950s were merged or sold out to other companies during the evolution of the industry in the 1990s. to specify more, Medico of Homs was founded in 1959 and operated for 40 years when it was sold to other stakeholders whom they restructured the company during the 1999 and

initiate the first products in 2000. The same falls on another company in Homs, Emessa Laboratories, which it kept owned by the same owners since it was established in 1958 till 1997 when the board decided to reengineered the company convoy the industries' modern practices.




The minimum period of establishment till initiating the front products was 1 year and the most-expanded time to start producing after the foundation was 7 years (Al-Fares Pharma and Allied Pharma).

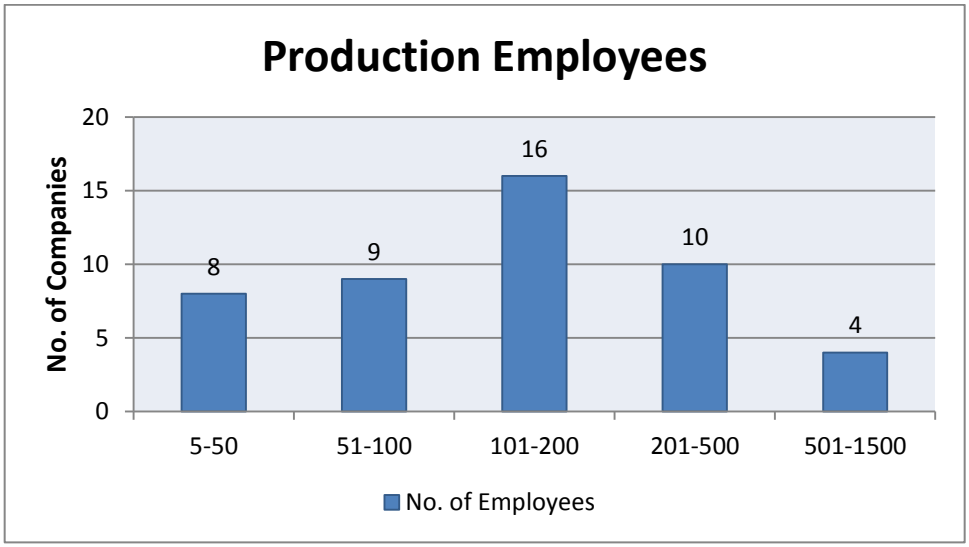


More than 60% of the studied community's companies were established within 1 year only. This supports the comparatively high-speed of penetrating this business and the level of emergence the industry was creating before 2011. These data show, in a way or another, the speed of creating employment opportunities for blue and white-color workers for this industry.

### 4.3.2 Human Resources Information:

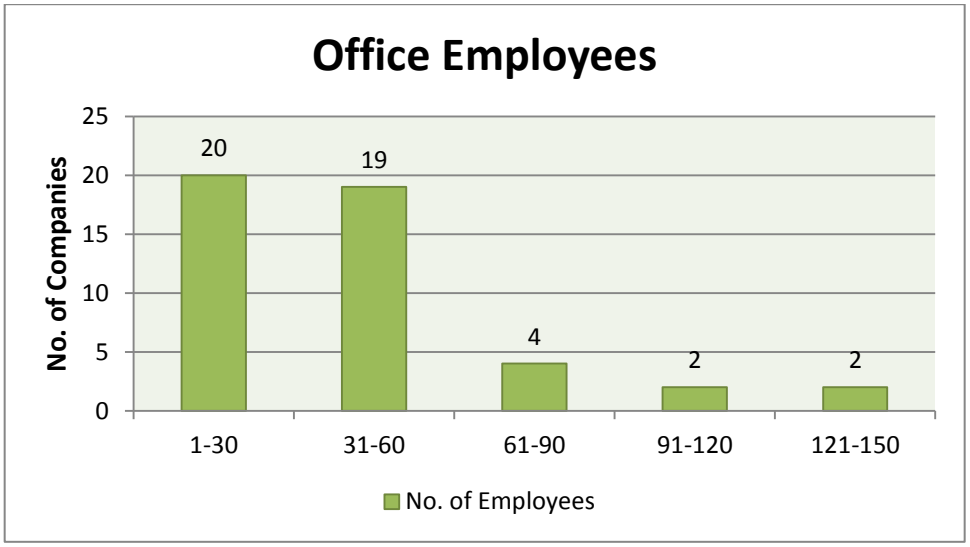
This section describes the structure of human resources of Syria's pharmaceutical companies as long as HR is considered the core of any industry. In this study, we grouped all answers given by respondents in order to classify them to fulfil the entity of human resources in the business model.

Firstly, and as the pharmaceutical companies are manufacturing units, the first input should be considered is the number of production employees. This number of employees includes foremen, machinery engineers, production planners, and technical support personnel. The noticed is, almost the third of the participated population (pharmaceutical companies) have between 101 to 200 employees in their facilities, which means the majority of these companies are in the middle-range of HR asset comparing to other industries require intensive human resources like banks or agricultural businesses.

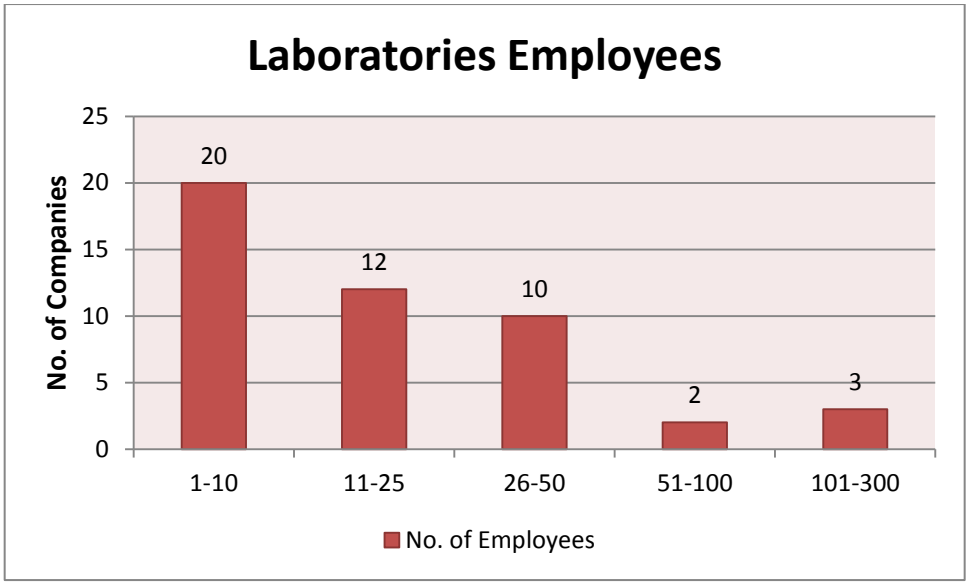


Moreover, office employees, including executives, form another significant labor force and should be taken into consideration as these people act like masterminds to run all other departments in the company, containing the previous-discussed input, the production labor force.

In this population, almost 40% of the companies are managed by less than 30 officer spread on sales & marketing, finance, procurement, and so on. And another 40% of these companies are administrated by 31 to 60 personnel. The remained 20% went to be managed by 61 to 90 with a 10% and 91 to 120 and 121 to 150 got 5% each accordingly. There is no significant correlation between the number of production people and the number of office executives.



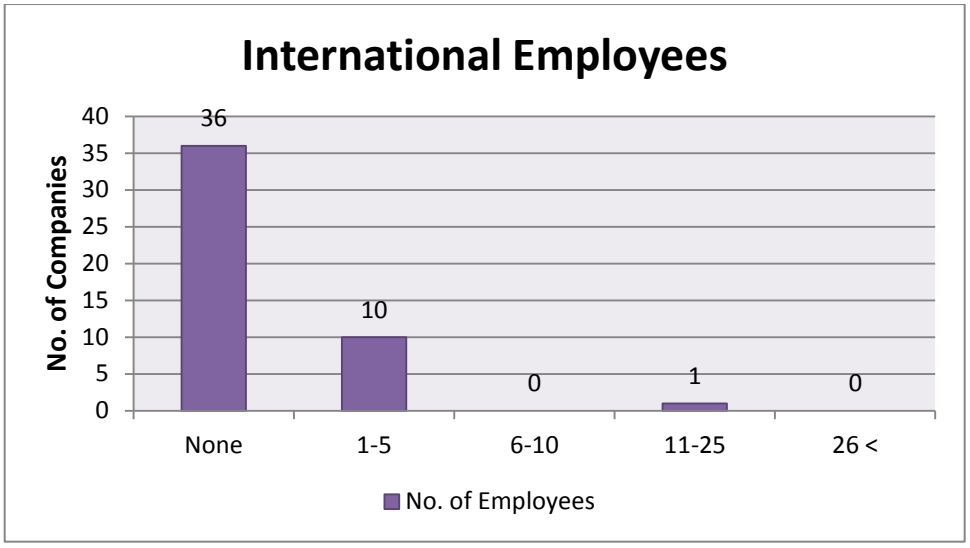

The third important input of the pharmaceutical labor force in Syria is the employees of laboratories as per their significant role for controlling and adjusting the quality standards for the company and the ready products as well. Usually, their number is comparatively the lowest with the production and office employees which is a few. These employees include pharmacists, chemists, biotechnological engineers, and quality assurance officers. Based on the discussions with the respondents run during the questionnaire filling-ups, the stated that laboratories' staffs are also involved in quality certificates registrations, and they monitor the account of the licensing corporations if they are producing their licensed products.



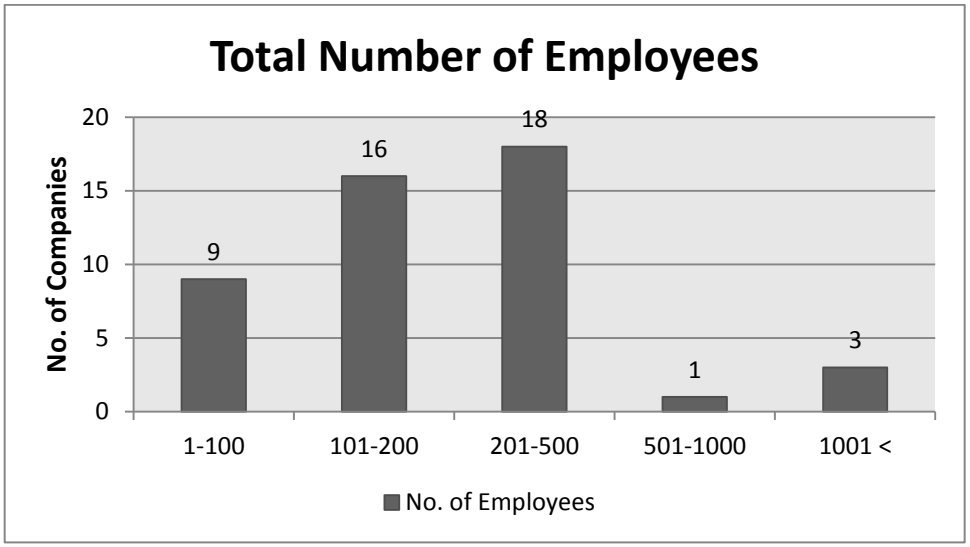

As per above chart, 20 companies out of the population are relying on less than 10 officers in their laboratories, which equals around 42% of the studied community. Besides, only 3 companies rely on huge laboratories within their facilities. The remarkable scene here is that 2 of these three companies are employing 1000 production worker or more, while the third one has the 100 laboratories' workers beside 200 production staff.

The fourth and the last component of the labor force of the pharmaceutical companies in Syria which is the international employees (the expatriates). Even though Syrian industries are depending on local labor force which is advantaged with productivity, efficiency, and cheaper rates per day, some companies hired international employees in order to get global experience to benefit their organizations.

Based on the graph below, 36 companies are relying on 100% Syrian experienced and trained labor force (which equals to 75% of the studied community), while 10 companies are getting the service of less than 10 foreign employees, and only one company (Asia Pharma) hired more than 10 international executives. All international employees are positioned in executive and managerial levels only.



