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The implementation of Open innovation in Dynamic capabilities

Study case: Group of SAIDAL

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Dedications

I dedicate this work to those who constitute my happiness:

My mother for her love and tenderness;

My father for his support and his sacrifices

My very dear brother Mohammed Kouider;

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*To My dearest Aichouche Kheira for being my partner in this journey and for all the
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List of abbreviations

Abbreviation	Signification
OI	OPEN INNOVATION
DC	DYNAMIC CAPABILITIES

Abstract:

This study aims to illustrate the importance for enterprises of resorting to external cooperation and the transition from the closed model of innovation to the open innovation based on the effective exploitation of the multiple sources of innovation such as ideas and knowledge, competencies and skills available in the environment. This requires enterprises to own dynamic capabilities limited in three skills: the ability to identify business opportunities, the ability of understand and assimilation of knowledge and finally the ability to administration or management in order to achieve a competitive advantage.

Key words: open innovation, dynamic capabilities, competitive advantage.

Résumé:

Cette étude vise à illustrer l'importance pour les entreprises de recourir à la coopération externe et le passage du modèle fermé d'innovation à l'innovation ouverte basée sur l'exploitation efficace des multiples sources d'innovation telles que les idées et les connaissances, les compétences et les aptitudes disponibles dans le environnement. Cela oblige les entreprises à posséder des capacités dynamiques limitées à trois compétences : la capacité d'identifier les opportunités commerciales, la capacité de compréhension et d'assimilation des connaissances et enfin la capacité d'administration ou de gestion afin de parvenir à un avantage concurrentiel.

Mots clés : innovation ouverte, capacités dynamiques, avantage concurrentiel

General introduction

General Introduction :

Economic institutions of all kinds and in various fields of activity are operating in an environment that threatens their sustainability and prevents them from achieving their objectives. On the one hand, the rapid technological developments in most economic sectors make it difficult for the institution to keep up with them, as technology is an autonomous dimension in the vicinity of the institution, which must constantly monitor its developments and fluctuations. On the other hand, institutions suffer from a lack of resources. The success and sustainability of the institution is linked to the resources and capacities it possesses and employs in so-called dynamic capacities. Studies have shown that it is not money that drives the institution forward, but rather its dynamic capabilities intellectual energy and the motivation of its members. The institution is also harassed by competitors who compete with it in terms of prestige, prices and profits.

All of this has created challenges for organisations that have prompted them to look for tools and mechanisms that would enable them to overcome these obstacles and gain a competitive advantage. Among these mechanisms is the need to adopt a new way of managing the innovation process that is compatible with the new realities of the business world and allows the organisation to obtain the necessary knowledge inputs or external expertise, in what is called open innovation.

With all that being said, we raise the following problematic :

How does open innovation contribute to strengthening and promoting open dynamic capabilities in organizations ?

To answer this question , we set the following sub-questions :

Q1: What is the concept of open innovation and what are its dimensions?

Q2 : What is the concept of dynamic capabilities ?

Q3 : Are there statistically significant differences between the dimensions of open creativity and dynamic capabilities?

As an attempt to provide an answer to the problem and sub-questions, some formulated hypotheses have been relied upon as follows:

The main hypothesis: There are no statistically significant differences between dynamic capabilities and open innovation in the context of achieving competitive advantage.

Hypothese n°1 : There are between dynamic capabilities and outbound open innovation ?

Hypothese n2: There are between a statistically significant differences dynamic capabilities and inbound open innovation?

For this study, we used the descriptive approach with regard to the theoretical aspect of the study, which allows describing the phenomenon under study theoretically, in addition to the analytical method in the field study in order to extract the most important results, we use of a single questionnaire that will be distributed to a sample of SAIDAL's group professional managers. As for the tools used in the study, the questionnaire was used as a main tool for data collection, which was processed and analyzed using the SPSS v25 statistical program.

The limitations of this study are as follows:

Objective limits: the topic concerned with studying how open innovation contributes to enhancing dynamic capabilities.

Spatial limits: the study included a sample of directors and executive chiefs of Saidal group

Time limits: This study was conducted during the time period from the beginning of April 2021 to the end of May 2021.

For the structure of research will be as followed :

In order to properly address the subject of our work, we will structure it around three chapters:

Theoretical part : Includes three chapters

Chapter 01: It will be devoted to the theoretical approach and dimensions of the concept of "open innovation".

Chapter 02: It will be devoted to the theoretical approach of the concept of "dynamic capabilities and its role in the promotion and implementation of open innovation in organizations.

Chapter 03 :Practical part :

An empirical study within GROUPE SAIDAL, where we will link the theoretical side to the practical side and abstract the most important results.

We have chosen to conduct this study for the following reasons:

- Lack of research on the topic at hand.
- Organizations in general live today within an environment characterized by a high degree of change in all aspects of technological, cognitive, economic and social competitiveness, and precisely those specialized in the pharmaceutical industry that require adaptation to innovation and continuous change. Which obliges it to search for the means that enables it to raise its competitiveness by investing in its financial, human

and knowledge resources as a real source of development. This is what made our topic deal with the study of the relationship of open innovation with dynamic capabilities.

**Chapter one:
literature review of
innovation and open
innovation**

Introduction :

Innovation is the safety valve for the continuation of the organization, which is keen to achieve qualitative and quantitative leaps in various fields of work. It is one of the basic concepts circulating in science since the early fifties until today as a result of scientific and technological developments that have reflected on the lives of individuals and institutions, and the need for it has become clear in contemporary institutions as it is an important tool whose importance, continuity, construction and ability to adapt to various variables has increased with the increase and acceleration of competition rates, which It gives it a competitive advantage over its other peers. In today's competitive markets, the organizations cannot be innovative on their own and according to Chesbrough there is no sustainability in the use of merely closed in house innovation. To keep industries growing, innovation is needed and open innovation is argued to help the innovation process. Chesbrough suggested that industrial development work is undergoing a paradigm shift, from a closed internal development to a more open and collaborative way for adopting innovation. the main idea of open innovation is to open up the innovation process to other firms, individuals' research labs, universities, customers, suppliers, ect . With the aim to facilitate a smooth flow of ideas inside and outside of organization and in this way, derive advantage from the exploration of external and exploitation of internal resources .

In this chapter we will talk about the literature review of innovation and open innovation , this chapter will be represented as follow:

Section 01 : Literature review of Innovation.

Section 02 : Theoretical framework of Open innovation

Section 01 : Literature review Innovation

There are many concepts of innovation and different points of view on the determination of its definition and what it is, but this difference is not a contradiction in its concept, but on the contrary, we find that it is a multifaceted human activity that has contributed to this difference.

1 . Definitions of innovation :

Table 1.1 :Definitions of innovation

Author	Definition
O'Sullivan & Dooley 2009	“Innovation is the process of making changes, large and small, radical and incremental, to products, processes, and services that results in the introduction of something new for the organization that adds value to customers and contributes to the knowledge store of the organization.”
Carlson & Wilmot, 2006	“innovation is the process that turns an idea into value for the customer and results in sustainable profit for the enterprise.”

Rogers, 2003	<ul style="list-style-type: none"> “...an idea, practice, or object that is perceived as new by an individual or another unit of adoption.”
Peter Drucker	“Innovation is change that creates a new dimension of performance.”

Source :realised by the student

From the above, it is clear that these definitions of innovation, although they are multiform and have different axes, do not go beyond the linguistic framework of innovation, which consists in achieving something new, whether it is an idea, a product or a service.

The most common definition is: "Adopting a new idea or behavior in the organization" can mean a new product, service or technology, and therefore we find it related to the change that underlies the development of any new product or service. It is seen as a measure to create knowledge that is aimed at providing solutions to develop any new product or service (Harkema 2003).

Innovation is that human reality that allows the individual to understand and develop all that surrounds him of ideas, things or methods. The human mind has an individual beginning and is strengthened through the group by opening up and exchanging ideas. Then innovative ideas are developed through the institutional framework that adopts and nurtures it, it includes the element of seriousness, originality, flexibility and deviation from the norm, which ultimately improves the entity of the individual and the organization, and thus society as a whole .

2 .The importance of innovation

In light of the changing political, cultural, social or economic conditions, it is imperative for today's organizations to respond to this change in an innovative way that ensures their survival, otherwise it will be the end of failure and extinction, so that change will become a reality in the lives of societies and organizations. The researcher Richard Beckhard pointed out that the environment of organizations is characterized by movement and dynamics, so the rigid must find ways and methods that allow them to renew their activity and take advantage of their capacity, which is an implicit reference to the importance of innovation and which organizations need as one of the means of renewal and change.

3 .The need for innovation

Modern organizations work in changing and complex conditions that impose many great challenges that they must also face quickly and effectively, which requires high innovative abilities that allow them to develop new solutions, ideas and opinions that ensure their continuity and growth .

Interest in the issue of innovation has increased in light of the growing challenges imposed by the phenomenon of globalization, rapid technological changes, intense competition, wealth of information and international agreements on free trade agreement and others, and many writers and researchers have emphasized the need for organizations to innovate as it has become one of the main functions of the manager, and it is the duty of every manager to learn how to manage the process of change and innovation, so that it becomes a necessary and vital issue for the organization and not just a luxury or a secondary issue.

Organizations have responded to the need for innovation in different ways and with varying degrees of interest and care, as some have adopted a comprehensive policy for it at the individual, group and organizational level, and others have created special organizational units for its development and development such as administrative and organizational development and research units And others, and others, trained individuals and groups on innovative behavior and thinking, so that organizations began to compete in the field of

innovation and consider it a competitive advantage, this intense competition led in turn to the emergence of many more intense innovations.

4 .The motivations for innovtaion :

- The changes in the elements of the competitive environment and the growing environmental developments that organizations have faced and are still facing, which requires modernization and new and the need to respond to adopt policies and activities that support creativity to be able to keep pace with the environment changes and challenges and to find and develop new solutions, ideas and opinions allowing it to grow and perpetuate itself.
- The increase in challenges, pressures, intense competition and the opening of the world to each other due to globalization, the information revolution and global transformations, which have led to an increase in opportunities for choice and diversity of goods and services facing the consumer.
- Responding to the technological revolution that the global market has experienced, especially in the area of goods and services and production and distribution methods in order to achieve customer and consumer satisfaction, which has forced organizations to respond by making creative administrative changes to keep pace with the technological revolution and be able to compete and continue to maintain To satisfy its customers and stay in the market
- Resource scarcity, which requires finding appropriate creative ways to achieve desired organizational goals in light of available resources.
- Social responsibility, so that due to the principle of being social and the intertwined and mutual relationships between workers and organizations, the latter has become a more conscious and flexible reality, working to increase its contribution to the support and improvement of the conditions and capabilities of its collaborators by adopting activities that promote creativity and working for their development.

5 . The Evolution of Innovation Framework Models

Understanding of the process of innovation at the firm-level has evolved throughout recent decades from simple linear and sequential models to increasingly complex models embodying a diverse range of inter and intra stakeholders and processes. Distinguishable by their management focus, strategic drivers, accommodation of external actors and internal and external processes and function level integration, (Rothwell ,1994) five shifts or generations, demonstrate that the complexity and integration of the models increases with each subsequent generation as new practices emerge to adapt to changing contexts and address the limitations of earlier generations .The evolving generation of innovation models does not imply any automatic substitution of one model for another ,many models exist side-by-side and in some cases, elements of one model are interwoven with elements of another (Rothwell ,1994). More recently and following on from the seminal work of Rothwell’s innovation generation model typology, researchers suggested that "Chesbrough" open innovation model represent the latest wave of innovation models.

Table 2.1 illustrates an overview of the key characteristics of generations of innovation framework models.

Table 1.2: Generations of Innovation Framework Models

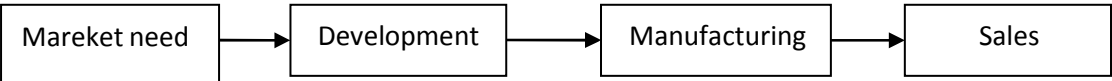
Model	Generation	Characteristic	Strengths	Weaknesses
Technology Push	First	Simple linear sequential process, emphasis on R&D and science	Simple Radical innovation	Lack of feedbacks No market attention No networked interactions No technological instruments

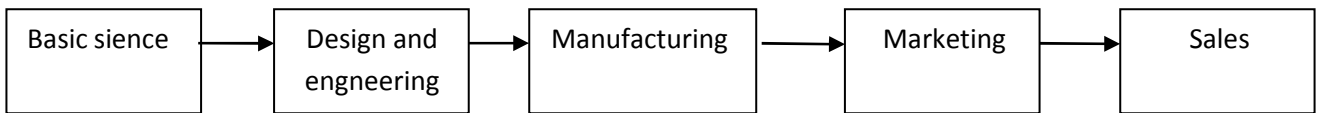
Market Pull	Second	Simple linear sequential process, emphasis on marketing, the market is the source of new ideas for R&D	Simple Incremental innovation	Lack of feedbacks No technology research No networked interactions No technological instruments
Coupling	Third	Recognizing interaction between different elements and feedback loops between them, emphasis on integrating R&D and marketing	Simple Radical and incremental innovation Feedbacks between phases	No networked interactions yet No technological instruments
Interactive	Fourth	Combination of push and pull models, integration within firm, emphasis on external linkages	Actor networking Parallel phases	Complexity increment of reliability No technological instruments
Network	Fifth	Emphasis on knowledge accumulation	Pervasive innovation Use of	Complexity increment of reliability

		and external linkages, systems integration and extensive networking	sophisticated technological instruments Networking to pursue innovation	
Open	Sixth	Internal and external ideas as well as internal and external paths to market can be combined to advance the development of new technologies	Internal and external ideas as well as internal and external paths to market can be combined	Assumes capacity and willingness to collaborate and network Risks of external collaboration

The first generation of technology push models of innovation represents a simple linear structure that describes innovation as a sequential process carried out through distinct stages. The technology push (Figure 1) is based on the assumption that new technological advances based on R&D and scientific discoveries preceded and "pushed" technological innovation through applied research, engineering, manufacturing and marketing into successful products or inventions (Rothwell, 1994).