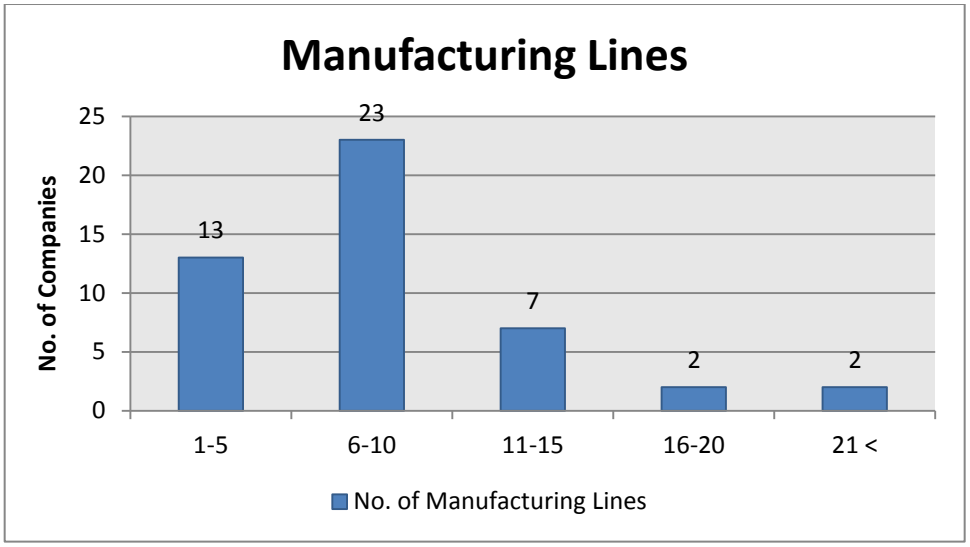

To sum up this section, and based on the below-listed graph, most of the Syrian pharmaceutical companies are considered as middle-level using the human resources measurement. This refers back to a fact that pharmaceutical industry in general does not require an intensive labor force in the facilities and offices, unlike other fields of industry like the petrochemical or oil & gas companies. This showed below as 90% of the companies hired less than 500 employees, one company has between 500 to 1000 employees, and only three companies have more than 1000 staffs in their departments.



### 4.3.3 Production Information:

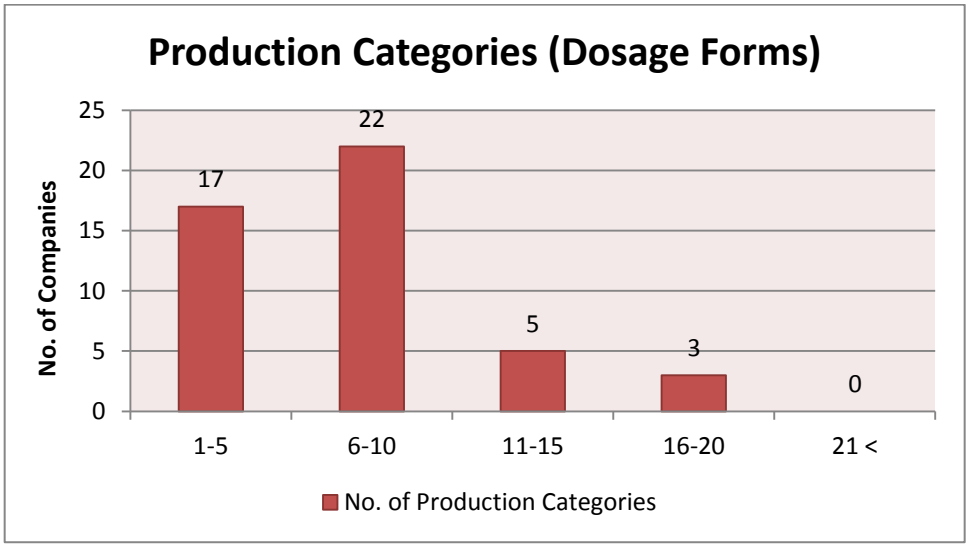
In this part, we list down all information which gained from the respondents related to the production process. They could follow the questions asked in the survey regarding the number of production lines, the number of products' categories, the total number of products, and the possibility of getting involved in any upstream related industry.

To start with, the respondents were about the number of production lines they have in their companies' facilities, as this figure shown the production capacity of the companies and their ability to cover 100% to approach to a wider market share locally and overseas.




Results show that almost 50% (23 companies) of the population are operating 6 to 10 manufacturing lines, producing a variety of products, while only 4 companies are following production plans away from the majority with 2 companies having between 16 and 20 manufacturing lines (Shifa Pharma and Pharmasyr have 16 production lines each) and another 2 companies are having more than 21 manufacturing lines in their plants (22 manufacturing line in Oubari Pharma and 25 in El-Saad Pharma). To highlight here, the number of manufacturing lines does not include the overseas plants (if any), and does not comprise any assistant machineries such as air compressors, power generators, gases generators, or loading vehicles.

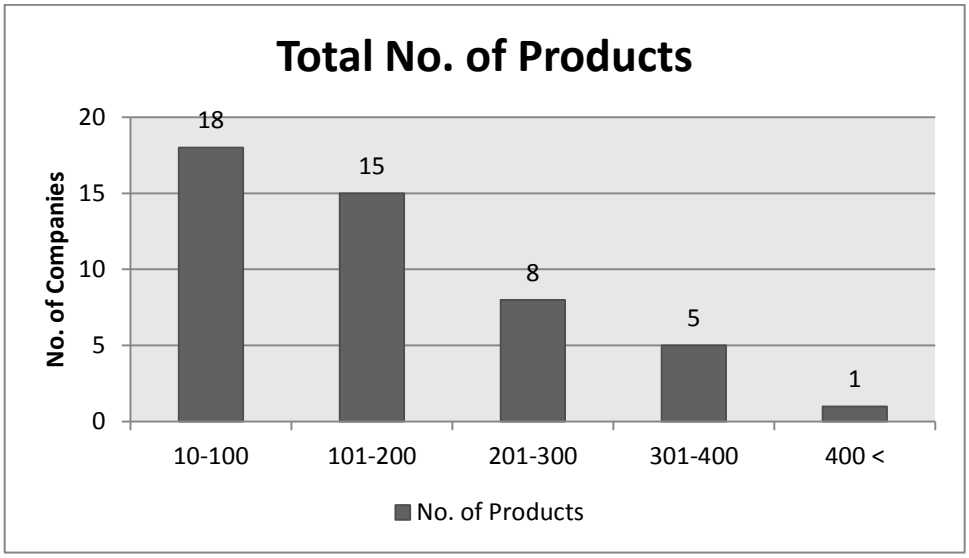
Furthermore, another entity refers to the production formula is the production categories. The question was introduced to the respondents to state the number of these categories which they reflect the types of dosage forms their companies are manufacturing. These dosage forms contain chew and solid tablets, gelatin and solid capsules, vials for powders or liquids, powder and liquid glass ampoules, plastic cartridges, dry and dissolved syrups, drops, suspensions, suppositories, gels, creams, ointments, effervescent, etc.




17 companies out of 47 have less than five various dosage forms and another 22 companies were producing between 6 to 10 dosage forms. This shows that most of the companies were operating based on bigger quantities and not referring to different categories. The third group of companies has between 11 and 15 dosage forms, and lastly three companies manage 16 to 20 medication categories (Barakat Pharma, Oubari Pharma and Shifa Pharma).

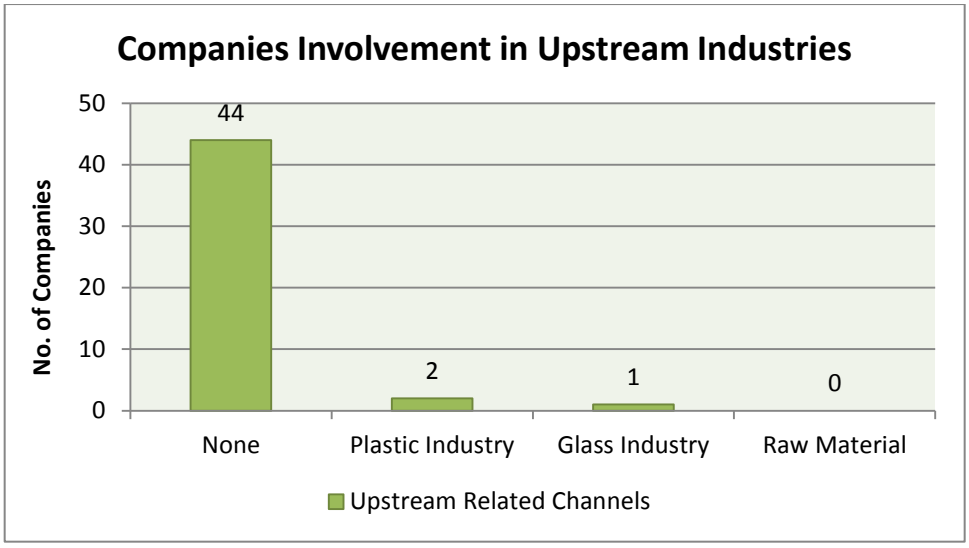
To an extent, there is no correlation between the number of production lines and the types of dosage forms as some categories can be produced using the same facility such as the filling machine which it is capable to fill up powder and liquid components and for different sizes, which means can fulfill the requirements for producing syrup bottles or vials glass cartridge.

Going further with the production information, the questionnaire could collect answers from the participants about the total number of products their companies' products. This entity includes products with their different concentrations and various dosages.




There are 18 companies produce series of products between 10 and 100 (started from 10 as per limited earlier in the research limitations of this study). The number of companies decreases when the total number of products gets doubled to become from 101 to 200 products. Then the number decreases to the half to count companies produce 201 to 300 products. 5 companies out of the studied 47 are manufacturing more than 300 and less than 401 different units in their chain of products, and lastly, there is only one company which produces more than 400 types of medications (which is Asia Pharma with 540 products).

The last input should be studied to get over this section is whether the company is interconnected with any upstream related industry. This means and kind of supplies the company owns away from the pharmaceutical manufacturing but still interconnected to it. So, this includes glass supplies, plastic supplies, paper supplies, raw materials supplies, and so on. No company can cover all horizons of its industry even if it is simple industry. However, the pharmaceutical industry has many featured industries which should be supplied by to keep the flow of the chain on.




This graph shows that most of the companies, around 96% of the population, are relying on outsourcing for supplying their inputs. This can be rationale in terms of saving time and money and to concentrate more about the core business. However, only two companies are involved in two upstream industries as the following; Rama Pharma in Aleppo owns its own plant for producing plastic containers for their own usage, as their representative stated on their strategy for concentrating on all types of drops, eye, ear, and nose. The second case is for Thameco in Damascus, which is the only governmental-linked company in this population, and as they have the sufficient support by the government to expand their facilities for producing their plastic containers as well as the paper sheets.

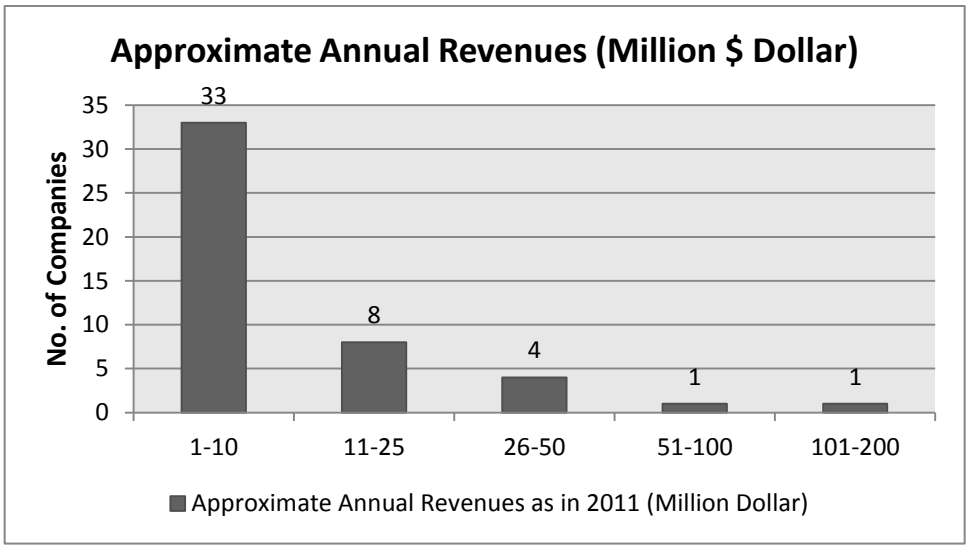
By observing further about the reason of avoiding getting involved in related industries and losing the chance of getting few more margins, some of the participants declared that the profitability they are getting from the producing medications distort the concentration on other margins, unlike other industries like food processing, they keep looking for saving from many sources in order to assemble wider margins of profits.

We do agree with the respondents on this point as other companies, mostly in developed countries, have adopted the same business model, which gives the possibility to create new-fashioned field of industry such as the pharmaceutical packaging.

### 4.3.4 Marketing Information:

This section illustrates the general headlines for marketing strategies implemented by the Syrian pharmaceutical companies in Syria. Within the questionnaire, there were 5 questions directed to the respondents in order to get answers regarding the marketing data which allowed us to understand further the strategy of each company respectively. These questions were identified by the respondents as controversial as they contained content about their annual revenues, the market share locally and overseas, and the companies' involvement in downstream related industries.

To start with, the participants were asked about the annual revenues for their companies, some claimed that this answer should be confidential and non-published information, but we could secure that the names and their names and the companies will be hidden in this question in order to show only where companies are placed in the scheme of revenues. All disclosures were on the last fiscal year of this study which is 2010.

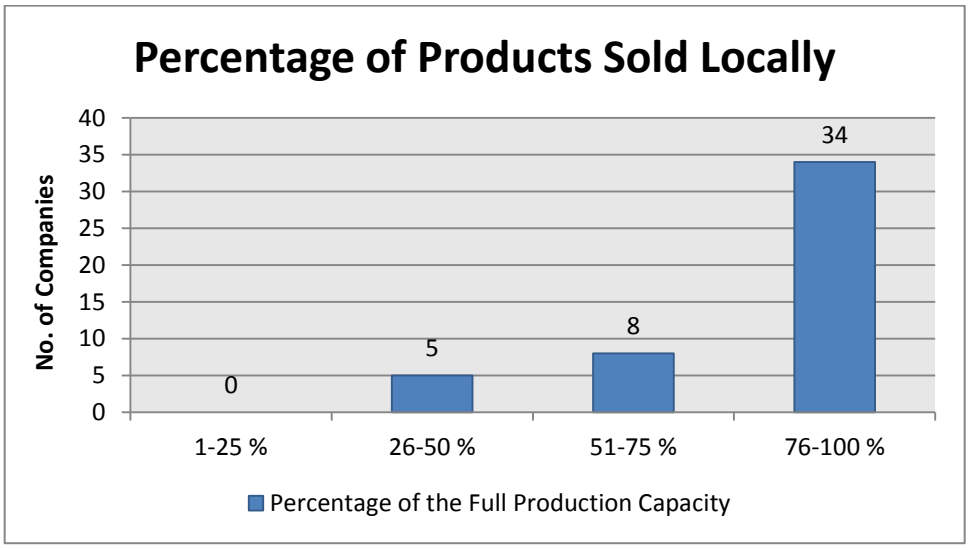



As per collected, 33 companies out of 47 gained in between 1 and 10 million US dollars in 2010. The mentioned also that this number can be generalized on the last operating years (2008 – 2010) within stabled environment and no much shifts-forward happened in the industry. This equals almost 70% of the studied population placed in this position

and shows that this majority is considered low or medium-range companies based on the revenues-intensity classification.

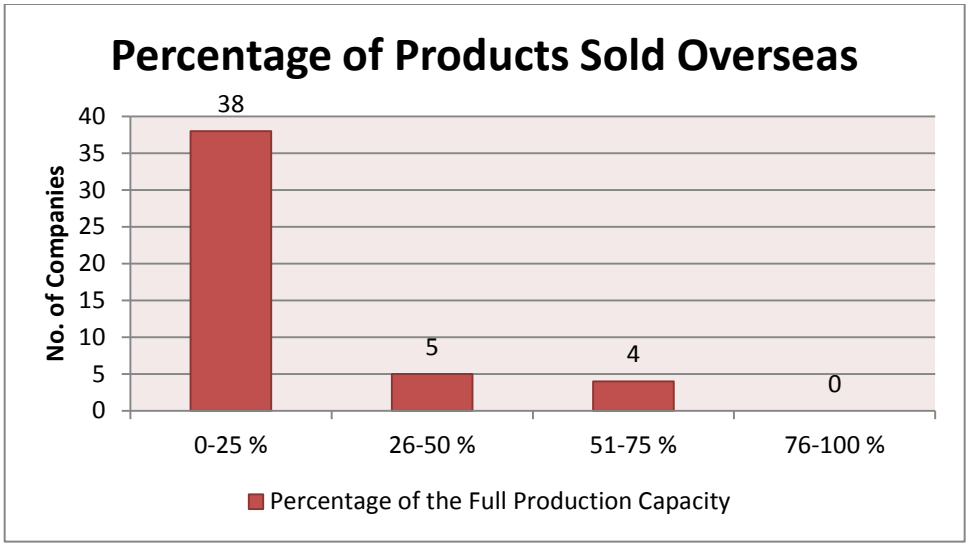
The seen, about the remained 30%, is distributed as; 8 companies collected between 11 and 25 million US dollars yearly and 4 companies gained doubled-figure in between 26 and 50 million US dollars. It also shows that only one company got more than 100 million US dollars in the year of 2010 and another company earned more than 100 in the same year. The noticed for the last two companies that they act as contract manufacturer for other companies locally and overseas.

Another concept was discussed on the marketing scheme has two interconnected sides. Participants were asked two questions about their companies' products which sold locally and the other question about the percentage of their products goes overseas.




The above graph shows that there is no company sells below 25% of the products locally, which means companies are selling at least between 26 and 50% of the production in the local market, specifically four companies are selling 40% of their production capacity in the local market and one company sells 50% of it. The number of the companies approaches to 8 when the percentage gets higher between 51 and 75% of their production covering the local market, while the majority, around 72% of the companies, are selling at least 76% of their products in the local market.

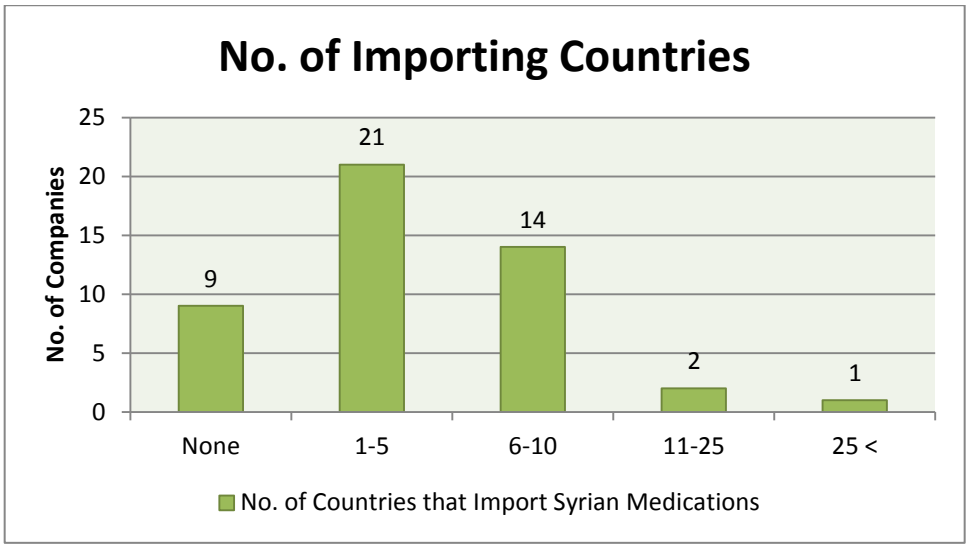
On the other side of this concept, the below graph describes the percentage of the companies are selling their outputs overseas as a vise-versa from the previous graph. To begin with, there are 9 companies which are involved in selling their products locally only (Ibn Roshed Pharma, Pharmalife, Rama Pharma, Ugarite, Allied Pharma, BioMed Pharma, Magico Pharma, Thameco, and Unichema). These companies have no overseas markets and if there is, it would be on tight margin and exported individually or by other trading companies (drugstores as an example). In the opposite side, there is no company sells 100% of their product to overseas market, or even more than 75% as showed in the graph below.




Asides from the 9 companies, the remained 29 companies export less than 25% of their production overseas. The rest of the studied community (9 companies) are involved in exporting on a higher level when it approaches to 5 companies export between 26 to 50% of their production and another 4 companies export 51 to 75% of their products to other markets.

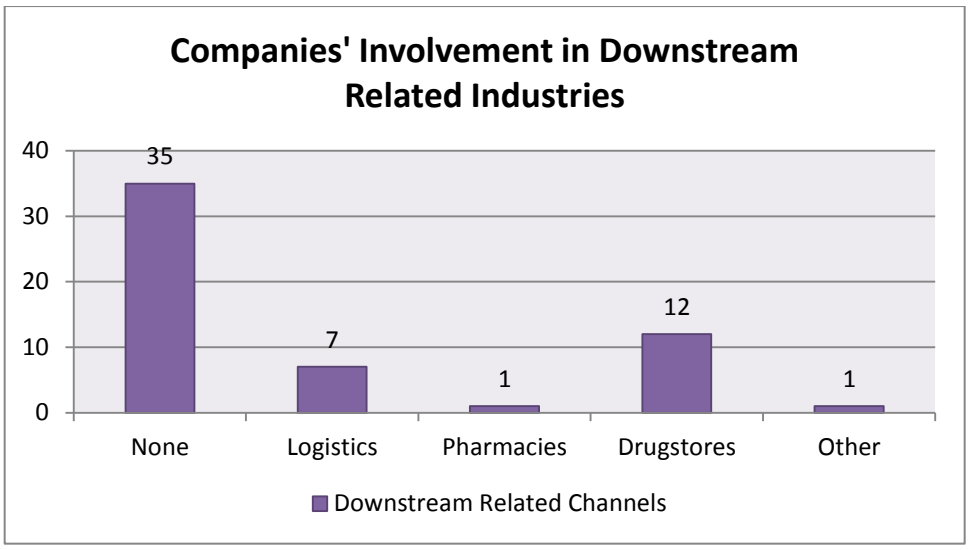
The previous two graphs are integrated to the fourth question of the marketing section which it illustrates the number of destinations companies are exporting to. As per the conversations with the respondents, most of the importing countries are located in Asia and Africa and the Syrian medication are registered in the ministries of health of these

countries. So, all data about the exports and imports should be recorded in both parties and there is no smugglings registered between Syria and the importing countries. An example of these countries; Yemen, Lebanon, Libya, Algeria, Sudan, Somalia, Djibouti, Chad, Mali, Burkina Faso, Senegal, Benin, Ghana, Togo, Ethiopia, Guinea, Armenia, Azerbaijan, Uzbekistan, Tajikistan, Kyrgyzstan and some more.




Aside from the first column of this graph which it contains company involved in local market only, there are 21 companies which export to 1 to 5 countries following the bunch of countries mentioned earlier, and other 14 companies are exporting to 6 to 10 destinations in different portfolios. Only 2 companies, NCPI in Aleppo and Orient Pharma in Damascus, are exporting to 15 destinations each (as in the fourth column) and one company exports to more than 25 countries in Asia and Africa (Asia Pharma exports exactly to 37 countries).

Lastly in this section, the participants answered the question which was asked to them about the possibility of their companies to get an involvement in downstream related industries in their supply chain. I found from their answers that they are involved in the downstream more comparing to their existence in the upstream flow, besides their thought about having a better benefit with this involvement on the profitability margins scheme.



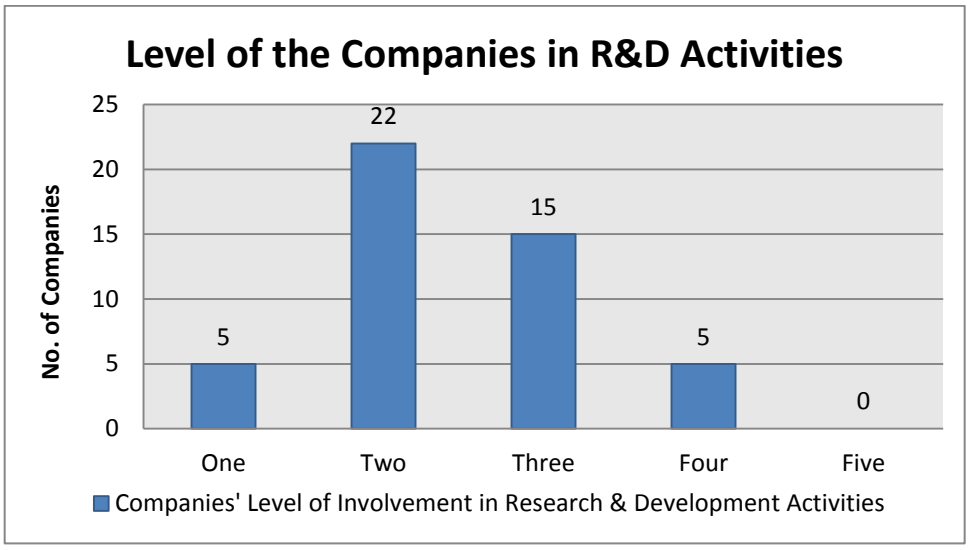

35 participants declared that their companies have no involvements in any downstream industries and they are concentrating on their process of production only. Therefore, the remained 12 companies scored many involvements in different categories of industry. 7 companies of this group (12 companies) are involved in logistic services to their local customers (drugstores and hospitals) represented be a network of cars and accounts executive who are running and maintaining these connections, while only one company has its own chain of pharmacies in the country (Asia Pharma), selling their products and others' products as well. At the same time, all 12 companies have their own drugstores which they represent in this industry the middleperson between the manufacturer (the pharmaceutical company) and the retailer (the pharmacy). It should be mentioned here that drugstores are important players in this business model and they are also able to control the market and the availability of the products locally and in neighboring countries.