Figure 1.1 : First and Second Generation Models



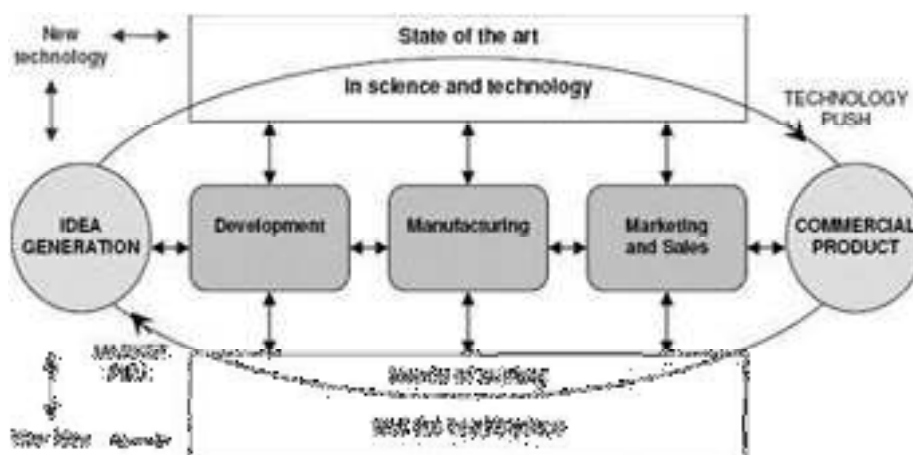


Source: Rothwell (1994)

In the second generation of the market pull era, a linear model of describing innovation also applies, but this time giving priority to the importance of market demand in innovation efforts. What distinguishes this model from its predecessor is that, rather than developing products from scientific advances, new ideas are born in the market, with R&D becoming reactive to these needs (Rothwell, 1994).

Third generation interactive, coupling or chain models have overcome many of the shortcomings of previous linear models of atypical examples, incorporating interaction and feedback loops to recognise that innovation is characterised by coupling and interaction between science and technology and the market. As a result, third generation models incorporate multiple internal functions and interdependent steps. Although third generation models are non-linear with feedback loops, a sequential nature of the stages of innovation has been characterised (Rothwell, 1994).

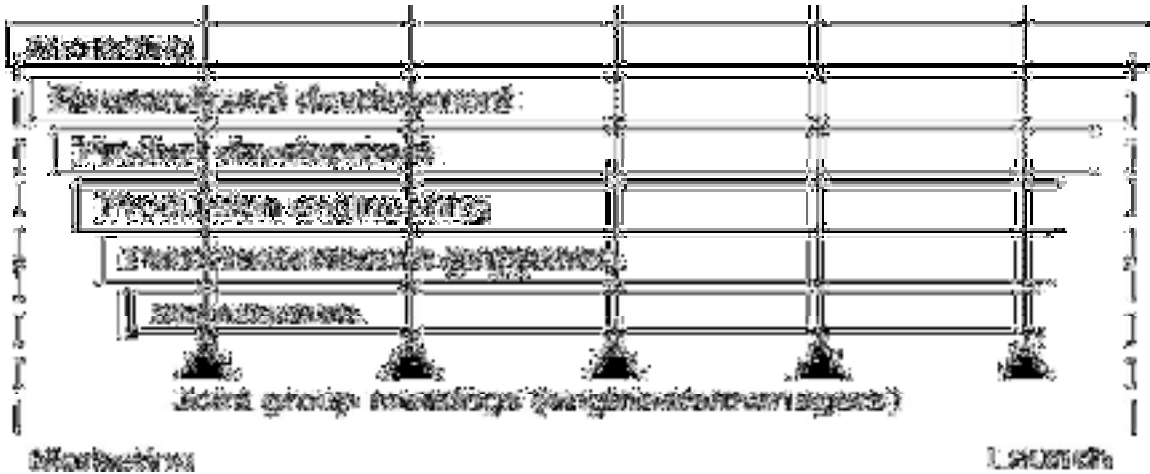
Figure 1.2 : Third Generation Coupling Model



Source: Rothwell (1994)

In response, and to reflect the high degree of cross-functional integration within companies, the fourth generation integrated or parallel models reflect significant functional overlaps between departments and/or activities (Figure 3). Another new feature of this model is the concept of external integration in terms of alliances and links with suppliers, customers, universities and government organizations (Preez and Louw, 2008).

Figure 1.3 : Fourth Generation Integrated/ Parallel Model

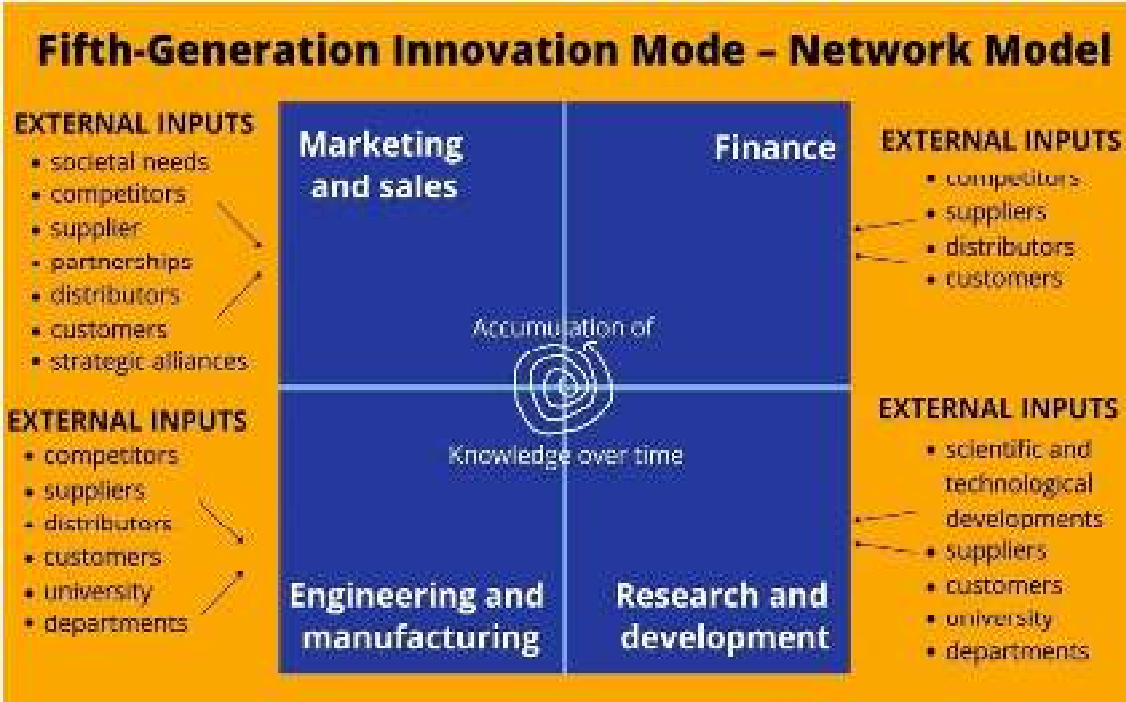


Source: Preez and Louw (2008)

Extending from the previous generation of innovation models, fifth generation systems integration and networking models emphasize that innovation is a distributed networking process requiring continuous change occurring within and between firms, characterized by a

range of external inputs encompassing suppliers, customers, competitors and universities. Reflecting a systems thinking approach, the dominant characteristics are the integration of a firm’s internal innovation ecosystem and practices with external factors in the National Innovation Environment (Preez and Louw, 2008) . The fifth generation models are characterized by the introduction of ICT systems to accelerate the innovation processes and communications across the networking systems in terms of raising both development efficiency and speed-to-market through strategic alliances (Figure. 4).

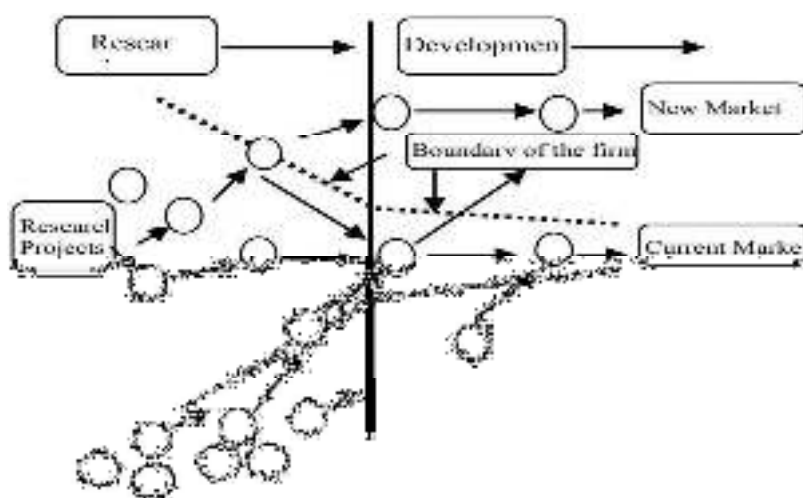
Figure 1. 4 : Fifth Generation Network Model



Source: Preez and Louw (2008)

More recently, and building on Rothwell's seminal work, researchers in the typology of innovation generation models have pointed to open innovation as representing the latest wave of innovation models. Reflecting a dominant direction from earlier networked innovation models, the open innovation approach is not limited to internal idea generation and development, as internal and external ideas, as well as internal and external routes to market (licensing, insourcing, etc.) are facilitated in the innovation development chain (Figure 5).

Figure 1.5 sixth generation open innovation



Source: Preez and Louw (2008)

Open innovation is seen as a paradigm shift whereby a competitive advantage can result from exploiting discoveries beyond the boundaries of a single internal R&D unit (inbound open innovation) and can also benefit from exclusively using their own internal routes to market by engaging with external organizations that may be better positioned to commercialize a given technology .

The first and second generation linear models have been widely criticized for their overly simplistic, linear, discrete and sequential nature of the innovation process. In response, the third generation of models demonstrate how the different functions of the firm interact during the innovation process, in addition to marrying the importance of the technology push and market pull dimensions. Nevertheless, the main criticism of the third generation models is that they do not sufficiently detail the mechanisms of interaction with environmental factors.

As for the fourth and fifth generation models, there is little evidence of their impact. Given the above and the consideration of a range of best practices over a specific historical period, the notion of a generalized, prescriptive, or isolated approach to best practices may be misleading. More recently, the model in which companies invest exclusively in research and development departments to drive innovation is eroding with the advent of open innovation. In contrast to closed innovation, where innovation activities take place entirely within a company, open innovation processes are characterized by reaching beyond the boundaries of the company, providing opportunities to reduce risk and market external and internal ideas externally.

Section 02 : Theoretical framework of Open innovation

In today's Competitive markets, the organizations cannot be innovative on their own and according to(Chesbrough , 2003) there is no sustainability in the use of merely closed in house innovation. To keep industries growing, innovation is needed and open innovation is argued to help the innovation process. (Chesbrough ,2003) suggested that industrial development work is undergoing a paradigm shift, from a closed internal development to a more open and collaborative way for adopting innovation. the main idea of open innovation is to open up the innovation process to other firms, individuals' research labs, universities, customers, suppliers, ect (Chesbrough, 2006). With the aim to facilitate a smooth flow of ideas inside and outside of organization and in this way, derive advantage from the exploration of external and exploitation of internal resources (Chesbrough, 2003). From the theoretical logic which says that the open innovation is the way to generate increased levels of innovation.

1 . Definition of open innovation :

Open innovation is the introduction of external ideas into an organisation to improve its ability to develop new products and services. Open innovation is also a way of bringing internal innovation to the market through external channels. Both methods can be used by interested government organisations to improve and increase the value of their innovation process.

Open innovation concerns not only where and how technologies are sourced, but also how they're commercialized, creating the potential “to expand the markets for external use of innovation” (Chesbrough 2006).

Here, too, there is a range of options, from licensing out to contributing to an open source project. In short, open innovation is an approach to technology management that recognizes the value to the enterprise of external sources and markets.

2 . Dimensions of open innovation :

Open innovation can be classified into two broad dimensions , the researchers “Thierry Isckia” and “Lescop” suggest a third approach that combines them, where the first aims to open the creative process in order to discover external knowledge to acquire new ones, and the second relates to the exploitation of knowledge and technology, and interest in its marketing, and the third means the combination of these two perspectives exported and imported .

Inbound open innovation : refers to the acquisition of external knowledge to enhance the internal innovation process and complement internal R&D (Chesbrough and Crowther, 2006). Examples of activities involving inward open innovation are formal arrangements such as acquisitions, joint ventures, licensing of intellectual property from abroad or contracting with knowledge workers from other organisations (Chesbrough, 2010), or less formal actions such as involving suppliers, business customers or lead users in the innovation process.

Outbound Open innovation : refers to the transfer and subsequent commercialisation of internally developed knowledge, technology or other resources through external channels (Chesbrough and Crowther, 2006). Patents and licensing of intellectual property abroad, strategic divestitures and the creation of spin-off companies are examples of open innovation activities abroad.

The Coupled process: Linking outside-in and inside-out by working in alliances with complementary companies during which give and take are crucial for success(Thierry Isckia, D Lescop,2009).