Lastly, the representative of Pharmalife mentioned that his company introduces training services for the people in charge for the whole industry of pharmaceutical, whether they are positioned in the pharmaceutical manufacturing companies, drugstores owners, or even pharmacies. We aimed to this service introduced by Pharmalife in the fifth column of other.

### 4.3.5 Research & Development Information:

The last part of the analyses includes all data collected from the respondents about the research level and the quality implemented and whether the company had developed licensing agreements with the multinational companies. This part can be determined as one of the business model inputs as it indicates the level of technologies used in the facilities and gives and insight about the level of development the company had reached.

The first question of this part was asked to the participant about their own view about the company's level of research as long as they are members of these companies and in a level allows them to be familiar with. The question was asked using a Likert scale and answers from 1 to 5. To mention again, the views of this questions are completely subject to the respondents' estimation and they may not show the reality about how their companies are positioned on the research scheme of business model.

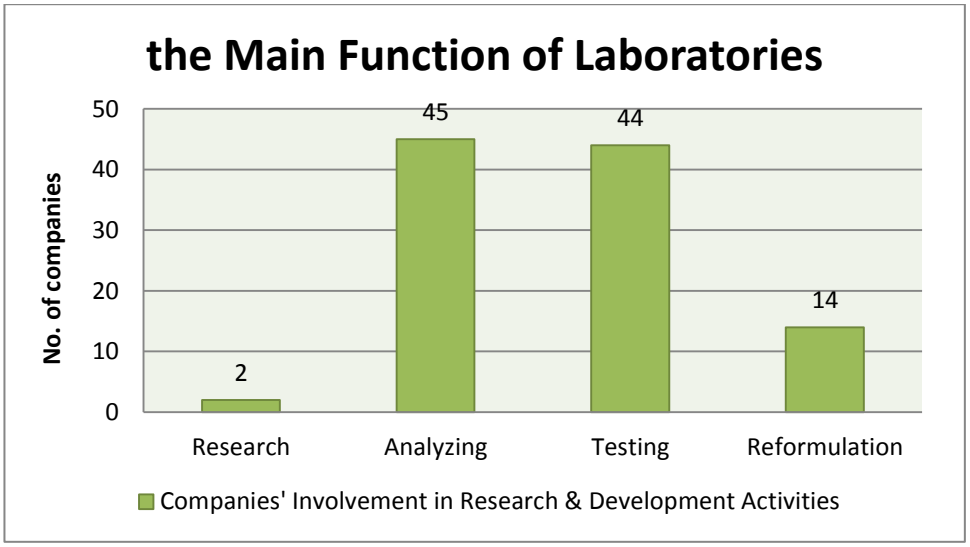



Based on the above graph, one represents weak level of research and developing, while three shows a middle level of research done in the laboratories and five refers to a higher level of the research.

5 out of 47 respondents disclosed that their companies are not that much involved in immense activities in their laboratories, while other 22 mentioned that their companies rely on their scientific center to develop some case of pharmaceutical reformulation

process. Another 15 participants assigned 3 as a suitable value could be given to their companies on this scale and 5 companies could get 4 out of 5 on the research scale of this study. Referring to the side discussions with the respondents pointing to the level of research, they mentioned that the level of research, as long as the produce generic medications in general, depends in this case about the level of reformulation process occurs in the laboratories.

With a deeper look to the main functions of the laboratories and the research centers inside the company, we found that laboratories, generally, are in-charge for 4 main activities which are; research, analyzing, testing, and reformulation.




The respondents got the ability to answer this question with multiple choices to let them assign the exact answers about their company. 2 participants (Alma Pharma and Unichema) scored Research as an answer for this question and the commented further that their companies are conducting researches on the impacts of their medicines and testing their side effects, cooperating with doctors and pharmacies in this regard.

At the same time, 45 companies are analyzing their medication and checking the status of the used raw materials after the process of production before certifying the product to be produced in big volume following each batch individually.

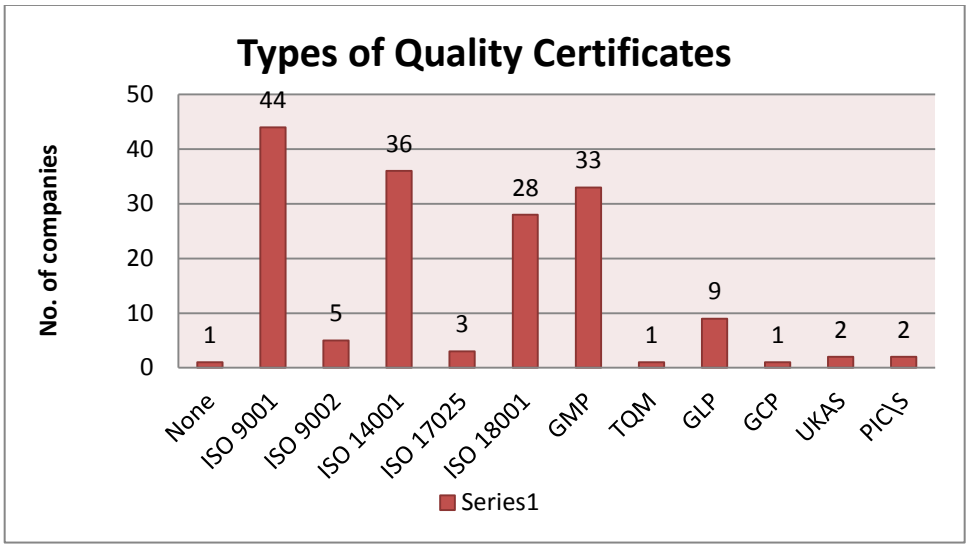
The other function of the laboratories was the Testing when the laboratories are requested to check each pack of products separately, inspecting any sediments or error happened during the production on a large scale and trying to shoot the failed units. Normally, this process comes after the Analyzing and we can indicate that from the converged number in the graph on the 2nd and the 3rd columns.

Lastly, the Reformulation function is not available in all companies, even it was not determined in the questionnaire as a separated answer, but the respondents pointed to it and made it an important function of the laboratories. They meant by reformulation as the process applied on the imported raw materials to use them on the same products but in different dosage forms, as the product has the effective material whether it is formed as a tablet or a syrup. That is why the reformulation process requires trained and professional personnel to perform it well, and it is obvious that only 14 out of 47 companies have this entity in their laboratories.

These laboratories are also concerned with the quality control issues among the products as well as whole departments in their companies. I could indicate about the companies' interest on controlling a good level of the quality among their products by inspecting the number of the global quality certificates have been obtained by the company from accredited organizations in the world.

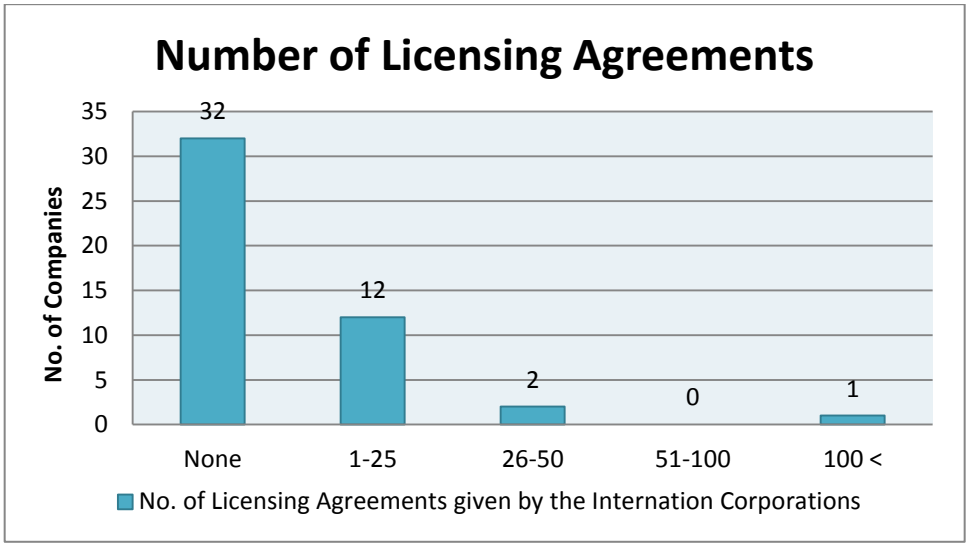
Only one company had not obtained any global certificates since its establishment, away from the certificates given by the Syrian organizations which are considered as awards, but at the same time they were able to export their products to 4 countries relying on the local certification. Obviously, 12 companies had rewarded 1 or 2 quality certificates from global parties and the number approaches to 21 companies when the number of certificates gets doubled to be 3 or 4 certificates. Lastly, 13 companies had obtained 5 certificates or more up to 2011.

During the data collection, we explored further about these certificates of quality and the source is issuing them. The most obtained certificate was ISO 9001 from SGS or TÜV, which are considered as the most known organization for inspection and testing functions around the world, which was obtained by 44 companies of the studied population. Later on, 5 companies had upgraded their ISO certificate to get ISO 9002 version by adding some more entities to inspect. The second most obtained certificate is ISO 14001 which is given upon being Environment Friendly for companies in various fields of industry, and in this case 36 companies could be characterized with it. Following other type of ISO, 28 companies could obtain ISO 18001 from the same issuing organizations, while some, 3 companies only, are still following the standards of ISO 17025 referring to the same function.



Another category of certificates was the Good Manufacturing Practices which is abbreviated as GMP and 33 companies obtained it, besides 9 companies were certified with Good Laboratories Practices – GLP and 1 company with Good Clinical Practices. Some companies have been distinguished by specific certificates such as UKAS certificate which it means the United Kingdom Accreditation Services (Shifa Pharma and Orient Pharma), and PIC\S certificate which is given by the Pharmaceutical Inspection Co-operation Scheme to two companies in Syria (NCPI in Aleppo and Medico of Homs).

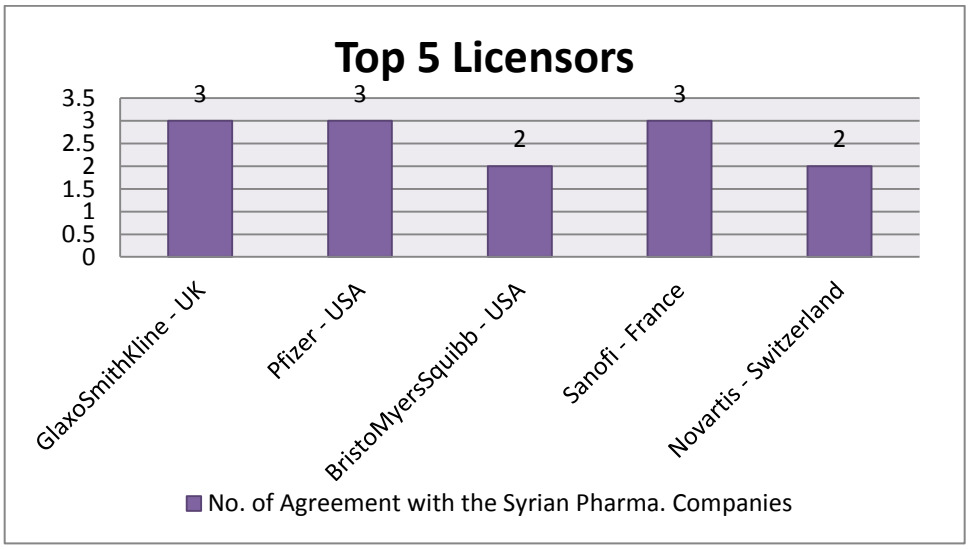
The last input that this part talks about is the licensing agreements between the MNCs and the local Syrian companies. Some of the Syrian pharmaceutical companies have obtained licensing agreements from the multinational companies in terms of producing the international products in Syria as a kind of franchising. Basically, the MNCs should check the ability of the local company for the production before it gives the agreement as the scientific and the commercial name should be used under control of the licensor.




As per illustrated in the above graph, the majority of 32 Syrian companies (almost 68%) are producing their own products away from manufacturing licensed product under control of the MNCs. But at the same time, 12 companies out of 47 had licensed less than 25 products in their category. Moreover, 2 companies are producing between 26

and 50 licensed products (Oubari Pharma produces 35 licensed products and Avenzor has 43 licensed products in its portfolio). Lastly, only one company produces more than 100 products using licenses from MNCs which UniPharma in Damascus. Basically, UniPharma is the only local company which has many licensing agreements with the big names in pharmaceutical world such as GSK, Bayer, and Pfizer.

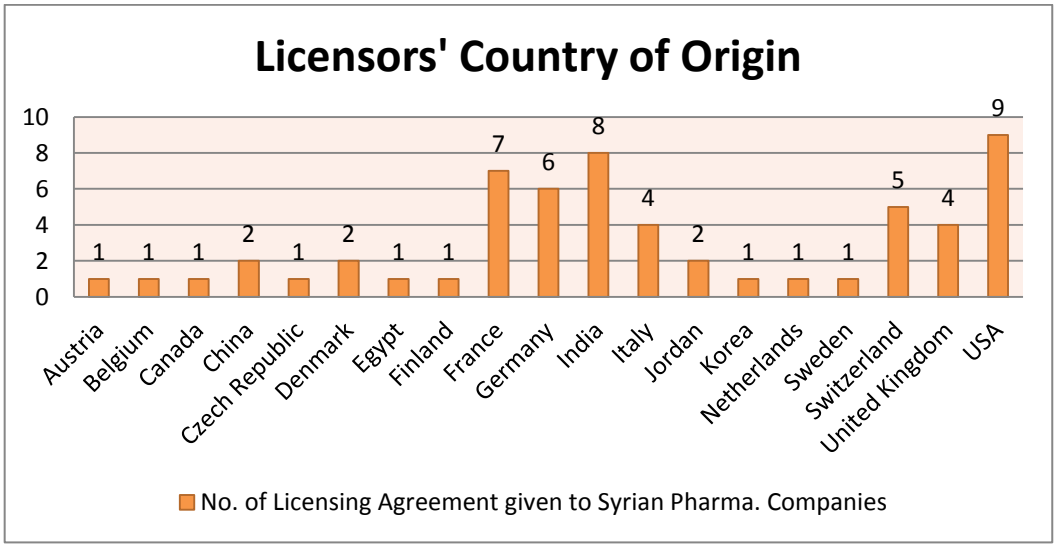
The Syrian pharmaceutical companies were able to sign these contracts with the big names in the pharmaceuticals' world in order to improve the standards of the quality among all products, especially the local generic medications, besides getting the global experience to implement through the facilities. These MNCs were headquartered in many countries in North America, European Union, and Asia. Although, there are the below5 companies which they are grouped as the top 5 licensors to the local Syrian companies.




GlaxoSmithKline is one of the biggest names in this field headquartered in London and serves in many parts of the world as a manufacturer and licensor, it has given agreements to 3 Syrian companies which are; ALPHA, Avenzor, and UniPharma. The second most important licensor is the American Pfizer which located in New York City and gave 3 agreements to; Avenzor, UniPharma, and MPI. Thirdly, Sanofi of France had licensed three companies to produce it products which are; Oubari Pharma, Avenzor,

and UniPharma again. At the end, there are 2 companies whom franchised 2 Syrian companies each to produce their products. The Swiss Novartis had given its name to be produce under it by MPI and UniPharma, while BristolMyersSquibb franchised ALPHA and UniPharma to produce specific products.

To sum up with, I assembled all licensors' country of origin in one graph in order to the readers to get an overview about the knowhow of these agreements which it helped the Syrian products to approach to farer destinations.




As per indicated, the USA got no.1 with licensing 9 products to be produce locally in Syria, while India comes at the second level with 8 licenses given to the Syrian companies. France comes thirdly with 7 agreements with the Syrian parties and Germany positioned fourthly with 6 licensed products. Switzerland, through its global pharmaceutical MNCs could approach to the Syrian industry and licensed 5 products, while both the UK and Italy companies had agreed with the Syrian pharmaceutical companies to produce 4 products for each. The Syrian companies had obtained 2 licenses from the Chinese, Danish, and the Jordanian companies respectively. Lastly, some companies located in Austria, Belgium, Canada, Czech Republic, Egypt, Finland, Korea, Netherlands, and Sweden had agreements with the Syrian companies with one contract each.

## 4.4 Conceptual Framework Review:

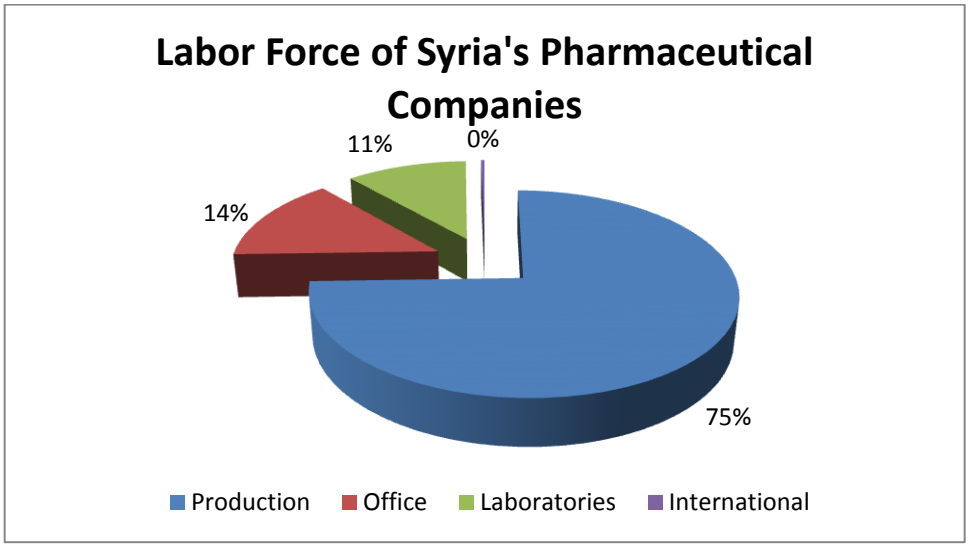
The conceptual framework of this research was tested manually because of the non-complex measurements and analyses were done through this study. The testing represents the findings summary and reflects the research questions directly.

The first entity explores whether the business model of the pharmaceutical companies in Syria has a specific stream and can be structured accordingly, or it follows other industries' business model.

To test this, we scanned the data related to HR and R&D based on my practical background on the Syrian market, as no industry has the same intensity of labor force and the quality assurance procedures, except for the food processing field which is similar to the pharmaceutical industry and requires high standards to control the quality.

As per reviewed earlier in this chapter, the pharmaceutical companies have various kinds of labor forces distributed among all departments in the production, laboratories, and the management offices.

**Figure 4.1 Labor force Existence in the Pharmaceutical Companies in Syria**



This graph shows the intensity of the labor force and the distribution among the criteria; the production, the laboratories, offices, with showing the number of international employees as a percentage from the overall aggregate.

**Table 4.1 The Number of Employees in the 47 Companies of the Population**

| Criteria | Production | Office | Laboratories | International | Total |
|---|---|---|---|---|---|
| **No.** | 10232 | 1931 | 1526 | 43 | 13732 |
| **Percentage** | 75% | 14% | 11% | 0.3% | ~100% |

This intensity of labor force cannot be seen elsewhere in the fields of industry, aside from the service sector which it relies mainly on the human resources in their daily process.

Moreover, the level of research and development activities, even they main stand on analyzing and testing processes for the final products, it also showed that this type of the focused inspection is not available in other manufacturing companies, and unlike the food processing industry which it requires lower standards of quality comparing to the pharmaceutical industry.

Therefore, the business model of the pharmaceutical companies in Syria has its specific stream even there is a room to discover mutual specifications with other industries' business model.

At the same time, the level of R&D activities determines whether the business model of pharmaceutical companies in Syria is considered static or dynamic, besides the supply chain processes in both upstream and downstream interconnections.
By looking at the list of licensors' country of origin which it includes almost 20 country of origin to these companies which have long-run agreements with the local Syrian companies to produce their products in Syria. It is seen obviously how the business model is dynamic to consist smooth interconnection with the MNCs and to balance their business relationships.

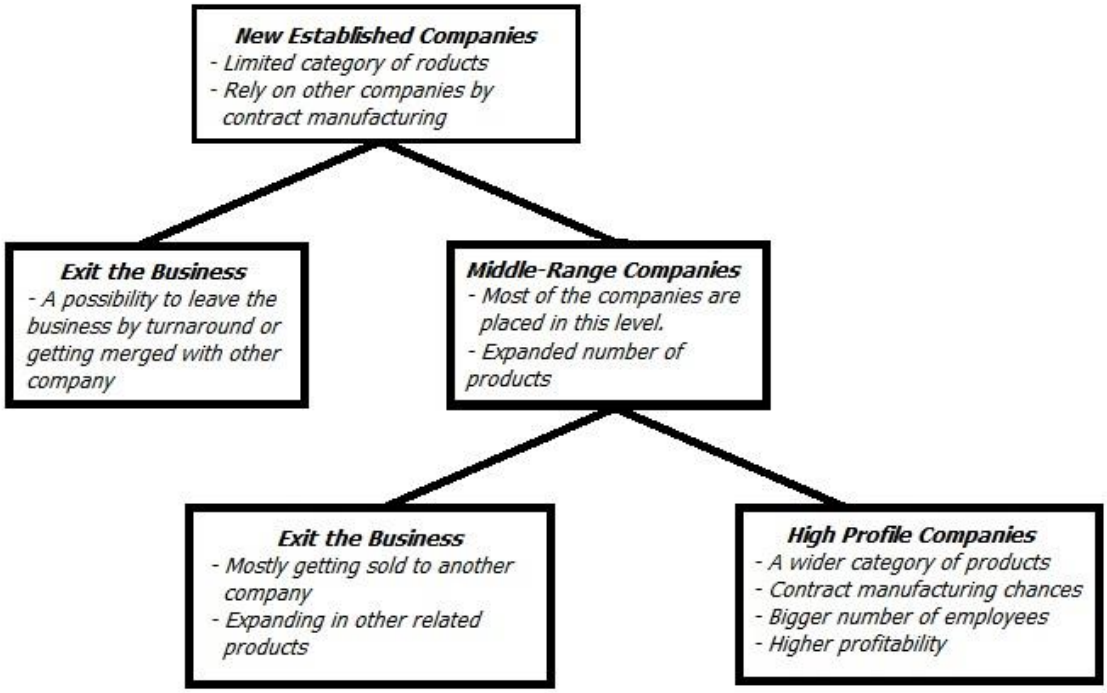
Furthermore, the companies had proved that they are not able to cover all manufacturing processes along the supply chain from securing the raw materials and other complementary outputs till creating downstream channels to distribute their products through. Business model could equate the relation with the suppliers as well as the buyers in terms of run the business smoothly. Assuming that Syria's pharmaceutical business model is static without any touch with the surrounding environment, it would have been impossible to cover the whole process of manufacturing, or at least made it difficult enough to be adopted by any company.

Finally, the last entity was tested to clarify if the business model of pharmaceutical companies in Syria suits the environment in Syria only or it can be generalized to other countries in the Middle East. By looking to the general headlines of the pharmaceutical business model of Middle East countries whose their companies are involved in the pharmaceutical companies, we found that all Middle Eastern countries are adopting the same type of business model as in Egypt, Saudi Arabia, Yemen, Tunisia, Sudan, and somehow Jordan, which it industry has approached beyond the levels of other Arab companies in research and manufacturing practices.

All Middle East countries are adopting the same manufacturing practices with converged level of limited research as all companies are producing generic products only, or as researchers call it "Moving over Counter" products. Hence, this business model which is coming up later, as per studied in Syria, can be similar to other companies in the Middle East based on the similarities in the economic environment, manufacturing practices, and cultural cases. However, there may be some differences on the number of companies operating in these countries comparing to Syria, and the volume of this industry including inputs and outputs.

Here we can adopt the trial of assigning the business model based on what had been done through this thesis and to let scholars to benchmark by using this business model to cover further in the pharmaceutical industry or working it out on other industries in Syria and other Middle East countries.

**Figure 4.2 the Business Model of Pharmaceutical Companies in Syria**




As per above figure, pharmaceutical companies in Syrian can be classified based on their profile. This classification is determined upon the revenues, total number of employees, the reputation, and global existence and cooperation.

**Table 4.2 Syrian Pharmaceutical Companies' Classification**

**Newly-Established Companies**

| | | | |
|---|---|---|---|
| City Pharma | Hariri Laboratories | Pharmalife | Rama Pharma |
| Salam Pharma | Sandy Pharma | Al-Fares | Allied Pharma |
| BioMed Pharma | Magico Pharma | Rouba Pharma | Syphco Pharma |
| UniChema | Alma Pharma | | |

**Middle-Ranged Companies**

| | | | |
|---|---|---|---|
| Al-Razi Labs. | Al-Shahba Pharma | Amrit Pharma | Barakat Pharma |
| Ibn Al-Haytham | Ibn Roshed | Kimi Pharma | Ugaarite |
| Adamco | Bahri Medical | Domina Pharma | Kanawait Pharma |
| MediPharm | Orient Pharma | Pharmasyr | Thameco |
| UltraMedica | Balsam Pharma | Emessa Labs. | Mediotic |

**High Profile Companies**

| | | | |
|---|---|---|---|
| ALPHA | Asia Pharma | Delta Pharma | El-Saad Pharma |
| NCPI | Oubari Pharma | Shifa Pharma | Avenzor |
| Diamond Pharma | MPI | UniPharma | Ibn Hayyan |
| Medico | | | |

## 4.5 Summary:

Based on data collected and analyzed from 47 respondents representing 47 pharmaceutical companies in Syria, we could develop a well-profiled structure of these companies. The goal of this framework is to come up with a developed explanation about the business model adopted by these companies and the way they do their businesses, of course before the Syrian crisis started in 2011.