3. Success Factors for Open Innovation :

Open innovation enables success, but without practical implementation, there is very little benefit to open innovation. Execution, however, is what many organisations struggle with, and this requires further clarification (Chesbrough 2007), for that we will see the success factors for open innovation as following :

a. Clarity of goals:

When open innovation becomes “the way things are done” in an organization, it is most effective. This necessitates the incorporation of open innovation into the company's culture and strategy. Many experts stress the necessity of understanding your open innovation goals, both on a corporate and project level. Open innovation procedures and goals should be adequately defined at a higher level. This increases trust because all members are aware of how things are handled.

b. Facilitating the collaboration :

Facilitating collaboration is the next critical step in achieving open innovation success. Starting with current partnerships and networks is a natural way to get started with open innovation collaboration. Because there is likely already some collaboration and knowledge of one another, as well as trust between the participants, utilizing existing connections enables open collaboration simple and quick to start.

c. Transparency :

Transparency is essential in an open innovation organization because open innovation is by definition transparent. It can be challenging to be upfront about your difficulties and challenges at first, but doing so can lead to unexpected answers. When people are aware of your difficulties, it is easier for them to devise solutions that are tailored to your specific needs. There may even be competition between these various options. organisations, therefore, have an incentive to profess transparency while withholding key information, such as current issues or potential sources of competitive advantage. Being secretive about things, on the other hand, can often negate the benefits of transparency. As a result, collaboration should be truly open and transparent.

d. Find the Right Channels :

When it comes to open innovation, it's generally best to start with a face-to-face meeting. This is fine for the initial pilot phase, where numerous concepts and methods are evaluated, but face-to-face brainstorming and innovation may be useless in solving problems in the long run. On the other hand, online collaboration has the potential to open up a lot of doors.

e. Commitment :

Finally, it's critical to keep to what's been agreed upon and the objectives that have been established. It's not enough to talk about open innovation; it has to be done. Building trust and putting the collaboration's ideas into action takes time. Similarly, when things are truly done, visible results and revenues arrive with time. As a result, it's important to create the collaboration gradually, allot sufficient resources, and commit to the implementation. This fosters trust, passion, and a fertile ground for a virtuous invention cycle.

f. Rewarding Participants :

One risk with open innovation collaboration is that the participants might not feel that they get something worthy out of it. It's important to understand that open innovation is not a way to get something without giving anything away. This is actually one of the central ways to motivate the participants.

4. The challenges of open innovation :

Open innovation introduces three managerial challenges. First, an agency must be able to motivate administrators and line employees to contribute intellectual property that is developed internally to those outside their organization. Unless these individuals can see the benefits of disseminating innovations internally generated, it may be difficult to ensure enough participation to fully take advantage of the open innovation paradigm. This can be resolved by incentivizing employee participation and carefully marketing the cost/benefits associated with the new changes. Second, the agency must be able to identify and access promising ideas developed outside the organization that can benefit its internal processes., the organisation must develop the capability to incorporate these external ideas, along with internal resources, to improve its innovation processes. This includes finding ways to increase the value of the resulting innovations developed within the agency and decreasing the cost of research and development (R&D) required to bring the new products or services to fruition.

Conclusion :

Regardless of the firm-level context, exploring innovation models is important because they can help management teams frame, understand, and act on issues that need to be managed. These issues include, but are not limited to, the key phases of the innovation lifecycle, activities, actors, and their interrelationships. In addition, the link between organizational contextual factors also impacts the overall innovation ecosystem. The imperative to develop the most optimal innovation processes and models is of paramount importance, as innovation is the means by which organizations perform in the present and adapt to future challenges and opportunities.

And from that, Henry Chesbrough (2003) presents us with a new formula for managing the innovation process that fits with the new realities of the business world and enables the organization to obtain the necessary knowledge inputs or the necessary external expertise to develop innovations in the so-called open innovation.

**Chapter two:
literature review of
dynamic capabilities**

Introduction :

Now days , organisations face strong competition in their markets, and for the organisation to be at the top, it must keep pace with the evolution of the market sector, which depends to a large extent on innovation and is linked to the organization's possession of capabilities to create new businesses, find new markets and create value for the customer. On the other hand, in order for organisations to build their dynamic capabilities, they need to work on building, developing, exploiting, integrating and aggregating the resources, knowledge and skills that they have, so that they can face all these challenges and enable them to take adaptive measures in the face of environmental changes and conditions of uncertainty. Some studies and research have revealed the realization of contemporary business organizations that innovation today has become a critical source of competitive advantage, and this can only be achieved through its need for dynamic capabilities, and accordingly organizations need to apply new methods in strategic management, based on reshaping the organization to work in Dynamic capabilities framework.

In this chapter we will talk about the literature review of dynamic capabilities and its different components , this chapter will be represented as follow:

Section one : Literature review on dynamic capabilities.

Section two : Previous scientific studies and their relationship to the current study.

Section one : Literature review on dynamic capabilities

Several previous studies have indicated the possibility of achieving innovation, which is essentially new combinations of production, through so-called "dynamic capabilities", which represent a source of competitive advantage and play a key role in the application of the principles of open innovation, especially developments, where strategies are closely linked, enabling innovation.

1. Economic Theories :

a. Evolutionary theory:

It was also known as Nelson Winter's theory, due to its emergence through the work presented by Sidney G. Winter and Richard R. Nelson in their 1988 book With "An Evolutionary Theory of Economic Change".

Its basic ideas were derived from biology, where the work of Charles Robert Darwin was based, which revolved around the evolution of living organisms.

As for the economic aspect, it was based on the research of "Joseph A. Schumpeter", to which he referred in his theory of economic development in 1926 (Marchel 1999, 1997).

The theory assumes that the organisation's willingness to perform is not established by profit, but by its ability to live and continue (satisfaction, not profit maximisation) (Plane, 2003,).

D. Teece sees the organisation as "the sum of distinct technological competencies and complementary assets, and the sum of routines that form the basic foundation of the institution's competitive advantage over another in a particular field" (Filleau and Marque Ripoull, 1999), these routines being the product of the learning process, which is defined as the process by which new knowledge and skills are acquired through repetition and repetition of tasks and experiences (Marichal, 1999), addressing the instability in the structure of the organisation, by including learning as a phenomenon of renewal and creativity.

b. Resource based view theory (RBV) :

The first writings emerged through the work presented by Bernard in 1938, Selznick in 1957 and Schadler in the same year, i.e. the principles of strategic management based on the organisation's ability to use resources and increase its economic performance.

The pioneering author of this theory was Edith Elura Tilton Penrose, through whom her book "The Theory of the Growth of the Firm" in 1959 focused on the importance of tangible and intangible resources in the presence of institutional development (Barabel et al,2008).

This theory consider the organisations as a set of resources, skills and capabilities (Fillol, 2006,), and Bernay considers that the resources and skills of the organisation include the set of assets, capabilities and particular organisational processes, as well as knowledge that represents the main source of competitive advantage (Gedda ,2008,).

c. The limitations of resource-based view theory and the development of dynamic capability theory:

The latter was developed in the early 1990s as an extension of researcher "Penrose's" ideas on resource theory (RBV) and was introduced in order to address the shortcomings and limitations shown by this theory. It is based on the work of the "Werenfel" (Werenfel ,1984) where he developed new ideas to measure the resources of the organisation to explain its potential , then, many researchers have studied the characteristics of resources that would contribute to sustainable competitive advantages. For example, we find that the researcher "Barney" (Barney ,1991) based on the assumption that resources in the organisation are distributed in a heterogeneous way and they cannot be transferred without incurring a cost (expenses), and therefore valuable and scarce resources will create competitive advantages, as if they are unique in the sense that they cannot be imitated or defined and cannot be transferred, they ensure the sustainability of the organisation. And based on the developments of his theories, several definitions have been given to these capabilities, some of which define it as the ability of the organisation to voluntarily create, publish and modify its resource base. They see dynamic capabilities as a balanced model of joint cooperation. collective activity, which has been learned through what the organisation does by constantly changing organisational routines to improve its effectiveness. According to these definitions, we find that dynamic capabilities are routines, capabilities or patterns of repetitive activities in response to environmental changes.

2 . Components of dynamic capabilities

- **Sensing capabilities** : includes the identification, development, and calibration of technological opportunities, customer needs, and strategic challenges. Strong sensing requires a “vigilant organization , able to both mind a broad periphery and mine the weak signals for relevance and meaning” (Day& Schoemaker, 2008). The top management team is responsible for combining and analyzing data from diverse sources to continuously monitor the firm’s environment, prioritize problems, and identify new opportunities.

Seizing capabilities : determine how quickly the organization can respond to significant opportunities and threats once they have been identified. The activities involved include investing to commercialize new technologies , identifying and deciding how to fill capability gaps and updating and implementing business models for various products and services (Teece, 2017). Once deliberations around open innovation activities have led to the decision to commercialize a given technology, a whole new round of decisions arises, such as whether to acquire, license, or ally with the owners of complementary technologies in order to ensure a predictable path both for the initial commercialization and for its future development (Chesbrough and Teece, 1996).

Transforming capabilities : particularly asset orchestration, are responsible for keeping the elements of the organizational system internally coherent, aligned with the strategy, and competitive in the external environment. Transformation capabilities are most critical when a business model change involves a significant alteration to the organization’s design. Minor transformations must also be made periodically for a variety of reasons. Fostering an organizational culture that supports openness, flexibility, and experimentation is a challenge, but success can provide a solid foundation for quicker and easier transformations in the future, contributing to future advantage.

3 Concept of Innovation Capability :

Innovation capability is a skill that involves the ability to create, expand, and adjust the resources used to produce new goods, services, processes, and markets, and it is utilized in the creation and implementation of innovation initiatives (Dodgson, Gann, & Salter, 2008). These ideas are presented in Table 1.3.

Table 1.3: Innovation capability concepts

Author	Concept	Focus
Neely and Hii (1999)	An organization's innovation capability is defined as the internal potential to generate ideas, identification of new market opportunities and the development of an innovation with commercial purposes from the organization's resources.	Innovation development with commercial purposes.
Lawson and Samson (2001)	Innovation capability is the ability to transform knowledge and ideas into new products, processes and systems so as to benefit both the company and its stakeholders.	Knowledge transformation into goods or services.
Pekka and Thomas (2006)	Innovation capability can be defined as the capability a company has to generate value to client through the development and the introduction of new products or services into the market, or the reduction of costs caused by the process of value creation.	Value creation.
Bell (2009)	Innovation capability is necessary to imagine, develop and implement new technology settings of products and services, and to perform improvements in the technologies under use.	Generate new technologies or improve them.

Source : (Dodgson, Gann, & Salter, 2008)

Based on the concepts presented in Table 1, innovation capability can be seen as an organisational capability of a strategic nature. In other words, it is about aligning innovation practices with organisational strategies. This usually happens deliberately, in a systematised way, and uses one or more models for innovation development. In this way, it transforms knowledge and learning into new products, services and processes, and brings radical and incremental innovations to the market. The authors emphasize that innovation is a process and not an isolated event. Therefore, it must be dynamically and fully managed, that is, it is not about managing or developing skills in some areas only. This way, innovation capability must not rely solely on Research & Development R&D (Tidd et al., 2008).

4 Dynamic capabilities and competitive advantage :

The resource-based view of the firm (RBV) is an influential theoretical framework for understanding

how competitive advantage within firms is achieved and how that advantage might be sustained over time (Penrose, 1959). This perspective focuses on the internal organization of firms, and so is a complement to the traditional emphasis of strategy on industry structure and strategic positioning within that structure as the determinants of competitive advantage (Porter, 1979). In particular, RBV assumes that firms can be conceptualized as bundles of resources, that those resources are heterogeneously distributed across firms, and that resource differences persist over time (Penrose, 1959). Based on these assumptions, researchers have theorized that when firms have resources that are valuable, rare, inimitable, and non substitutable they can achieve sustainable competitive advantage by implementing fresh value-creating strategies that cannot be easily duplicated by competing firms (Barney, 1991). Finally, when these resources and their related activity systems have complementarities their potential to create sustained competitive advantage is enhanced (Porter, 1996). Recently, scholars have extended RBV to dynamic markets (Teece *et al.*, 1997). The rationale is that RBV has not adequately explained how and why certain firms have competitive advantage in situations of rapid and unpredictable change. In these markets, where the competitive landscape is shifting, the dynamic capabilities by which firm managers ‘integrate, build, and reconfigure internal and external competencies to deal with rapidly changing environments’ (Teece *et al.*, 1997: 516) become the source of sustained competitive advantage. The manipulation of information resources, particularly, is very critical in such markets (Grant, 1996; Kogut, 1996).

5 How dynamic capabilities enhance open innovation :

Looking from the opposite direction, strong dynamic capabilities enable effective open innovation practices. While open innovation is simple in theory, it can be fiendishly challenging in reality, and strong dynamic capabilities are needed to make it successful. “The variance between a best practice in open innovation and the average is huge” (Chesbrough, 2010) When dynamic capabilities are weak, open innovation initiatives may be poorly chosen, poorly governed, and/or only weakly (or never) monetized.

The orchestration skill needed to coordinate assets and activities across the firm’s entire innovation ecosystem is a key dynamic capability. The right governance mode needs to be selected and managed carefully for each external relationship. Outside of pure open-source arrangements, contracting costs can mount rapidly. As more partnerships are established, dedicated resources such as a licensing group or relationship managers become necessary.

As external knowledge is sourced, it must then be put to use within the firm. The design of the organization should permit relevant information to find its way quickly to where it will be properly assessed and handled. A key piece of market intelligence, for example, obtained as part of an open product development process, might be more useful to another business division or to a top management team setting investment priorities.