First of all, it has been explained further about the process of the screening done to the collected data before I went through the analyses to make sure that all procedures of analyses deem to be correct and in order. Besides, all scores were checked carefully to pass this step successfully. We could confirm that the response rate was 100% as per small number of the population's companies and the importance of showing the facts as they should be.

Furthermore, the analyses were done by using the functions featured in Microsoft Excel 2010 version to sort, classify, and group the respondents in order to pertaining a clearer insight about the status of this field of industry. We decided to use many figures in this study to give a better understanding to readers by using graphs covering the whole entities of this research.

Lastly, we finalized the analyses by grouping these companies in three various classes as; newly-established companies, middle-ranged companies, and high profile companies to come up with an imagination about the business model adopted by these companies and showing the similarities of each group of them.

# CHAPTER FIVE

# CONCLUSIONS AND RECOMMENDATIONS

## 5.1 Introduction:

This chapter sums up the work done in this study through the earlier chapters. It begins with detailing the results which were approached from the analyses and shed the lights on specific points which were aimed to achieve. Besides, it confirms the limitations that had framed this research and allowed us to contribute to the science as well as Syrian industry. Lastly, some recommendations were stated in terms of enriching the position of this industry to help the companies to retrieve what they lost during the current circumstances.

This study has answered the following questions:

A. What could possibly be the business model of pharmaceutical companies in Syria?
B. Could the proposed business model be considered static or dynamic?
C. Is this business model consistent with the economic and business environment in Syria?

Besides of the above, this thesis has aimed to achieve two types of objectives which are the Academic Objectives and the Practical Objectives listed as follows:

*** Academic Objectives:**

A. To determine the pharmaceutical business models which are adopted by the Syrian pharmaceutical companies within a period from 2000 to 2010;

B. To introduce a comparison between the possible pharmaceutical business model among the Syrian companies and other pharmaceutical business models adopted by other companies from different parts of the world; and
C. To inspect the possibility of generalizing the pharmaceutical business model in Syria to other Middle Eastern countries which are involved in pharmaceutical industry?

*** Practical Objectives:**

A. To clarify the exact situation of Syrian pharmaceutical industry as a sophisticated field in the regional market by revealing the export data; and
B. To enhance the efficiency of Syrian pharmaceutical companies by giving them a transparent analysis on their performance in terms of improving their quality on both local and international markets.

## 5.2 Discussion of Results:

The results of the data analyses are considered in the context of the conceptual framework of this thesis. The first entity of the conceptual framework tested whether the business model of the pharmaceutical companies in Syria has a specific stream and can be structured accordingly or it adopts other industries' business model. The statistical analysis indicates that companies which are involved in this study have their own business model, notwithstanding the similarities and likenesses with other industries' business models.

The business model of pharmaceutical companies which it was developed earlier in this study shows that classifying these companies into three profiles help the readers and the scholars to understand the general outlines of the industry, and gives them a chance to explore other industries in Syria, or even getting through detailed results about one profile as per above-mentioned classification or a specific company.

The way that companies do business relies on a long functional supply chain, starting from the inputs of raw materials supplied by outsourced companies, or obtaining

licenses from MNCs, mostly based in North America and European Union, to produce their products in Syria under a control of the mother companies.

Featured to this step, companies work on securing other inputs to the industry represented by glass containers, plastic containers, paper material, etc. as indicated earlier, to use in the manufacturing process. However, these companies could be manufactured by the companies themselves as another channel of business, this proves the second entity tested in this study that the business model of pharmaceutical companies in Syria is completely dynamic and subject to cooperate with many parties in the surrounding environment.

Finally, this thesis tested the last and the third entity of conceptual framework developed earlier about the possibility of generalizing the founded business model on other pharmaceutical companies based in the Middle East, namely the Arab countries, because of the similarities existed and mutuality based on cultural, financial, and economical environment. As per respondents' disclosures, and referring to same type of ownership and management adopted in other countries with general reviews, we can say whole-heartedly that it is easy to generalize this concept of business model among these countries; even there is s lack of data in the Arabic content on the web.

## 5.3 Contributions:

### 5.3.1 Academic Contribution:

This thesis added a new material to the science of business model as no one has done before any observation about this business model in this field of industry in any Middle Eastern countries. Therefore, this study will help the researchers and the scholars from these countries to follow and to work it out based on the economic situation of each country involved in pharmaceutical businesses.

On the other hand, it can be a confluence for scholars from overseas to know the exact description of how the pharmaceutical industry was on as per reviewed earlier in chapter two of this study, they may work on the level to come up with a business model which it can be generalized on the pharmaceutical industry all over the world.

### 5.3.2 Practical Contribution:

This study looked at various dimensions and variables that affect the type of business model followed by the pharmaceutical companies in Syria. The results indicate that on several key dimensions, there are differences between newly-established companies, middle-ranged companies, and high profile companies. If these findings can be used to identify the position of each company on this business scheme and following the market share, it will enhance the small and medium companies to improve further in terms of opting out weaknesses they suffer from in order to approach to a higher-profile theme and reduce the dependence on the big companies (as per indicated, high profile companies are also involved in contract manufacturing for these types of the companies).

## 5.4 Limitations:

This research case was restricted to study the pharmaceutical industry in Syria which has several unique characteristics. Therefore, I would not be easy to generalize these findings on other industries in Syria. The accelerating changes occur in the pharmaceutical industry are unique aspects as they pertain an overview about this field of industry.

The value created in this thesis designed to draw the framework of the pharmaceutical business model of the Syrian companies as a contribution to the research generally to be as a start point for other scholars to enhance other scholars to work on the same industry as well as other industries in Syria. All techniques used in this research were validated to match the Syrian culture in a way to learn more about the pharmaceutical industry.

The research was conducted on 47 pharmaceutical companies in Syria, even there were, in 2011, around 74 registered companies in the Directorate of Pharmaceutical Industry of Ministry of Health. The exempted 27 companies were dropped as they may produce 10 products at least, or have got an involvement in veterinaries and agricultural treatments, or the companies which they produce medications from natural and organic

sources even with a chemical process, or companies which are manufacturing complementary medical products.

Lastly, these 47 participants were called to disclose their answers on the questionnaire according to their experience of heading units or departments, and as they are familiar with other departments, as this study covers various departments from HR to marketing, finance, and R&D.

## 5.5 Recommendations and Future Studies:

This study looked at various dimensions and variables that affect the business model in the pharmaceutical companies in Syria. It also showed how these companies could be classified as newly-established companies, middle-ranged companies, and high profile companies. The results indicated that on several inputs there are remarkable differences between the earlier-mentioned three types of companies. If these findings can be used to identify each company on the right position should be placed on, then this can be of significant benefit to the pharmaceutical industry in Syria.

This study will help companies to retrieve and compare the business model they used to adopt on the period before 2011. This will find a room to improve further in this level of industry and refresh what they had lost.

In this aspect, there is a chance to improve this study later through research papers or articles to specify the damages' volume happened to the pharmaceutical companies by conducting a survey collecting all damages happened to the facilities.

Another load could be inspected is the emotional traumatism happened to owners and managers if scholars are looking forward to describe about the rate of employment before 2011 and after the war ends, as this recovery will change the way adopted by these companies to do business and restructure the extreme damage.

Another aspect could be taken into consideration is the governmental rules about the recreation of the industry after the war get settled, because of the essential role of

pharmaceutical industry to be positioned back in the country's business core following its strategic adjective.

Since my study is based on the core of the pharmaceutical companies in Syria and the way they perform their businesses, yet the study took a place before 2011 as an overview on the position of this industry referring to the economic situation at that time. Therefore, there is a further room to look at the situation of the pharmaceutical companies in Syria the crisis from 2011 onwards by comparing the same figures studied here with the numbers came up since 2011. This can help the Syrian pharmaceutical companies to retrieve their position before the crisis in order to back up the level of industry at the previous time.

On the other hand, this study can be a base to look further at other business models of pharmaceutical companies among the Arab countries, like Egypt and Jordan, in order to inspect any possibility of convergence among the research level and the market share. Notwithstanding, the business models of other countries should be set-on to make the comparison achievable.
This comparison between business models in the pharmaceutical companies in the Arab countries will enrich, definitely, the power of this industry and may create self-sufficiency on the middle-run.

## 5.6 Conclusion:

The purpose of this study was to identify the business model adopted by the Syrian companies in the field of pharmaceutical industry. Another minor goal was to indicate and develop the Syrian pharmaceutical companies into three different classes in order to researchers and scholars to understand the outline of the industry.

This study started by reviewing the literature published in the recent few years, with some exemption for some articles which are considered as a benchmark for the field of business model. This allowed me to read through various experiments, mainly in North

America, European Union, China, and India. This review enriched my knowledge about the line of other authors and could leave a space to discuss in future about business model global comparisons and the possibility of getting any convergence in this regard.

Furthermore, the methodology was listed down, which was simple to be used and implemented through Microsoft Excel 2010 to sort, analyze, and classify the companies based on the scored disclosed by the respondents. It also illustrated how data was screened and checked in order not to miss any value in the data panel, because of the small size of the studied community (47 companies only). This was achieved by using the semi-structured questionnaire, including 5 sections of questions as; organizational information, human resources information, production information, marketing information, and research and development information.

Finally, the analyses were done through Microsoft Excel 2010 as per mentioned, and the data were checked again to assure all scores were recorded correct and in order, to avoid any possible problem and non-associated value on the panel.
By the full coverage of the population and the semi-structured questionnaire, there was no biasness recorded and at the same time participants were free to answer based on their experience and knowledge which enriched my experience about this field of industry and could lead us to this point of being familiar with the business model of pharmaceutical companies of Syria.

However, no research covers 100% a topic based on a single point of view, and we believe that readers and scholars will build their helpful further discussions on this base, on order to show Syria as a new member of global pharmaceutical manufacturer club.

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**Appendix A:** English Questionnaire

# Pharmaceutical Business Model in Syrian Arab Republic

This survey is to come up with a comprehensive overview about the pharmaceutical companies in Syrian Arab Republic

## Dear Respondent:

Many thanks for your participation in this survey. Your feedback is essential to me in order to submit my thesis to the Faculty of Administrative & Financial Sciences, Al-Madinah International University. This survey should only take 15 minutes of your time, and your answers will be handled carefully and confidentially. Your inputs will only be used in combination with the responses of others participating in the survey to come up with a comprehensive overview about the pharmaceutical companies in Syrian Arab Republic. Please note that a report of the results and findings of this study will be available and it will be sent to you upon request

## Respondent Details:

Your details will be handled confidentially in order to contact you later if necessary

***Name: ****

***Company: ****

***Position: ****

***Current Residence: ****

***Mobile: ****

***E-Mail: ****

## Organizational Information:

Questions 1 to 6

***1. Which province are you located in? ****

- Aleppo
- Damascus
- Homs
- Other:

***2. Where is your location? ****

Please mention the Area (neighborhood) of the Factory

***3. Do you have any international branch? ****

Please tick one answer

- None
- One Branch
- Two Branches
- Three Branches

***4. What is the company's ownership structure? ****

Please tick one answer

- Family Company
- Partnership
- Public Listed
- Other:

***5. When was the company established? ****

***6. When was the production start? ****

---

## Human Resources Information:

Questions 7 to 10

***7. What is the number of production employees? ****

Please mention a number

***8. What is the number of office employees? ****

Please mention a number

***9. What is the number of laboratories employees? ****

Please mention a number

***10. What is the number of international employees? ****

Please mention a number

---

## Production Information:

Questions 11 to 14

***11. What is the number of manufacturing lines? ****

Please mention a number

***12. What is the number of production categories? ****

Please mention a number

***13. What is the total number of products? ****

Please mention a number

***14. Is the company involved in any upstream related industry?****

Please choose one or more

- None
- Plastic Industry
- Glass Industry
- Pharmaceutical Raw Materials
- Other:

---

# Marketing Information:

Questions 15 to 19

***15. What is your approximate annual revenue? ****

Million U.S Dollar

***16. What is the percentage of products sold locally? ****

Please mention as a percentage %

***17. What is the percentage of products sold overseas? ****

Please mention as a percentage %

***18. How many countries are you exporting to? ****

Please mention a number

***19. Is the company involved in any downstream related industry? ****

Please choose one or more

- None
- Logistics (Transport)
- Pharmacies (Retailing)
- Drugstores (Wholesaling)
- Other:

---

## Business Development & Research Information

Questions 20 to 25

***20. What is level of company's research and development activities? ****

| | 1 | 2 | 3 | 4 | 5 | |
|---|---|---|---|---|---|---|
| Very Low | ○ | ○ | ○ | ○ | ○ | Very High |

***21. What is the main function of the laboratories? ****

Please choose one or more

- Researching
- Analyzing
- Testing
- Other:

***22. How many global certificates have been obtained by the company? ****
Please mention a number

***23. What are the quality certificates have been obtained by the company? ****
Please choose one or more

- None
- Total Quality Management (TQM)
- ISO 9001
- ISO 14001
- ISO 17025
- ISO 18001
- Good Manufacturing Practices (GMP)
- Good Laboratory Practices (GLP)
- Good Clinical Practices (GCP)
- The United Kingdom Accreditation Service (UKAS)
- Other:

***24. How many licensing agreement have been given to the company? ****
Please mention a number

***25. What are the licensors companies? (If any) ****
Please choose one or more

- None
- Abbott Laboratories
- GlaxoSmithKline (GSK)
- MERCK Sharp & Dohme (MSD)
- Pfizer
- Bristol-Myers Squibb
- Eli Lilly
- Boehringer Ingelheim
- Bayer

- Roche
- Sanofi
- Other:

---

**For further information about the survey, the theses, or the methodology adopted for this study, please do not hesitate to contact the below-mentioned persons:**


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**Appendix B:** Arabic Questionnaire

# نموذج الأعمال للصناعات الدوائية في الجمهورية العربية السورية

يقوم هذا الاستبيان على إيجاد نظرة شاملة على الشركات الدوائية في الجمهورية العربية السورية

**عزيزي المشارك:**

شكراً جزيلاً على مشاركتك في هذا الاستبيان. استجابتك جوهرية لي لتسليم أطروحة بحثي لكلية العلوم الإدارية والمالية في جامعة المدينة العالمية, مدينة شاه علم, ماليزيا .يستغرق هذا الاستبيان 15 دقيقة تقريباً, وستُعامل إجاباتك بحذر وكتمان. ستُجمع مشاركتك مع مشاركات متلقين آخرين مشاركين في هذا الاستبيان للوصول إلى نظرة شاملة على الشركات الدوائية في الجمهورية العربية السورية .يرجى ملاحظة أن تقريراً بنتائج البحث سيكون متوفراً وسيُرسل لك عند الطلب.

**بيانات المشارك:**

ستُعامل بياناتك الشخصية بسريةٍ تامة وذلك لأجل الاتصال بك لاحقاً عند الحاجة

**الاسم* :**

**اسم الشركة* :**

**المنصب الوظيفي* :**

**بلد الإقامة الحالي* :**

**رقم الجوال* :**

**البريد الالكتروني: ***

**المعلومات التنظيمية:**

الأسئلة من 1 إلى 6

***1. في أي محافظة تقع شركتكم؟ ****

- حلب
- دمشق
- حمص
- أخرى:

***2. في أي منطقة تقع شركتكم؟ ****

يرجى ذكر اسم المنطقة (الحي) التي تقع فيه الشركة

***3. هل لديكم أي فرع خارج البلاد؟ ****

يرجى اختيار إجابة واحدة

- لا يوجد
- فرع واحد
- فرعين
- ثلاثة فروع

***4. ما هو نوع ملكية الشركة؟ ****

يرجى اختيار إجابة واحدة

- شركة عائلية
- شركة تضامنية
- شركة مساهمة عامة
- أخرى:

***5. متى تم تأسيس الشركة؟ ****

***6. متى بدأت الشركة في الانتاج؟ ****

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## معلومات الموارد البشرية:

الأسئلة من 7 إلى 10

***7. كم عدد موظفي قسم الانتاج؟ ****

يرجى ذكر رقم

***8. كم عدد موظفي المكاتب؟ ****

يرجى ذكر رقم

***9. كم عدد موظفي المختبرات؟ ****

يرجى ذكر رقم

***10. كم عدد الموظفين الأجانب؟ ****

يرجى ذكر رقم

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## معلومات الانتاج:

الأسئلة من 11 إلى 14

***11. كم عدد خطوط الانتاج؟ ****

يرجى ذكر رقم

***12. كم عدد فئات المنتجات؟ ****

يرجى ذكر رقم

***13. كم عدد منتجات الشركة؟ ****

يرجى ذكر رقم

***14. هل الشركة معنية بصناعات سابقة ذات صلة؟ ****

يرجى اختيار إجابة أو أكثر

- ليست معنية
- صناعات بلاستيكية
- صناعات زجاجية
- صناعات مواد خام صيدلانية
- أخرى:

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## معلومات التسويق:

الأسئلة من 15 إلى 19

***15. كم هي إيرادات الشركة السنوية؟ ****

بالمليون دولار أمريكي

***16. ما هي النسبة المئوية للمنتجات التي تباع محلياً؟ ****

يرجى ذكر نسبة مئوية %

***17. ما هي النسبة المئوية للمنتجات التي تباع في الخارج؟ ****

يرجى ذكر نسبة مئوية %

***18. كم عدد البلدان التي تصدرون لها؟ ****

يرجى ذكر رقم

***19. هل الشركة معنية بصناعات لاحقة ذات صلة؟ ****

يرجى اختيار إجابة أو أكثر

- ليست معنية
- خدمات لوجيستية (نقل وإمداد)
- صيدليات (تجارة التجزئة)
- مستودعات أدوية (تجارة الجملة)
- أخرى:

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## معلومات تطوير الأعمال والبحث العلمي:

الأسئلة من 20 إلى 25

***20. ما هو مستوى نشاطات الشركة في تطوير الأعمال والبحث العلمي؟ ****

| | 5 | 4 | 3 | 2 | 1 | |
|---|---|---|---|---|---|---|
| ضعيف جداً | ○ | ○ | ○ | ○ | ○ | متطور جداً ○ |

***21. ما هي الوظيفة الرئيسية للمختبرات العلمية؟ ****

يرجى اختيار إجابة أو أكثر

- البحث العلمي
- وظيفة التحليل
- وظيفة الاختبار
- أخرى:

***22. كم عدد شهادات الجودة التي حصلت عليها الشركة؟ ****

يرجى ذكر رقم

***23. ما هي شهادات الجودة التي حصلت عليها الشركة؟ ****

يرجى اختيار إجابة أو أكثر

- ولا شهادة
- إدارة الجودة الشاملة TQM
- ايزو 9001
- ايزو 14001
- ايزو 17025
- ايزو 18001
- ممارسات التصنيع الجيد GMP
- ممارسات المخابر الجيدة GLP
- الممارسات السريرية الجيدة GCP
- خدمة الاعتماد في المملكة المتحدة UKAS
- أخرى:

***24. كم عدد عقود الترخيص الممنوحة للشركة؟ ****

يرجى ذكر رقم

***25. ما هي الشركات المرخصة؟ (إن وجدت) ****

يرجى اختيار إجابة أو أكثر

- ولا شركة
- Abbott Laboratories

- GlaxoSmithKline (GSK)
- MSD & MERCK Sharp (Dohme)
- Pfizer
- Bristol-Myers Squibb
- Eli Lilly
- Boehringer Ingelheim
- Bayer
- Roche
- Sanofi
- أخرى:

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**لمعلوماتٍ أكثر عن الاستبيان, عن الأطروحة, أو عن المنهجية المتبعة في هذه الدراسة, يرجى عدم التردد في الاتصال بنا كالتالي:**


**عمار قصاب**
**ماجستير في إدارة الأعمال MBM**
**كلية العلوم الإدارية والمالية جامعة المدينة العالمية (ميديو)**
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**بروفيسور داتوك دكتور اسماعيل بن رجب**
**أستاذ في قسم إدارة الأعمال**
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**Appendix C:** Questionnaire Scores

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Aleppo | Al-Mansourah | 0 | Family Company | 1990 | 1991 | 550 | 15 | 30 | 5 | 9 | 9 | 250 | 0 | 5 | 40 | 60 | 8 | Drugstores | 4 | Analyzing - Testing | 5 | ISO 9001 - ISO 14001 - ISO 17025 - GMP - GLP | 5 | GlaxoSmithKline (GSK), Bristol-Myers Squibb, Eli Lilly |
| Aleppo | Al-Mansourah | KSA | Family Company | 1987 | 1988 | 297 | 70 | 35 | 2 | 12 | 10 | 304 | 0 | 15 | 80 | 20 | 7 | 0 | 3 | Analyzing - Testing - Reformulation | 3 | ISO 9001 - ISO 14001 - GMP | 0 | 0 |
| Aleppo | Al-Mansourah | 0 | Family Company | 1989 | 1992 | 115 | 35 | 5 | 0 | 12 | 8 | 117 | 0 | 6.8 | 90 | 10 | 4 | 0 | 2 | Analyzing - Testing | 2 | ISO 9001 - ISO 14001 | 0 | 0 |
| Aleppo | Handarat | 0 | Private Limited | 1991 | 1992 | 164 | 18 | 7 | 0 | 5 | 10 | 82 | 0 | 6 | 90 | 10 | 1 | 0 | 1 | Analyzing - Testing | 2 | ISO 9001 - GMP | 1 | German Company |
| Aleppo | Kafar Hamra | Romania Russia Iraq Algeria | Family Company | 1952 | 1988 | 1150 | 60 | 300 | 12 | 10 | 11 | 540 | 0 | 200 | 40 | 60 | 37 | Logistic Pharmacies Drugstores | 4 | Analyzing - Testing - Reformulation | 7 | ISO 9001 - ISO 14001 - ISO 17025 - ISO 18001 - GMP(Syrian) - GMP (European) - GLP | 0 | 0 |
| Aleppo | Al-Mansourah | 0 | Family Company | 1972 | 1972 | 250 | 40 | 25 | 5 | 6 | 19 | 228 | 0 | 35 | 50 | 50 | 7 | 0 | 3 | Analyzing - Testing - Reformulation | 5 | ISO 9001 - ISO 14001 - ISO 18001 - GMP - OHSAS - GCC | 0 | 0 |
| Aleppo | Al-Zerbeh | 0 | Family Company | 2007 | 2008 | 70 | 20 | 15 | 0 | 5 | 13 | 300 | 0 | 6 | 80 | 20 | 2 | 0 | 2 | Analyzing | 4 | ISO 9001 - ISO 14001 - ISO 17025 - GMP | 0 | 0 |

| | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Aleppo | Al-Mansourah | 0 | Family Company | 1988 | 1990 | 226 | 47 | 18 | 0 | 10 | 10 | 286 | 0 | 29 | 77 | 24 | 6 | 0 | 2 | Analyzing - Testing | 3 | ISO 9001 - ISO 14001 - OHSAS 18001 | 0 | 0 |
| Aleppo | Al-Mansourah | Iraq | Family Company | 1994 | 1995 | 400 | 50 | 10 | 5 | 25 | 6 | 352 | 0 | 25 | 95 | 5 | 10 | 0 | 2 | Analyzing - Testing | 4 | ISO 9001 - ISO 14001 - ISO 18001 - GMP | 0 | 0 |
| Aleppo | Azaz | 0 | Family Company | 1992 | 1994 | 22 | 8 | 4 | 0 | 4 | 5 | 17 | 0 | 1 | 90 | 10 | 3 | 0 | 2 | Analyzing - Testing | 1 | ISO 9001 | 0 | 0 |
| Aleppo | Al-Mansourah | 0 | Private Limited | 1991 | 1992 | 200 | 100 | 8 | 0 | 9 | 12 | 234 | 0 | 21 | 88 | 13 | 4 | 0 | 2 | Analyzing - Testing | 4 | ISO 9001 - ISO 14001 - ISO 18001 - GMP | 2 | RipariGero - Benedetti |
| Aleppo | Al-Mansourah | 0 | Family Company | 2007 | 2008 | 35 | 32 | 12 | 0 | 5 | 5 | 44 | 0 | 2 | 100 | 0 | 0 | 0 | 2 | Analyzing - Testing | 2 | ISO 9001 - GMP | 0 | 0 |
| Aleppo | Al-Mansourah | 0 | Family Company | 1958 | 1959 | 110 | 45 | 10 | 0 | 8 | 8 | 190 | 0 | 5 | 75 | 25 | 5 | 0 | 2 | Analyzing - Testing | 2 | ISO 9002 - ISO 14001 | 0 | 0 |
| Aleppo | Khan Al-Asal | 0 | Family Company | 1989 | 1991 | 212 | 48 | 16 | 2 | 15 | 8 | 200 | 0 | 35 | 75 | 25 | 15 | Drugstores Logistics | 4 | Analyzing - Testing - Reformulation | 4 | ISO 9001 - ISO 14001 - OHSAS 18001 - PIC\S | 14 | Servier (France) - EBEWE (Austria) - JPM (Jordan) |
| Aleppo | Al-Zerbeh | 0 | Private Limited | 1989 | 1990 | 250 | 50 | 35 | 0 | 22 | 18 | 350 | 0 | 50 | 80 | 20 | 10 | 0 | 3 | Analyzing - Testing | 4 | ISO 9001 - ISO 14001 - ISO 18001 - GMP | 35 | Sanofi |
| Aleppo | Mayer | 0 | Private Limited | 2002 | 2006 | 37 | 74 | 6 | 0 | 4 | 5 | 28 | 0 | 2.2 | 100 | 0 | 0 | Drugstores Logistics Training | 2 | Analyzing - Testing | 2 | ISO 9001 - GMP | 13 | LEO - Belco - CITCO |
| Aleppo | Al-Zerbeh | 0 | Public Listed | 2004 | 2005 | 18 | 8 | 3 | 0 | 5 | 5 | 40 | Plastic | 1 | 100 | 0 | 0 | Drugstores | 2 | Analyzing - Testing | 1 | ISO 9001 | 0 | 0 |
| Aleppo | Al- | 0 | Family | 2000 | 2001 | 160 | 65 | 32 | 0 | 9 | 8 | 47 | 0 | 1 | 90 | 10 | 5 | 0 | 2 | Analyzing - | 3 | ISO 9001 - ISO | 7 | Welex Labs - Indian Herbs - |

| | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Mansourah | | Company | | | | | | | | | | | | | | | | | Testing | | 14001 - GMP | | ZIM Labs - United Biotech - Delass Natural Products - Mepaco - Lin Fa Medical |
| Aleppo | Al-Mansourah | 0 | Family Company | 1996 | 1996 | 80 | 20 | 5 | 0 | 7 | 7 | 98 | 0 | 4 | 90 | 10 | 3 | 0 | 2 | Analyzing - Testing | 4 | ISO 9001 - ISO 14001 - ISO 18001 - GMP | 0 | 0 |
| Aleppo | Al-Mansourah | KSA | Family Company | 1988 | 1989 | 285 | 50 | 65 | 0 | 16 | 16 | 348 | 0 | 12 | 80 | 20 | 6 | 0 | 3 | Analyzing - Testing - Reformulation | 6 | ISO 9001 - ISO 9002 - ISO 14001 - GMP - GLP - UKAS | 0 | 0 |
| Aleppo | Kafar Da'el | 0 | Private Limited | 1999 | 1999 | 86 | 10 | 4 | 0 | 4 | 4 | 28 | 0 | 3 | 100 | 0 | 0 | 0 | 1 | Analyzing - Testing | 2 | ISO 9001 - GMP | 2 | German Company - Korean Company |
| Damascus | Khan Al-Sheeih | 0 | Private Limited | 1998 | 1999 | 90 | 40 | 12 | 0 | 5 | 3 | 68 | 0 | 4.5 | 80 | 20 | 6 | 0 | 2 | Analyzing - Testing | 4 | ISO 9001 - ISO 14001 - ISO 18001 - GMP | 0 | 0 |
| Damascus | Mneen | 0 | Family Company | 1991 | 1998 | 110 | 34 | 9 | 0 | 7 | 3 | 80 | 0 | 6.5 | 65 | 35 | 3 | Drugstores | 1 | Analyzing - Testing | 5 | ISO 9001 - ISO 14001 - OHSAS 18001 - GMP - GLP | 0 | 0 |
| Damascus | Daraya | 0 | Private Limited | 1987 | 1994 | 47 | 43 | 20 | 0 | 4 | 4 | 57 | 0 | 2 | 100 | 0 | 0 | 0 | 2 | Analyzing - Testing | 6 | ISO 9001 - ISO 9002 - ISO 14001 - ISO 18001 - GMP - GLP | 0 | 0 |
| Damascus | Sabbourah | 0 | Private Limited | 1991 | 1996 | 315 | 70 | 30 | 3 | 10 | 10 | 164 | 0 | 15 | 70 | 30 | 6 | 0 | 3 | Analyzing - Testing - Reformulation | 5 | ISO 9001 - ISO 14001 - OHSAS 18001 - GMP - | 43 | Pfizer - Sanofi - GSK - Beneo - Ethypharm |

| | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | | | | | | GLP | | | |
| Damascus | Al-Ghassouleh | 0 | Private Limited | 1990 | 1990 | 285 | 45 | 14 | 0 | 14 | 8 | 204 | 0 | 9.5 | 80 | 20 | 9 | 0 | 3 | Analyzing - Testing - Reformulation | 3 | ISO 9001 - ISO 14001 - ISO 18001 | 4 | Merck - Sandoz - Pharmacosmos - Nutrisante |
| Damascus | Rankous | 0 | Private Limited | 2007 | 2008 | 100 | 35 | 65 | 0 | 6 | 5 | 64 | 0 | 2 | 100 | 0 | 0 | Logistic Drugstores | 3 | Analyzing - Testing | 5 | ISO 9001 - ISO 14001 - ISO 18001 - GMP - GLP | 0 | 0 |
| Damascus | Al-Mliha | 0 | Private Limited | 1991 | 1993 | 200 | 150 | 50 | 0 | 9 | 6 | 180 | 0 | 10 | 75 | 25 | 7 | 0 | 3 | Analyzing - Testing - Reformulation | 4 | ISO 9001 - ISO 14001 - ISO 18001 - GMP | 0 | 0 |
| Damascus | Al-Mliha | 0 | Family Company | 1988 | 1989 | 200 | 18 | 8 | 0 | 6 | 5 | 106 | 0 | 2 | 40 | 60 | 5 | Drugstores | 3 | Analyzing - Testing | 5 | ISO 9001 - ISO 14001 - ISO 18001 - GMP | 0 | 0 |
| Damascus | Jdeidet Artouz | 0 | Family Company | 1991 | 1992 | 136 | 42 | 14 | 2 | 5 | 5 | 200 | 0 | 10 | 80 | 20 | 7 | Drugstores Logistics | 2 | Analyzing - Testing | 4 | ISO 9001 - ISO 14001 - ISO 18001 - GMP | 13 | Himalaya India |
| | | | | | | | | | | | | | | | | | | | | | | | | | |
| Damascus | Airport Highway | 0 | Family Company | 1993 | 1994 | 90 | 22 | 8 | 0 | 10 | 8 | 90 | 0 | 4 | 100 | 0 | 0 | 0 | 2 | Analyzing - Testing | 4 | ISO 9001 - ISO 9002 - ISO 14001 - GMP | 0 | 0 |
| Damascus | Akraba | 0 | Private Limited | 1989 | 1990 | 40 | 10 | 5 | 0 | 6 | 6 | 116 | 0 | 3 | 95 | 5 | 1 | 0 | 2 | Analyzing - Testing | 1 | ISO 9000 | 0 | 0 |
| Damascus | Douma | 0 | Private Limited | 1987 | 1988 | 110 | 20 | 30 | 0 | 8 | 8 | 133 | 0 | 20 | 90 | 10 | 3 | 0 | 3 | Analyzing - Testing - Reformulation | 2 | ISO 9002 - GMP | 8 | Roche - Novartis - AstraZeneca - Valeant - Pfizer - Wassen Nutrition |

| | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Damascus | Deir Salman | 0 | Private Limited | 1992 1997 | 1997 | 165 | 42 | 18 | 0 | 8 | 4 | 91 | 0 | 6.5 | 65 | 35 | 15 | 0 | 2 | Analyzing - Testing | 4 | ISO 9001 - ISO 14001 - OHSAS 18001 - UKAS | 0 | 0 |
| Damascus | Ma'aret Sednaya | 0 | Family Company | 1990 | 1994 | 60 | 25 | 15 | 0 | 16 | 4 | 122 | 0 | 10 | 40 | 60 | 5 | Drugstores | 3 | Analyzing - Testing | 4 | ISO 9001 - ISO 14001 - GMP - OHSAS 18001 | 1 | Alfa Wassermann |
| Damascus | Hammourieh | 0 | Private Limited | 1989 | 1991 | 25 | 8 | 6 | 0 | 6 | 4 | 56 | 0 | 1.5 | 90 | 10 | 4 | 0 | 1 | Analyzing - Testing | 0 | 0 | 0 | 0 |
| Damascus | Hosh Nasri | 0 | Private Limited | 1989 | 1990 | 65 | 25 | 10 | 0 | 7 | 7 | 104 | 0 | 5 | 90 | 10 | 3 | 0 | 1 | Analyzing - Testing | 1 | ISO 9001 | 0 | 0 |
| Damascus | Al-Mliha | 0 | Public Listed | 1955 | 1956 | 1000 | 120 | 109 | 0 | 8 | 8 | 188 | Plastic Paper | 10 | 100 | 0 | 0 | 0 | 3 | Analyzing - Testing - Reformulation | 3 | ISO 9001 - ISO 14001 - ISO 18001 | 0 | 0 |
| Damascus | Sednaya | 0 | Private Limited | 1954 | 1955 | 200 | 51 | 30 | 0 | 8 | 7 | 128 | 0 | 8 | 80 | 20 | 3 | 0 | 3 | Analyzing - Testing - Reformulation | 4 | ISO 9001 - ISO 14001 - OHSAS 18001 - GMP | 0 | 0 |
| Damascus | Airport Highway | 0 | Family Company | 1995 | 1995 | 200 | 30 | 22 | 5 | 2 | 3 | 40 | 0 | 1.5 | 100 | 0 | 0 | 0 | 4 | Research - Reformulation | 6 | TQM - ISO 9001 - ISO 14001 - ISO 18001 - GMP - OHSAS | 0 | 0 |
| Damascus | Asharafiet Sahnaya | 0 | Family Company | 1990 | 1991 | 1100 | 100 | 300 | 0 | 8 | 8 | 245 | 0 | 100 | 75 | 25 | 9 | Logistic - Drugstores | 4 | Analyzing - Testing - Reformulation | 5 | ISO 9001 - ISO 14001 - ISO 18001 - GMP - GLP | 107 | Pfizer - GSK - Abbott Labs. - Schering Plough Corp. - Bayer AG - Menarini - BristolMyersSquibb - AWD - Sanofi - Pierre Faber - Solvay - Gilbert Labs. - Vifor |

| | | | | | | | | | | | | | | | | | | | | | | | | - Orion - BGCMI - Hikma - Janssen - Novartis |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Homs | Kafar A'aya | 0 | Public Listed | 1998 | 2000 | 25 | 8 | 4 | 1 | 3 | 3 | 45 | 0 | 1.5 | 70 | 30 | 3 | 0 | 2 | Research - Analyzing - Testing | 6 | ISO 9001 - ISO 14001 - ISO 18001 - GMP - GLP - GCP | 0 | 0 |
| Homs | Al-Hwash | 0 | Private Limited | 1991 | 1992 | 100 | 10 | 6 | 0 | 8 | 8 | 174 | 0 | 8 | 90 | 10 | 3 | 0 | 2 | Analyzing - Testing | 2 | ISO 9001 - GMP | 1 | Leciva Czech |
| Homs | Hama Road | 0 | Private Limited | 1958 1997 | 1959 | 112 | 18 | 8 | 1 | 5 | 5 | 93 | 0 | 6.4 | 87 | 13 | 3 | Logistic Drugstores | 2 | Analyzing - Testing | 3 | ISO 9001 - ISO 14001 - OHSAS 18001 | 0 | 0 |
| Homs | Aleppo Road | 0 | Private Limited | 1991 | 1992 | 400 | 50 | 50 | 0 | 12 | 12 | 367 | 0 | 19 | 78 | 22 | 5 | 0 | 3 | Analyzing - Testing - Reformulation | 3 | ISO 9001 - ISO 14001 - OHSAS 18001 | 0 | 0 |
| Homs | Maskaneh | 0 | Private Limited | 1959 1999 | 2000 | 200 | 30 | 30 | 0 | 11 | 8 | 253 | 0 | 24 | 85 | 15 | 3 | 0 | 3 | Analyzing - Testing | 5 | ISO 9001 - ISO 14001 - OHSAS 18001 - GMP - PIC\S | 0 | 0 |
| Homs | Sena'ah | 0 | Private Limited | 1959 | 1960 | 140 | 20 | 8 | 0 | 11 | 11 | 107 | 0 | 10 | 80 | 20 | 9 | 0 | 2 | Analyzing - Testing | 3 | ISO 9001 - ISO 14001 - ISO 18001 - GMP | 0 | 0 |