In the case of early-stage innovations, the sourcing of technology must be combined with other types of input from the firm's ecosystem to engage another dynamic capability, sensemaking. In the presence of uncertainty and ambiguity about the value of an innovation and the evolution of markets, managers need to construct a narrative that makes sense of conflicting signals and provides expectations about the future in order to decide whether and how to proceed (Teece and al 2016).

Strong seizing is needed to ensure that open innovation leads to value capture. Open innovation requires special attention to business model design because adopting external innovations is likely to drain some of the profit away from any eventual product or service (Chesbrough, 2006). Strong seizing capabilities will also augment the value of open innovation by sharpening key decisions about IP strategy, such as deciding whether a particular piece of in-house IP is best managed as proprietary, open, or both. The use of out-licensing to monetize IP must also be considered, with royalty rates calibrated to balance short-term value capture with the maintenance of a healthy ecosystem. Other seizing capabilities such as rapid prototyping and the ability to quickly assess and integrate the most useful feedback from early adopters also help bridge the gap between open innovation and value capture.

More broadly, the dynamic capabilities framework is well suited to coordinating strategic decisions across the multiple interdependencies and commitments in today's networked organizations since it is a systemic approach to strategic management (Teece, 2018). Its emphasis on managerial abilities needed to orchestrate assets and activities across organizational boundaries, including the integration of varied technologies, is particularly pertinent here. Collaboration provides an opportunity to learn from others, which is a skill that must be actively developed in order to be effective (Hamel, 1991). At the same time, collaboration increases the risk of knowledge leaking to rivals in unintended ways .

The holistic approach of the dynamic capabilities framework also draws attention to the complications that can arise from open innovation. For example, exposure to numerous

external sources during the knowledge creation process can create liabilities, which must be addressed with careful tracking of internal knowledge accumulation. Knowledge sharing and alliances can also raise complicated contractual issues. In the downstream direction, efforts to extract royalties from users of the firm's intellectual property must be balanced with other business and political considerations in each location.

6 How open innovation enhances dynamic capabilities :

Theoretical connections exist between open innovation and the dynamic capabilities framework. Both are mutually beneficial. Open innovation can extend top management's horizons for identifying and seizing opportunities. Furthermore, open innovation activities will be more effective if they have great dynamic capabilities.

The better technological and market understanding that comes with access to external knowledge sources enhances sensing skills. Linkages with university researchers, for example, can be leveraged to tackle specific challenges while also offering access to cutting-edge thinking that isn't bound by commercial objectives., Providing management with a better understanding of possible future technical advances. More broadly, technical dialogue with customers, suppliers, and complementors will not only improve the effectiveness of innovation efforts, but it will also increase the likelihood that top management will become aware of issues affecting the company's markets, value chain, or ecosystem before they fester and reach crisis proportions(Teece ,1997).Seizing can be enhanced by the use of open innovation to build new capabilities. When a new business model is contemplated, a good management team will identify capability gaps. Where market-based options are available, the gaps can be filled through outsourcing. However, when the missing capability is strategic for reasons such as scarcity or the need to control the technology trajectory, open innovation resources may be available to accelerate the process of capability development.

Seizing can also be enhanced by adopting an outbound open innovation perspective. This might make a firm more receptive, for example, to the pursuit of hybrid business models involving both direct exploitation and out-licensing of intellectual property to maximize the returns to innovation (Chesbrough, 2006).

Finally, transformation is implicated because opening up the innovation process can allow a redeployment of internal resources away from non-core technologies that can be externally sourced, further enhancing flexibility. New or stronger IP management

capabilities may need to be developed in order to run an inbound and outbound licensing programs (Tecce,2018).

Section two :Previous scientific studies and their relationship to thecurrent study:

Consedering previous studies that were in the same context of great importance for any subsequent study, the most important ones will be addressed in the context of building a simultaneous research series and benefiting from them in strengthening the current study, in addition to highlighting the most important features that distinguish the current study from its predecessors.

I. Presentation and results of previous scientific studies.

First study : titled "**Effects of open innovation and knowledge-based dynamic capabilities on radical innovation**" by Colin C.J.Cheng and al(2006) , scientific article published in the Journal of Engineering and Technology Management, The problematic of the study was : "How knowledge capabilities influence the effectiveness of open innovation inbound and outbound activities on radical innovation performance ?", where the following results were obtained:

- α . OI inbound activities have a stronger impact on radical innovation performance than OI out bound activities.when firms simultaneously perform OI inbound andoutbound,or exclusively performe ither OI inbound or outbound activities .
- β . The statistical results reveal that the effects of OI inbound and out bound activitieson radical innovation are contingent on both knowledge acquisition and sharing capabilities.

Second study : titled "**the role of dynamics capabilities in achieving competitive advantage** "(2010) ;article written by Carsten Reuter and al , and the following results were obtained :

- The value of a dynamic capability for gaining competitive advantage lies in the resource configuration it creates.
- Responsiveness is a major ingredient of dynamic capabilities because it provides timely feedback on a firm's sustainability performance.

Third study : titled "**Identification of dynamic capabilities in open innovation**" (2020) by Edson De Aro , a scientific article published in the journal of Innovation & Management Review , this article was written in order to define the interaction between capabilities inherent in open innovation and dynamic capabilities (sensing, seizing and transforming) as a source of competitive advantage. And the following results were revealed :

- The identification of nine capabilities that relate to the dynamic capabilities of sensing, seizing and transforming
- This set of capabilities present in open innovation indicates the development of the dynamic capability to strategically manage internal and external knowledge.
- These combined capabilities are relevant in the configuration of routines, processes and internal and external relationships as a critical capability for the management of the company.

Fourth study : titled "**The impact of knowledge sharing in sustaining dynamic capabilities an Analytical study for a sample of Baghdad collage economic sciences university lecturers** " (2018) , PhD thesis by Hatem Ali , the problematic of study was : Does knowledge sharing contribute to the sustainability of dynamic capabilities? , Where the following results were obtained:

- There are cases of agreement among researchers on the importance of knowledge sharing factors in shaping the sharing behavior.

- These factors varied from individual to social to organizational factors, realizing a conception of the nature of creation processes the knowledge that initially occurs at the individual levels is transmitted in a spiral to the social and organizational levels, noting that the process of creating knowledge is a process of creation and participation.

Fifth study : a scientific article titled "**open innovation: a new Mechanism for adoption of organizational innovation from**

Algerian companies" (2016) written by Aichouche, Khayra; Bousalem, Rafika published in International Journal of Innovation , the aim of this paper is to analyze the relationship between the openness degree of companies and organizational innovation. Where the following results were obtained :

- There is a relationship between open innovation and organizational innovation.
- Open innovation is able to encourage creativity and nurture the organizational innovation.
- organizational innovation significantly affects the organizational performance.
- the organizational innovation is one of the variables which are considered to have an important impact on organizational performance.

II. Distinguishing the current study from previous studies :

Through our review of previous studies, we will discuss the most important characteristics of the current study compared to its predecessors.

First: In terms of variables and relation:

By reviewing previous studies, we find that most of them have contributed to the objective we are looking for; Some of them highlight open creativity and study its relationship with other variables; Others have focused on dynamic abilities and

linking them to other variables; On the other hand, several studies have focused on studying how dynamic abilities contribute to promoting open innovation.

The current study focuses on the inverse relationship of how open creativity affects and contributes to enhancing the dynamic capabilities of the organization.

Second: In terms of the approach followed:

Considering the nature of the research and the intent to take note of its various aspects, in order to reach the desired goals, the descriptive and analytical approach was relied upon as followed in previous studies, using the IMRAD method, which is characterized by special laws and foundations, and depends on its construction on A theoretical aspect and an applied aspect, similar to the rest of the previous studies that adopted the classic method in presenting the subject. In addition to the treatment of the study through the questionnaire tool and an analytical review of the data obtained through the statistical program SPSS v25 .

Third: In terms of the limits of the study:

Both previous and current studies differed in terms of place and time of study, as some previous studies were conducted on an international level in Iraq, France, Britain, for example, while our study included the local level in Algeria.

Conclusion :

Our focus in this chapter is to address the literary studies of dynamic abilities, as our study also touched on the most important studies related to the subject of the .study and serving its variables.

We conclude the organization must possess the dynamic capabilities that are limited to three skills: the ability to identify, the ability to understand and assimilate, and the ability to manage or manage, and enable it to identify business opportunities and learn how to seize these opportunities, that is, how to identify the needs of its customers and develop their business models. The decisions required to be made, the identification of its limits and the guarantee of the commitment and loyalty of its employees, which gives it the ability to face the challenges of the environment and formulate new dynamics.

In order for our study to be more practical, in the next chapter, the theoretical aspect will be dropped into an applied form by reviewing the role of open innovation in enhancing dynamic capabilities.

Chapter three:
**Empirical study of the
relationship between
open innovation and
dynamic capabilities
within Saidal group**

Introduction :

In this chapter we will try to give an applied picture of the relationship between open creativity and dynamic capabilities, and to support the theoretical study of the previous chapter, as well as to match the theoretical knowledge with what exists in practice to address it and move away from theorizing and expectations, by surveying the opinions of a sample of employees and managers of the Sidal group a study model, by distributing a questionnaire form after receiving the answers, they were validated, then the collected data were processed using statistical analysis methods by the representative program in SPSS version 25 in addition to the Excel program and then the information was analyzed ,extracted and commented scientifically in order to test the hypotheses of the study, and thus reach the conclusion and interpretation of the results.

Accordingly, this chapter will be divided into:

Section one : the desgin of study.

Section two :Interpretation of the results.

Section one : The design of study.

In this section we will have an over look at the saidal group were was the empirical study

I. An overview of Saidal group:

1. Presentation of Saidal group :

Saidal group was created in April 1982 following the restructuring of the Algerian Central Pharmacy (PCA) and benefited, in this context, from the transfer of the factories of El Harrach, Dar El Beida and Gué de Constantine. In 1988, the Antibiotic Complex of Médéa was also transferred to it, the realisation of which had just been completed by the SNIC (National Company of Chemical Industries). In 1989, following the implementation of economic reforms, Saidal became a public economic company with management autonomy. In 1993, changes were made to the company's articles of association, allowing it to participate in any industrial or commercial operation that could be related to its corporate purpose by creating new companies or subsidiaries. In 1997, Saidal implemented a restructuring plan which resulted in its transformation into an industrial group comprising three subsidiaries (Pharmal, Antibiotical and Biotic). In 2009, Saidal increased its share in the capital of Somedial to 59%. In 2010, it acquired 20% of the capital of IBERAL and its share in the capital of Taphco increased from 38.75% to 44.51%. In 2011, Saidal increased its share in the capital of Iberal to 60%. In January 2014, Saidal merged its wholly-owned subsidiaries Pharmal, Antibiotical and Biotic .

2. Production lists :

SAIDAL has 09 production plants that produce 215 medicines in all forms and dosages:

The production site of Annaba: Specialized in the manufacture of dry forms. - The production site of Médéa: Specialised in the production of penicillinic and non-penicillinic antibiotics.

The production site of Dar El Beida: Located in the industrial zone of Algiers, this factory produces a wide range of medicines in several galenic forms (syrups, solutions, tablets and ointments).

The production site of Gué de Constantine 1: composed of two distinct parts: one for the manufacture of galenic forms (suppositories, ampoules and tablets), the other equipped with a very recent technology

specialised in the production of massive solutions (bags and bottles).

The production site of El Harrach: has four production workshops: syrups, solutions, tablets and ointments.

The Chercell production site: Composed of three production workshops: syrups, dry forms (tablets, powder in sachets, capsules) and haemodialysis concentrate.

The Constantine production site: It has two workshops specialising in the production of syrups.

The Constantine production site: is an Insulin unit specialised in the production of human insulin with three types of action: rapid (Rapid), slow (Basal) and intermediate (Comb 25).

The Batna production site: Specialised in the production of suppositories.

The Médéa production site: Specialised in the production of penicillinic and non-penicillinic antibiotics.

3. Other shareholdings :

The SAIDAL Group also holds stakes in other companies:

-Algérie Clearing (financial company) holds 6.67%.

-Nover (glass production company) holds 4.46%.

-Acdima (ArabCompany for Drug Industries and MedicalAppliances) holds 0.38%.

4. Partnership :

The SAIDAL Group is currently a minority shareholder in three (03) companies and a majority shareholder in one (01) company. It is also present as a main or majority shareholder in three (03) companies in the pipeline. Discussions are underway with other partners to create two (02) new companies covering different therapeutic classes.

The Group's partnerships cover different formulas: industrial and commercial partnership, licence transfer and creation of joint ventures.

The parameters that determine each association include the credibility of the partners, the loyalty of the commitments and mutual trust.

The quality of the agreements relating to the insulin and oncology projects recently completed and the progress of their implementation programme attest, if any were needed, to the validity of the approach.

II. Method and tools of study:

Due to the scientific and practical importance of the field, the analytical descriptive approach has been adopted as being appropriate with the objectives of this study as the research deals with the society's study and its sample, and will determine and show methods of data collection and analysis.

First : Society and sample study :

This study represents the targeted population as well as the identification of the sample on which the study is based.

1. The study population :

The study population represents the group of individuals or units that share specific traits and characteristics. The criteria for scientific and practical qualification have been relied upon as a prerequisite for the distribution of questionnaire forms to the informants in order to ensure that the sample members can handle the content of the questionnaire well. This study is limited to the chief executives and workers of the SIDAL Group.

2. The study sample :

A sample study is a part of the society that provides data on its characteristics and displays its properties, randomly selected according to special rules to properly represent the society. The sample selected in our study is a purposive (arbitrary) represented in the chief executives and workers of the SIDAL complex. The content and results of the field study were related to the time of the distribution and receipt of questionnaires within the period of May and June, 2021.

The following table shows the questionnaires distributed and received on the study sample:

.Table 3. 1: Statistics on the questionnaires

Statement	Number	Percentage
Number of distributed forms	121	%100
Number of forms received	94	%68,77
Number of forms cancelled	5	%4.13

Number of valid forms	89	%73.55
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Source: Prepared by student based on Google Drive output

Second : Methods of data collection and analysis :

The study method includes not only identifying the source, techniques and methods of data collection, but also the tools used during the completion phase of the study.

In this study we relied mainly on the questionnaire, with some interviews with chief executives. Further more, the questionnaire is the most practical and appropriate way to obtain the desired results.

The questionnaire relies more on the clarity of written words rather than the proficiency of interviews. This method provides many advantages, as it can be achieved quickly, at low cost. It also needs more time for the interviewee to be able to answer questions accurately. Although this technique might not provide the required information; due to the refusal or inability of informants to answer questions, it is the most common method of business research.

1. Data collection techniques:

As concerns the scope of the study (location, sector), most studies and research have revealed the culture of the statistical community impact and the selected sector on the process of building the standard model. This is why the industry sector; specifically the Algerian pharmaceutical industry, was chosen for the following reasons:

- The pharmaceutical industry is one of the most important strategic industries since it's tied to health safety.
- The pharmaceutical industry is largely based on research and sustainable development to improve the pharmaceutical product.
- The SIDAL Group is one of the leading pharmaceutical industry institutions in Algeria and occupies a significant proportion of the Algerian market.

The preparation of this study was based on two main data sources and information related to the achievement of its objectives:

a. Secondary Sources:

In general, it concerns all Arab and foreign sources that have been adopted to edit the theoretical aspect of the study, represented in all academic books, articles published in scientific journals, letters and dissertations, , as well as access to some websites.

b. Primary Sources:

These sources are related to the field side of the study as information has not been ready yet, it's rather the researcher who has to excavate, analyze, collate and extract results; as it is a real contribution to the researcher in order that it would become secondary information to assist future studies on the same or similar topics. The questionnaire was implemented as a key tool to obtain the data, and then have been entered to be analyzed them using SPSS v25.

2. Study tools:

In order to achieve the objective of the study and to obtain the desired data and information, the questionnaire was designed and finalized in several phases, which can be summarized as follow:

Questionnaire preparation phase:

.The questionnaire design:

The questionnaire was designed in French and was drafted on closed questions with specific answers, so that we could identify the views of the sample members on the various axes addressed in the questionnaire, which contained 27 questions divided into two sections:

Section One: Includes general information on the individual being asked to clarify the characteristics of the sample study, including: sex, age, academic qualifications (titles), position or rank held by the interviewer, as well as the number of professional experience years.

Section two: The questionnaire is structured into two axes:

First axis: Dynamic capabilities, consisting of 19 paragraphs;

Second axis: Open creativity, 8 paragraphs.

Validation of the questionnaire:

The overall purpose of this process is to ensure that the questionnaire is properly drafted in terms of simplicity and ease of structure, quantitative quality and quality to meet research objectives, which is an important stage in the design of the questionnaire that occurs after the as completion of the initial questionnaire.

At this stage, the questionnaire was e-mailed to the two professors, who were asked to assess it and check if it is relevant to the subject matter of the study.

In the second test, we interviewed a bunch of chief executives for the SIDAL group, the first interview was with (03) Three directors, the director of research and development, the director of projects, the director of production and five experts and 10 chief executives in various fields. The purpose of these interviews was to know their views on the questionnaire, to identify problems relating to the content and format of the questionnaire, its relevance to the pharmaceutical group of SIDAL, and to determine the ability of interviewees to answer questions. Based on their views and comments, the questionnaire was amended, and most of the amendments concerned the keywords of the study, which were rather difficult, especially for executives that are not specialized in the field.

On the other side, the focus was on the basic principles mainly related to:

- The questionnaire language: The interviewer's level of comprehension was taken into account and avoiding the use of complex terminology to the utmost degree.
- General aspect: the introduction of the questionnaire was taken into consideration as it clearly reveals the identity of the students and the objective of the study in addition to finding some links between the interviewees and catalyze them to respond spontaneously guaranteeing information confidentiality and then thanking them of course. Questions were well-organized, not numerous to ensure that the interviewee is not going to be exhausted in matters of efforts, time and boredom.

Method of distribution:

The way the questionnaire was designed and produced was initially in paper form, but soon in electronic form, to:

- Facilitate the communication process with the respondents, thus reducing the costs associated with the questionnaire (preparation and management, selection and analysis costs);
- Take advantage of its distribution time in short and from remote locations, for the Internet enables us to home working penetrating geographic boundaries.

- Get complete responses when the Google Drive service provides the feature that the interviewer cannot send his response without answering all the questions;
- The response rate increases due to the ease of dissemination of the questionnaire and the ease of completion by the sample members.

Distribution phase of the questionnaire:

After the design of the questionnaire in its final draft, a random and targeted sample of managers, chief executives and workers from all branches of the pharmaceutical complex were selected to achieve the specific objectives of the study. The sample type was selected by the help of the project manager to obtain a representative sample.

To reach the study sample, the distribution and the dissemination of the questionnaire, we get helped in several ways, the most important of which are:

- Internet and email distribution to respondents;
- Social media dissemination;
- Use colleagues to publish it.

The method of obtaining responses varied depending on how they were distributed and disseminated, but they were all received through Google Drive.

Questionnaire Processing Phase:

After receiving the answers to the distributed forms, the selection and analysis of the answers they contain; which were collected automatically, is followed and based on the statistical package program SPSS 25, plus Excel.

We quantized the data that we obtain through the compiled forms using the numeric coding method so that: option 1 is marked by the number (1), option 2 by the number (2), option 3 by the number (3), option 4 by the number (4) and option 5 by the number (5). Owing to the nature and methodology of the study, we have calculated and extracted, as well as analyzed both the recurrences and the ratios of the sample study, and its individual responses to the phrases of the main axes contained in the study tool. The arithmetic averages have also been calculated to see how high and low those responses are, and through which it is possible to calculate the standard deviations of each phrase by the highest average. In addition, the following statistical methods complement the above:

Pearson correlation coefficient: It is used to measure the strength and direction of a

linear association between two variables, that is to say, the strength of the correlation between them.

Constant coefficient: It means that the scale is stable and not inconsistent with itself, that is, it gives the same results if it is re-applied to the same sample, since this parameter takes values ranging from zero to the integer number one. If there is no reliability in the data, the value of the coefficient is equal to zero and vice versa. If there is a total reliability, the coefficient equals the integer number 1. As long as the constancy coefficient approaches 1, the constancy is higher and the order reversed when the coefficient is close to 0.

We used the **Alpha Cronbach coefficient** in our study to ascertain the degree to which the phrases of the questionnaire were consistent.

Honesty coefficient: It is meant that the scale (s) (questionnaire) measures what is set to measure. In mathematics, it is measured by the square root of the alpha-Cronbach persistence coefficient, that is, to increase the value of the alpha-Cronbach coefficient means to increase the credibility of the data.

Section 02 : Interpretation of the results:

In this research, we will display the results obtained by processing and analyzing study forms distributed to the sample, which will serve the current study and reinforce previous studies.

First: Presentation and interpretation of the results.

In this request, we will present and interpret the results obtained in this study, starting with the demographic characteristics of the sample, and the trends of its members towards the study variables and standards, and then we will make a standard assessment of the study model after the discovery of the data variables, and eventually test the hypotheses of the study.

1. Presentation and discussion of the demographic characteristics of the study sample

Demographic data are considered as one of the most significant study mechanisms and the adequate strategic preparation to dealing with the targeted study sample. The study stands for 5 characteristics which are appropriate to the nature of the accounting environment. Here is a well-detailed description of the study sample members:

Table 3.2: The demographic characteristics of the study sample.

	Statement	Frequency	Percentage
Sexe	Female	26	29%
	Male	63	71%
	Total	89	100%
Age	Less than 30 years	25	28%
	From 30 to 40 years	38	43%
	From 41 to 50 years	18	20%
	More than 50 years	08	9%

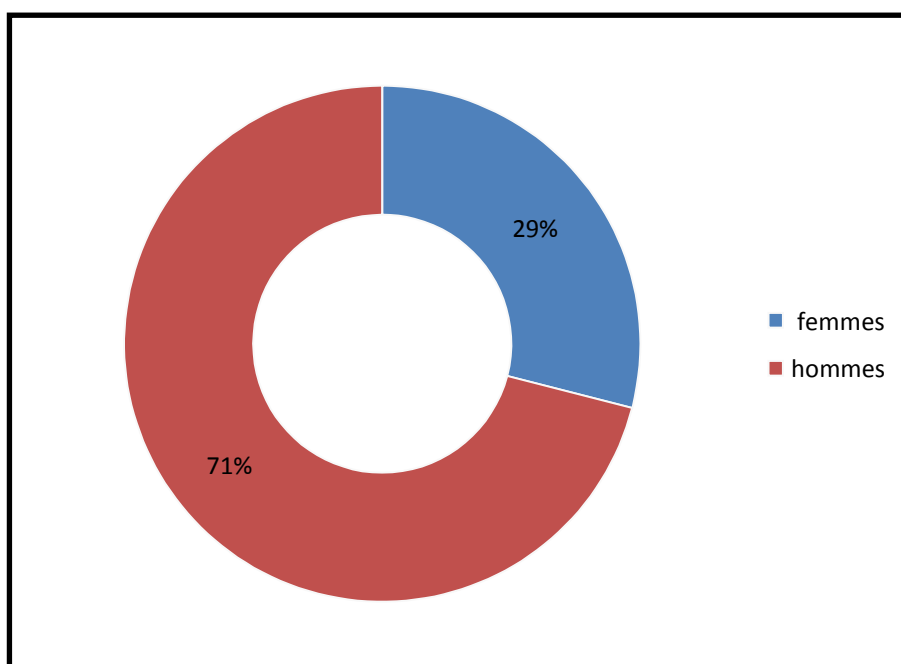
	Total	89	%100
Eduquational qualification	Secondary	12	%13,49
	University	13	% 14,60
	Post university	64	% 71,91
	Total	89	%100
Professional experience (in years)	Less then 3 years	8	7.5%
	3 to 7 years	13	10%
	8 to 12 years	26	37.5%
	13 to 17 years	19	20 %
	18 to 22 years	19	20.8%
	More than 27 years	4	4.2%

Source: Prepared by the student based on the outputs of SPSS v25.

Distribution of the sample members by gender:

The following figure shows the relative distribution according to the sex characteristic of the study sample according to the answers provided.

Figure 3.1: Distribution of sample members by sex.



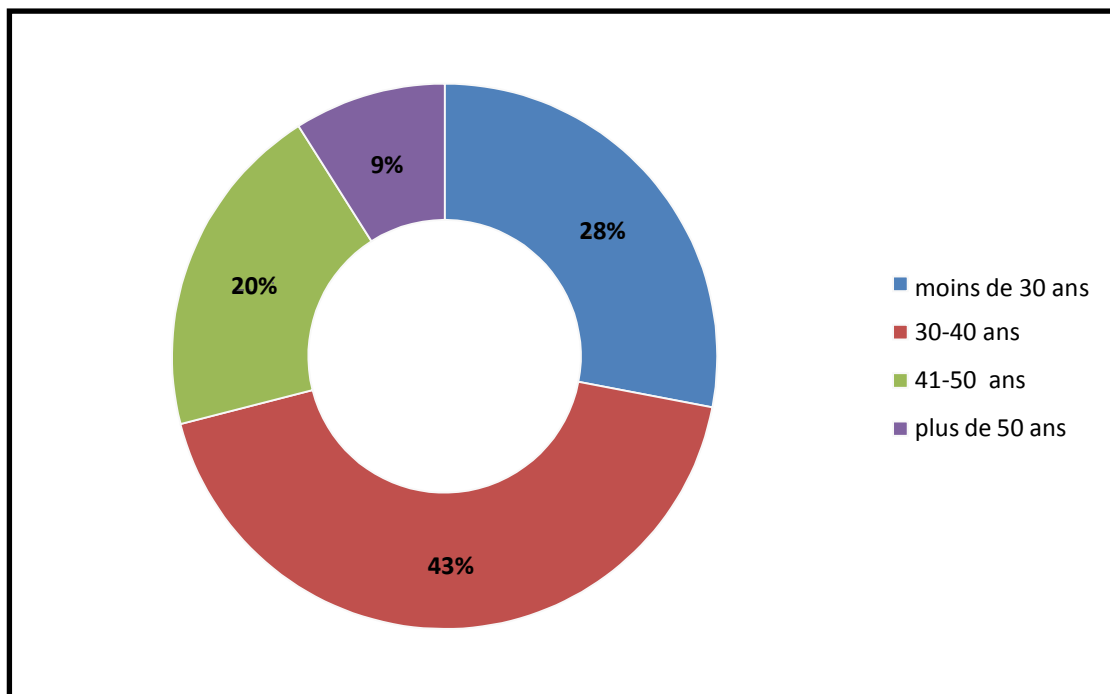
Source: Prepared by the student based on the outputs of Excel 2016.

Through the results of Figure 3.1 , it is clear to us that 71% of the study sample is male, while the rest, or 29%, is female. This is due to the fact that the workforce in the pharmaceutical industry in Algeria is male.

Distribution of the sample members according to age:

The following figure shows the relative distribution according to the age characteristic of the study sample according to the answers provided.

Figure 3.2: Distribution of sample members according to age.



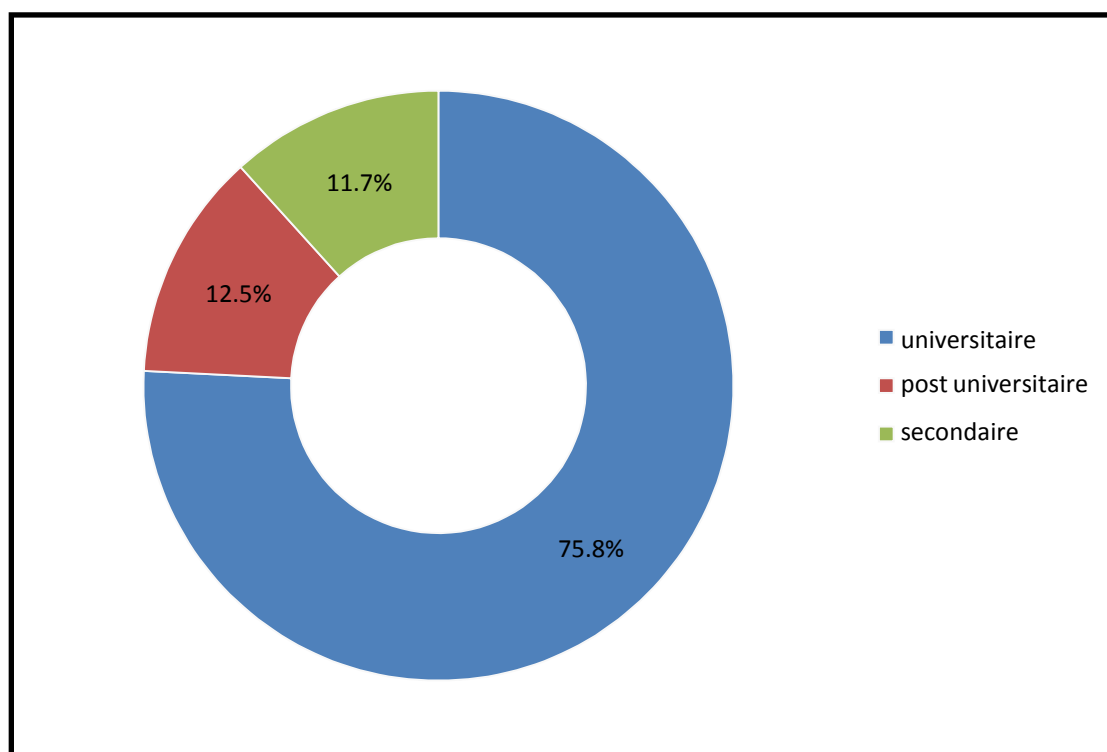
Source: Prepared by the student based on the outputs of Excel 2016.

With regard to the age characteristic, the results in Figure 3.2 showed that the group of respondents whose ages range between 30 and 40 years, accounts for the largest percentage, which is 43%, and the results also showed that 28% are those under the age of 30 years, while 20% of the study sample is for the age group from 41 to 50 years, and finally, it was found that the percentage of those over 50 years old reached 9%, and this indicates that most of the sample categories are middle age groups

Distribution of the sample members according to educational qualification:

The following figure shows the relative distribution according to the acquired academic qualification characteristic of the study sample members according to the answers provided.

Figure 3.3: Distribution of sample members by educational qualification.



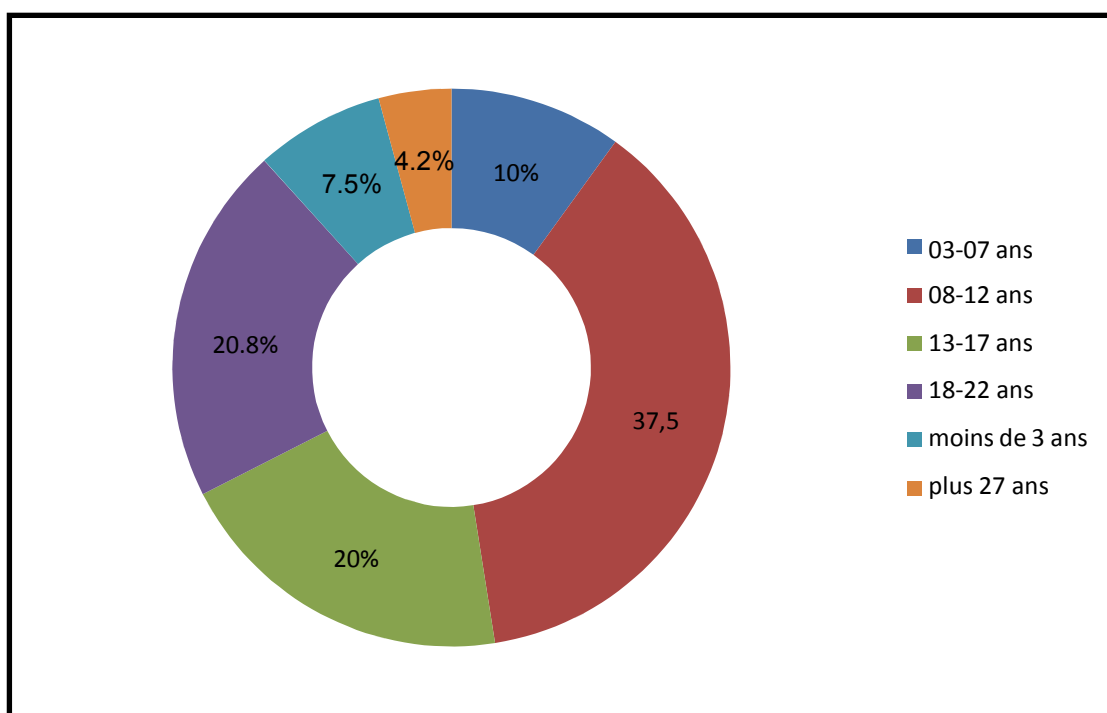
Source: Prepared by the student based on the outputs of Excel 2016.

As for the academic qualification, it was shown in Figure 3.3 that the vast majority of the sample are those who have a university level (Bachelor, Master) with a rate of 75.80%, followed by 12.50% of individuals with high levels of masters and doctorate degrees, and a small percentage estimated B 11.70% of the secondary level, which means that the educational level of the sample is high, because most of its members have a university level, and this is a good and important indicator that all sample members have the ability to answer the questionnaire questions well, which enhances confidence in their answers and reliance on them in analysis. This can be attributed to the company's desire to develop its competencies due to the nature of its activity, which is based on continuous research and development, which requires it to attract highly qualified individuals.

Distribution of sample members according to professional experience (in years):

The following figure shows the relative distribution according to the annual experience characteristic of the profession for the study sample members according to the answers provided.

Figure 3.4: Distribution of respondents according to professional experience (in years)



Source: Prepared by the student based on the outputs of Excel 2016.

We note through Figure 3.4 the highest percentage of employees with seniority between 08 and 12 years, which is equivalent to 37.50%, while those with seniority between 18 and 22 years represent 20.80%, which is almost the same as for employees whose seniority ranges between 13 and 17 years, as for those whose working years range between 03 and 07 years, their percentage is 10%, followed by 7.50% for employees whose work period is less than 03 years, and the last percentage is for employees who have more than 27 years of experience in the company, and this is 4.20%, and these results confirm that the majority of the interviewed individuals have experiences in the field of the pharmaceutical industry, and this is due to the date of the company's establishment in 1984.

2. Presentation and discussion of the questionnaire axes :

Through this section, the procedures for processing the questionnaire axes will be

explained, with the results of the questionnaire axes reviewed and discussed.

Procedures for processing the questionnaire axis :

Likert scale :

The questions of the questionnaire axes were prepared based on the Quinary Likert trend measurement scale, which can have five responses, in order to allow us to know the opinion of the sample members on the topic covered by the questionnaire. The Likert scale has many advantages, the most important of which are the ease of construction and ease of administration. In scientific research, and this is what most of the previous studies related to the subject of the current study have used this scale, and the following table shows how to code the study scale:

Table 3.3 : Five point likert scale

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1	2	3	4	5

Source: Muhammad Khair, Statistical Analysis of Data Using IBM SPSS Software, Edition 01, Safaa Publishing and Distribution House, Amman, Jordan, 2018, pg. 28.

Criteria for determining the general trend of the sample:

Through this element, we try to deduce the general tendency of the members of the sample studied, for each of the questions of the axes of study, and this based on the weighted weights of the Likert scale, where we calculated the length of the category , which is calculated by the following law :

$$\text{Category length} = (\text{maximum variant} - \text{minimum variant}) \div \text{number of levels}$$

The maximum bound for the alternative is: 5 for a strongly agree response, and the minimum bound for the alternative is: 1 for a strongly disagree response. Therefore, the class length for the study is: $(5 - 1) \div 5 = 4 \div 5 = 0,80$

Table 3.4: Criteria for determining the general direction of the sample

General trend of the sample	weighted average
From 1.00 to 1.79	Strongly disagree
From 1.80 to 2.59	Disagree
From 2.60 to 3.39	Neutral
From 3.40 to 4.19	Agree
From 4.20 to 5.00	Strongly agree

Source: Walid Abdurrahman Khalid Al-Farra, Analysis of Questionnaire Data Using Statistical Programme SPSS, Department of Programme and Foreign Affairs, Jordan, 2009, p. 26.

Reviewing the number of responses from sample members:

The process of reviewing the data in terms of the number of responses of respondents to the questionnaire questions is a very important process, to ensure that there are missing values or not, and the following table shows 89 cases of valid responses and the absence of missing values that represent the failure of individuals to respond to the questionnaire

.Table 3.5: Number of sample members' answers

	Number of valid answer		Number of missing answers		Total	
	Number	percentage	Number	percentage	Number	percentage
Questionnaire	89	100%	00	00%	89	100%

Source: Prepared by the student based on the outputs of SPSS v25.

Parameter Testing:

Parametric statistical tests are one of the most important applications, used in the case of large samples that must be normally distributed, so it is necessary to know whether the

sample is normally distributed or not, which is a prerequisite for testing the one-way analysis of variance.

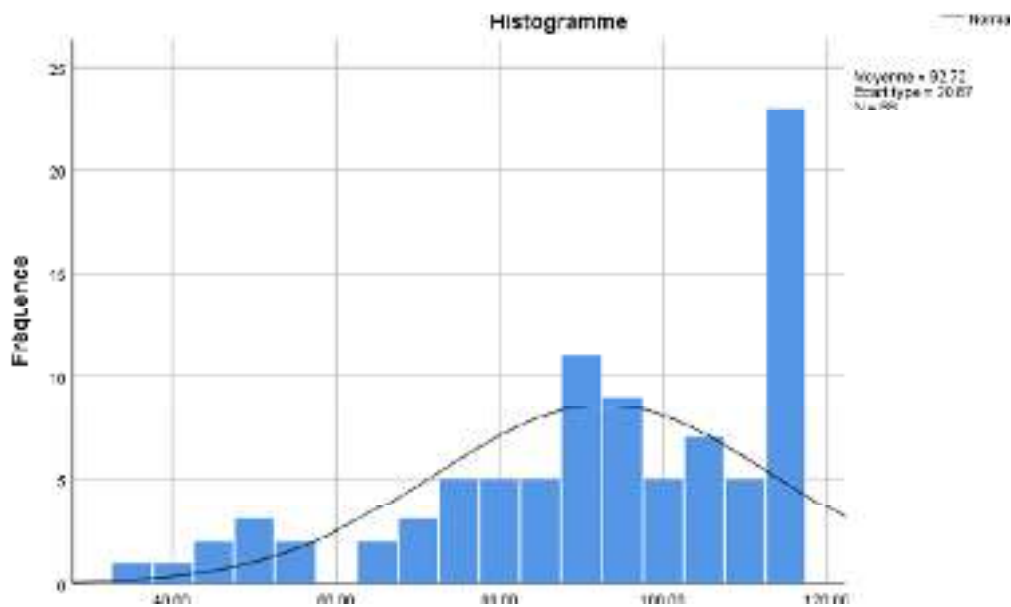
Table 3.5: Normal distribution test for data

Tests	Kolmogorov-Smirnov test			Shapiro-Wilk test		
	statistics	Degree of Freedom DDL	Level indicator sig	statistics	Degree of freedom	Level of indicator sig
Questionnaire	0.143	89	0.000	0.892	89	0.000

Source: Prepared by the student based on the outputs of SPSS v25.

Table 3.6 shows the results of Shapiro's test for the sample of less than 50 cases. Therefore, we rely on the results of the Kolmogorov test because of the large sample size, which is equal to 89 cases and is greater than 50. This test shows the level of significance of the data, it is less than 0.05 for all questionnaires, so we conclude that the data follow an abnormal distribution at a confidence level of 95%

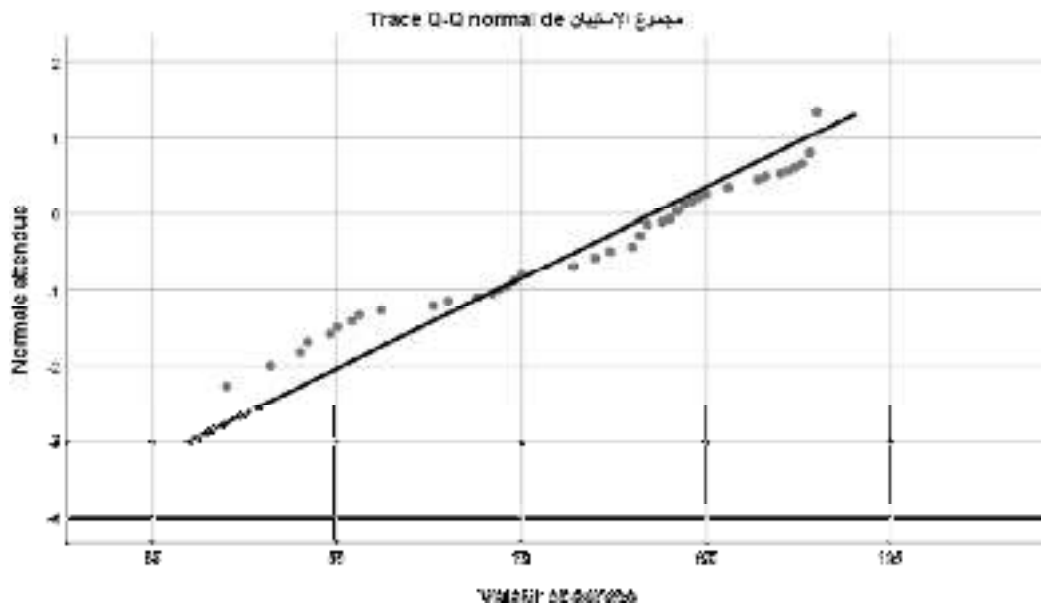
Figure 3.6: Abnormal sample distribution



Source: Prepared by the student based on the outputs of SPSS v25

Figure 3.6 emerged, the two measures of twist and fluidity to indicate the degree of distribution of the data, where the twist indicates the realization of an ascending shape, and the symmetry of the curve around the average value 100.00, in addition to obtaining a positive permutation in the figure that indicates the orientation of the curve to a higher peak, the figure shows that the distribution by the standard deviation is 20.87, confirming that the sample is subject to an abnormal distribution.

Figure 3.7: The diffraction plate and the slope line.



Source: Prepared by the student based on the outputs of SPSS v25

The figure 3.7 determines the shape and strength of the relationship between study variables (Open creativity and dynamic capabilities) through the diagram of the dot cloud, which shows that the cloud is approaching the shape of a straight line, so the gateways It also shows that the correlation coefficient is close to the correct one, which reflects that the relationship between the two variables is strongly positive and that they are related to a linear and direct relationship.

Validation test of the questionnaire tool:

Internal consistency:

The validation of the questionnaire tool means to what extent all the paragraphs of the questionnaire are consistent with the axis to which it belongs, and that there is no leakage bias or error, at any stage that may affect the validity of the form as a data collection tool, and thus the high level of confidence in it, and as a result the Pearson correlation coefficient was calculated, which shows the degree of each of the expressions the axis and the total degree of the axis to which that paragraph belongs.

- **The internal consistency of the first axis's sections :**

Table 3.7 :The internal consistency of the first axis's sections

Sections of first axis : Dynamics capabilities	Correlation coefficient	Statistical significance	Decision
1. Les attentes de l'organisation concernant les prochains mouvements de ses concurrents sont souvent correctes.	**0.902	0.000	Significant
2. Des nouvelles opportunités contribuent à activer les capacités dynamiques de l'organisation.	**0.909	0.000	Significant
3. Vous vous fiez à l'intuition lorsque vous formulez une stratégie de l'organisation.	**0.930	0.000	Significant
4. Une fois que de nouvelles connaissances sont développées, les utiliseriez-vous autant de fois que possible	**0.958	0.000	Significant
5. Vous utilisez les connaissances et les compétences du personnel pour élaborer de nouvelles stratégies créatives.	**0.941	0.000	Significant
6. Vous analysez les facteurs de concurrence entre votre organisation et les autres concurrents lors de l'élaboration du plan .	**0.870	0.000	Significant
7. Vous définissez une stratégie appropriée pour combler le fossé entre les événements passés, présents et futurs.	**0.837	0.000	Significant
8. L'organisation permet-elle à ses employés de participer à l'élaboration d'une planification	**0.956	0.000	Significant

stratégique			
Comment évaluer la performance de votre organisation par rapport au principaux concurrents ?			
9. Elle est plus efficace	**0.907	0.000	Significant
10. Elle plus efficience	**0.941	0.000	Significant
11.Elle a un puissant statut concurrentiel	**0.960	0.000	Significant
12. Elle innove de nouveaux produits et services de haute qualité	**0.965	0.000	Significant
13.Elle développe des compétences hautement qualifiés	**0.934	0.000	Significant
14. Elle a une grande part du marché	**0.966	0.000	Significant
15.Elle a un puissant statut concurrentiel	**0.958	0.000	Significant

** The correlation is statistically significant at the 0.01 level of significance (binary).

Source: Prepared by the student based on the outputs of SPSS v25.

It is clear from Table 3.7, that the correlation coefficients R between the score of each statement and the total score of the first axis statements ranged from 0.966 in its upper limit at sentence No. 14, to 0.837, in its lower limit at sentence No. 7, and that all correlation coefficients are statistically significant at the 0.01 significant level, indicating internal consistency between The statements in the first axis, and thus the axis, are considered to be true for what has been set for it and serve the purposes of the study.

- **The internal consistency of the second axis's sections**

Table 3.8 :The internal consistency of the second axis's sections

Sections of second axis : open innovation	Correaltion coefficient	Statistical significance	Decision
16.L'organisation investit dans la recherche et le développement	**0.978	0.000	Significant
17.L'organisation offre une formation externe aux employés	**0.970	0.000	Significant
18.L'organisation prend en compte les changements environnementaux	**0.929	0.000	Significant
19.La technologie utilisée est mise à jour en fonction des évolutions de l'environnement écologique.	**0.978	0.000	Significant
20.La gestion de votre organisation implique ses employés dans des sessions de génération d'idées.	**0.899	0.000	Significant
21.L'organisation s'ouvre à de nouvelles expériences à travers des contrats de partenariat	**0.962	0.000	Significant
22.Est-ce que vous êtes capables de créer et d'acquérir de nouvelle connaissance	**0.927	0.000	Significant
23.Les TIC sont utilisés effectivement dans votre organisation pour favoriser l'apprentissage et pour faciliter la création et le partage des connaissances	**0.978	0.000	Significant

** The correlation is statistically significant at the 0.01 level of significance (binary).

Source: Prepared by the student based on the outputs of SPSS v25.

Table 3.8, through the correlation coefficients R, shows that the two largest sections for the second axis are number 16 and 19, and the lowest section for the second axis is section number 23, and that all correlation coefficients are statistically significant at The level of significant significance is 0.01, which indicates the internal consistency between the statements of the second axis, and therefore the axis is considered Honest about what was set for him and he achieved the desired goals of the study.

Stability test of the questionnaire tool :

To measure the stability of the measurement tool statements for each of the study variables, the reliability coefficient of Cronbach's alpha was used (Cronpach alpha) as well as using its square root to measure its validity, and the accepted value of the reliability coefficient is 60% or higher, so that the questionnaire can be applied several times so that it gives the same answers each time despite the passage of time. The higher the value of this coefficient, the greater the reliability of the data collection tool and the reliability of the results. achieved. The following table shows the reliability and validity of each axis of the questionnaire:

Table 3.9 : reliability and statistical validity of the questionnaire axis.

Sections of the questionnaire	Number of questions	Reliability coefficient Alpha Cronbach	Validity coefficient = square root of consistency
First axis	15	0.988	0.994
Second axis	8	0.980	0.953
Full questionnaire	23	0.992	0.996

Source: Prepared by the student based on the outputs of SPSS v25.

Through the results obtained in Table 3.9 , it is clear to us that all the reliability and validity coefficients for the questionnaire sections in the two axes, it was greater than the 60% acceptance level and it is close to the correct one, and the ratio total achieved is high, reaching 99%, which means that it represents the greatest degree of consistency. From this, we conclude that the questionnaire is valid, and this allows the possibility of stability of the results obtained in the questionnaire, that If the study was repeated through it, we would get results that approximate its results or are almost completely identical to it, but regarding for the validity coefficient, which is the square root of Cronbach's alpha coefficient, which is directly related to it, we note as is It is shown in the previous table that the greater the reliability coefficient, the higher the validity coefficient, and vice versa. All parts of the questionnaire have an excellent degree of reliability and reliability, and that the questionnaire has achieved what it was designed to measure.

Presentation and discussion of the first axis of dynamic capabilities

The following table presents a summary of the results of the sentences of the first axis of the questionnaire.

Table 3.10: Statistical indicators of the results of the study sample's opinions on the statements of the first axis.

	Scale	Strongly agree	Agree	neutral	Disagree	Strongly disagree	ADM	Standard deviation	gener directi
	First axis : Dynamic capabilities								
entes de isation concernant chains ments de ses rements sont souvent es.	Repetition	50	32	7	0	0	4.481	0.641	1
	Ratio	56.2	36.0	7.9	0	0			
ouvelles opportunités uent à activer les és dynamiques du isation.	Repetition	49	29	8	1		4.370	0.871	2
	Ratio	55.1	32.2	9.0	1.1	2.2			
ous fiez à l'intuition vous formulez une e de l'organisation.	Repetition	38	41	06	04	0	2.469	0.779	3
	Ratio	42.7	46.1	6.7	4.5	0			

s que de nouvelles sances sont pées ,les utiliseriez- tant de fois que e	Repetition	27	38	11	08	05	3.831	1.130	12
	Ratio	30.3	42.7	12.4	9.0	5.6			
tilisez les sances et les ences du personnel aborer de nouvelles es créatives.	Repetition	41	29	10	01	08	4.056	1.200	7
	Ratio	46.1	32.6	11.2	1.1	9.0			
analysez les facteurs urrence entre votre ation et les autres ents lors de ration du plan .	Repetition	26	51	11	0	01	4.134	0.710	6
	Ratio	29.2	57.3	12.4	0	1.1			
éfinissez une e appropriée pour r le fossé entre les ents passés, s et futurs.	Repetition	22	26	39	02	0	3.764	0.853	15
	Ratio	24.7	29.2	43.8	2.2	0			
nisation permet-elle mployés de er à l'élaboration lanification que	Repetition	28	35	15	11	0	3.898	0.989	11
	Ratio	31.5	39.3	16.9	12.4	0			

uer la performance de votre organisation par rapport au principaux concurrents ?

plus efficace	Repetition	36	45	04	04	00	4.269	0.750	4
	Ratio	40.4	50.6	4.5	4.5	00			
s efficience	Repetition	46	25	12	04	02	4.227	0.997	5
	Ratio	51.7	28.1	13.5	4.5	2.2			
n puissant statut entiel	Repetition	30	35	13	11	0	3.942	0.992	10
	Ratio	33.7	39.3	14.6	12.4	0			
ove de nouveaux s et services de ualité	Repetition	40	25	13	10	1	4.044	1.075	8
	Ratio	44.9	28.1	14.6	11.2	1.1			

veloppe des ences hautement s	Repetition	35	25	10	19	0	3.853	1.163	12
	Ratio	39.3	28.1	11.2	21.3	0			
ne grande part du	Repetition	30	29	15	11	04	3.786	1.172	14
	Ratio	33.7	32.6	16.9	12.4	4.5			
n puissant statut entiel	Repetition	35	28	20	06	0	4.033	0.946	9
	Ratio	39.3	31.5	22.5	6.7	0			
Full first axis							60.966	13.443	Strongl

Source: Prepared by the student based on the outputs of SPSS v25

Table 3.10 shows that the arithmetic means for all sections ranged from 3,764 to 4,481, the whole axis of dynamic capabilities reached an arithmetic mean of 60,966 with a standard deviation of 13,443, which is within the hypothetical mean by a very pleasant degree. This is due to the extent to which the sample members are aware of the importance of dynamic capabilities and their importance in achieving the competitive advantage of the institution.

Presentation and discussion of the second axis of open innovation

The following table presents a summary of the results of the sentences of the second axis of the questionnaire.

Table 3.11: Statistical indicators of the results of the study sample's opinions on the phrases of the second axis.

Sections	Scale	Strongly agree	Agree	neutral	Disagree	Strongly disagree	ADM	Standard deviation	general direction	Relative importance
Second axis : Open innovation										
L'organisation investit dans la recherche et le développement	Repetition	30	40	10	08	01	4.011	0.959	3	agree
	Ratio	33.7	44.0	11.2	9.0	1.1				
L'organisation offre une formation externe aux employés	Repetition	25	45	10	09	00	3.966	0.897	4	agree
	Ratio	28.1	50.6	11.2	10.1	0				
L'organisation prend en compte les changements environnementaux	Repetition	35	25	20	07	02	3.943	1.069	6	agree
	Ratio	39.3	28.1	22.5	7.9	2.2				
La technologie utilisée est mise à jour en fonction des évolutions de l'environnement écologique.	Repetition	30	40	10	08	01	4.011	0.959	2	agree
	Ratio	33.7	44.9	11.2	9.0	1.1				
La gestion de votre organisation implique ses employés dans des sessions de génération d'idées.	Repetition	49	11	10	10	09	3.910	1.427	8	agree
	Ratio	55.1	12.4	11.2	11.2	10.1				

Source: Prepared by the student based on the outputs of SPSS v25.

Through Table 3.11, we note that the arithmetic means of all sentences were between 3,910 and 4,044, and the whole open creativity axis reached an arithmetic mean of 31,752 with a standard deviation of 7,523, a general tendency for the sample members to a pleasing degree according to the known weight, and which proves the validity of the second sub-hypothesis.

Second : Interpretation and discussion of the study results

1. Testing the main hypothesis.

To test the hypothesis of the main study, the one-way analysis of variance (ANOVA) was used, with the results presented in the following table:

Table 3.12: Statistical indicators of the results of the one-way analysis of variance ANOVA test

Dependent variable : first axis dynamic capabilities						
independent variable	Correlation coefficient R	Coefficient of determination R ²	Quality test F-test	Effect Test T-test	Significance level Sig	Degree of freedom DDL
Second axis	0.980	0.961	458.295	46.003	0.000	88

Source: Prepared by the student based on the outputs of SPSS v25.

The correlation coefficient R is a parameter that reveals the strength of the relationship between the independent variable (open innovation) and the dependent variable (dynamic capabilities), and given the results obtained, we note by its estimated value 0.980 at a significant level of 0.01 and there is a strong direct correlation of 98% between the two variables, i.e. more the independent variable increases, the dependent variable increases and vice versa, which proves the validity of the hypothesis.

The value of $R^2 = 0.961$ also indicates that the independent variable explains the change in the dependent variable by 96%, and the remaining 4% is explained by other factors, in addition to random errors resulting from the precision of the sample selection and the precision of measurement units and others.

It is also noted that the test value of $F = 458.295$ statistical function at the 0.01 significance level indicates the existence of the model of the relationship between the independent variable and the dependent variable, and also indicates the validity of the dependence on the results of the error-free model.

The value of the impact test $T = 46.003$ shows that the effect of the independent variable on the dependent variable cannot reach zero, which means that the independent variable (open innovation) has an impact on the dependent variable (dynamic capabilities). And

by the significance level Sig, whose estimated value of 0.000 is less than 0.05, which expresses the significance of the model, and indicates the rejection of the null hypothesis (H0) and the acceptance of the alternative hypothesis (H1), and therefore there is a relationship between the independent variable (open innovation) and the dependent variable (dynamic capabilities).

According to the results, the level of morale was below 05%.

The following table summarises the results of the questionnaire outputs

Table 3.13: Statistical indicators of the results of the questionnaire axes.

Questionnaire axis	Arithmetic average	standard deviation	general direction
First axis	60.966	13.443	Strongly agree
Second axis	31.752	7.523	Strongly agree
Full questionnaire	92.72	20.87	Strongly agree

Source: Prepared by the student based on the outputs of SPSS v25.

We notice in Table 3.13 that the overall arithmetic mean is 92.72 with a standard deviation of 20.87, which confirmed that the overall trend of the study sample was in agreement according to the known weight.

By proving the sub-hypotheses above, and based on the data in the above tables.

Table 3.14 regression model factors

The dependent variable : qualitative characteristics of accounting data.			
Independent variable	slope of the regression line a	regression coefficient b	Result
First axis	1.751	5.359	Significant

Source: Prepared by the student based on the outputs of SPSS v25.

The degree of influence of the independent variable on the dependent variable can be calculated using the following relationship model:

$$Y = 1.751 X + 5.359$$

Interpreting the relationship model, it becomes clear that by measuring the independent variable and applying the model, the dependent variable can be

predicted, as we see that for every 1,751 units change in the independent variable (open innovation), the dependent variable (dynamic capabilities) increases by one unit. This shows the knowledge of the relationship between dynamic abilities and open innovation, and this has achieved the desired objective of the study.

Conclusion of the chapter :

The empirical study mainly aimed at analyzing and interpreting what came from the answers of the managers and chief executives of the Sidal group about the role of open innovation in enhancing the dynamic capabilities of the organisation.

Through the study and analysis of these answers, the validity of the study's principale and sub hypotheses was tested .

General Conclusion :

In light of the changes of the external environment, intense competition and current trends in the business environment, and in response to change and complexity, organizations have taken new ways to practice their business in order to survive and perpetuate in highly competitive and turbulent markets, where was open innovation and dynamic capabilities A major role in achieving a permanent competitive advantage, which was confirmed by the researcher "Tecee".

And the research process in the relationship of open creativity with the dynamic capabilities of the Saidal group was the main objective of this study, which was achieved after reviewing and analyzing the literature of many empirical studies that dealt with this subject

In our quest to cover the issue, our study came to answer the problematic: "**How does dynamic capabilities contribute to strengthening and promoting open innovation in organizations?**" .

By studying a sample of chiefs aexecutive and directors in saidal group . we have linked the theoretical study on the one hand and empiracal study on the other.

Hypotheses testing:

Through the field study, we found:

- Proving the validity of the first sub-hypothesis, which states that: "**There are statistically negligible differences between dynamic capabilities and open innovation ?**".
- Proving the validity of the second sub-hypothesis, which states that: "**There are statistically negligible differences between the dynamic capabilities and competetive advantage?.**"

After proving the validity of the sub-hypotheses, we were able to prove the negation of the main hypothesis, which states: "**There are no statistically significant differences between dynamic capabilities and open innovation in the context of achieving competitive advantage?**".

Also, through this study, some results were reached, the most important of which are:

On a theoretical level, we found:

Our findings have relevance for both OI and DC studies. According to previous studies, DCs are critical for businesses in marketplaces with fast rates of technological change. Firms with DC seek new technical opportunities in these situations by developing scanning and monitoring capabjkiilities that manifest as sensing skills . Our findings have relevance for both OI and DC studies. According to

previous studies, DCs are critical for businesses in marketplaces with fast rates of technological change .Firms with DC seek new technical opportunities in these situations by developing scanning and monitoring capabilities that manifest as sensing skills . When dynamic capacities like sensing, seizing, and transforming are linked to open innovation, it becomes clear that the path effects the status. which results in management and organizational procedures that must be coordinated and incorporated, and which must be learned and reconfigured in accordance with the growth of sensing, seizing, and reconfiguring capabilities. Then it was able to observe whether there was a competitive advantage in the existing path or whether there was a need/possibility to create new paths that would decide new statuses and processes for the pursuit of a competitive advantage.

On the empirical side , we found:

The dynamic capabilities of the Saidal group are represented in the embodiment and employment of the knowledge gained from its employees and partnership relations, and the training clauses imposed by Saidal in most of its agreements, and through investment in research and development,

And also by introducing modifications to its products that are characterized by continuous renewal and development, and by updating the used technology based on developments in the technological environment.

Saidal group's ability to develop comes from research efforts (in specialized laboratories), and the acquisition of information about markets and competitors,

Involve employees in brainstorming sessions.

Saidal group works according to strategic thinking, and it contributes to activating its dynamic capabilities.

According to the obtained results, we were able to formulate a set of recommendations:

- The necessity of adopting the open principle in various types of institutions, and it should be practiced in particular in pharmaceutical industry due to its benefits and advantages, including activating the dynamic capabilities of the institution.
- Given the pharmaceutical industry's association with creativity, the dynamic capabilities of pharmaceutical institutions that enable them to achieve innovative processes.
- The need to develop awareness among managers and managers of the importance of open innovation.
- The need to enhance the competitiveness of Arab economies in the field of the pharmaceutical industry by maximizing the benefit from the available modern technology in this field.
- Due to the clear lack of Arabic studies and research that address how open innovation contributes to enhancing dynamic capabilities, it is necessary to intensify research in these two fields because of their importance in light of the current developments.
- The necessity of cooperating with faculty members in universities and colleges to give training courses for directors of institutions and workers about open innovation practices and that the courses take the character of continuity and serious follow-up.

As for the prospects for the study, there are points that need to be expanded in future are:

- Further delving into the components of the organization's dynamic capabilities and researching the possibility of its components differing from one institution to another.
- Study the elements contributing to the formation of dynamic capabilities depending on the type of institution.
- Studying the steps of forming and disseminating the dynamic capabilities of a number of institutions for the purpose of comparing them.

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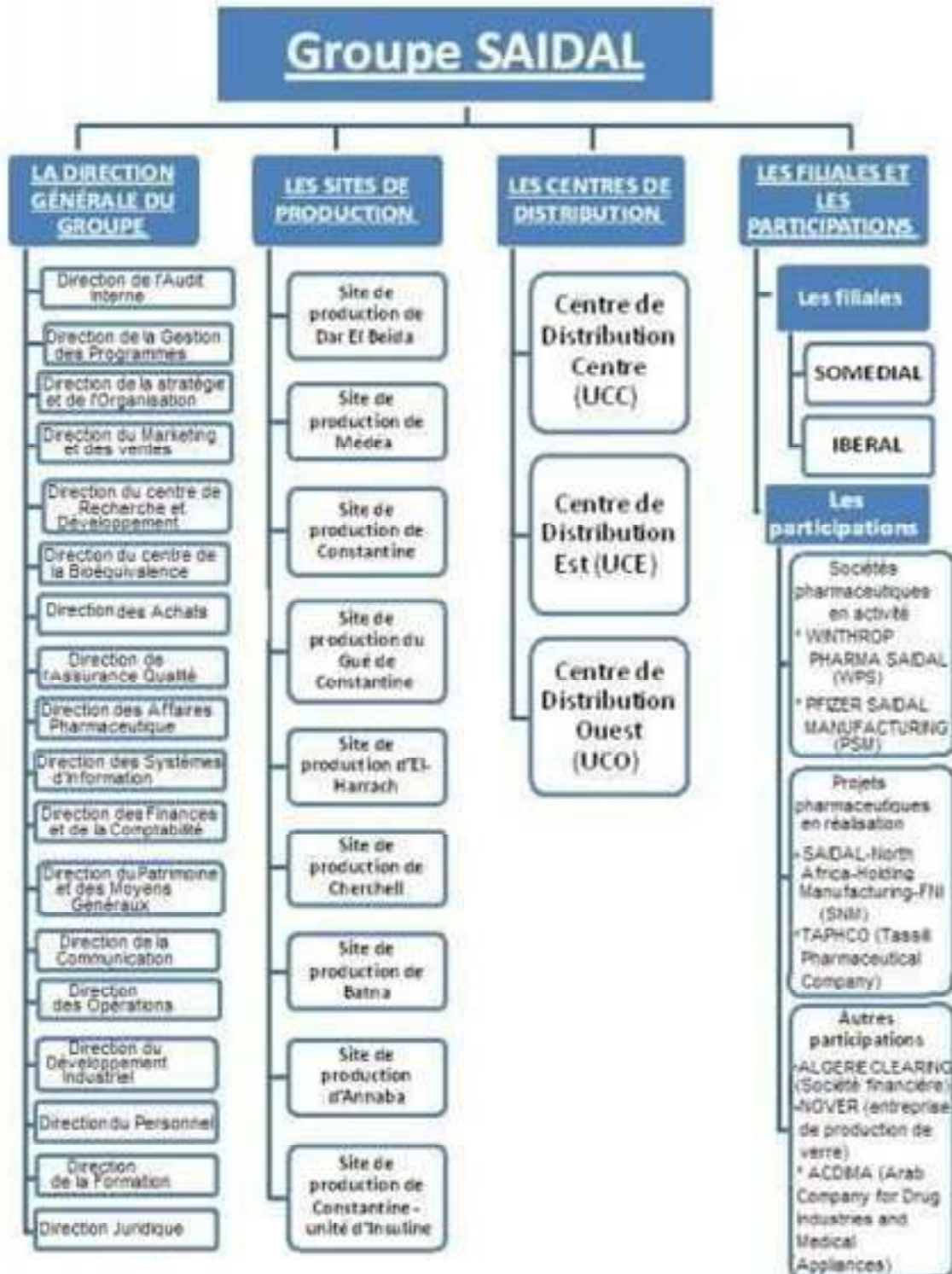
Websites :

- www.sciencedirect.com
- www.researchgate.com

Liste of annexes

Liste of annexes

Annex 1: saidal organization chart



Annex 1: SPSS Outputs.

Statistiques de fiabilité	
Alpha de Cronbach	Nombre d'éléments
,988	15

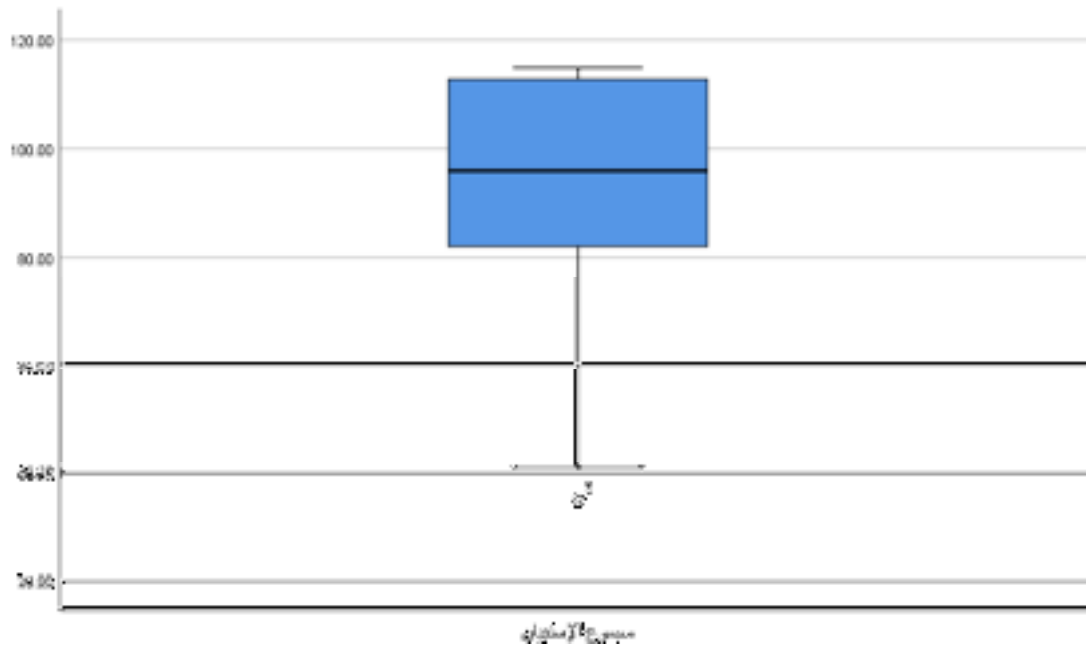
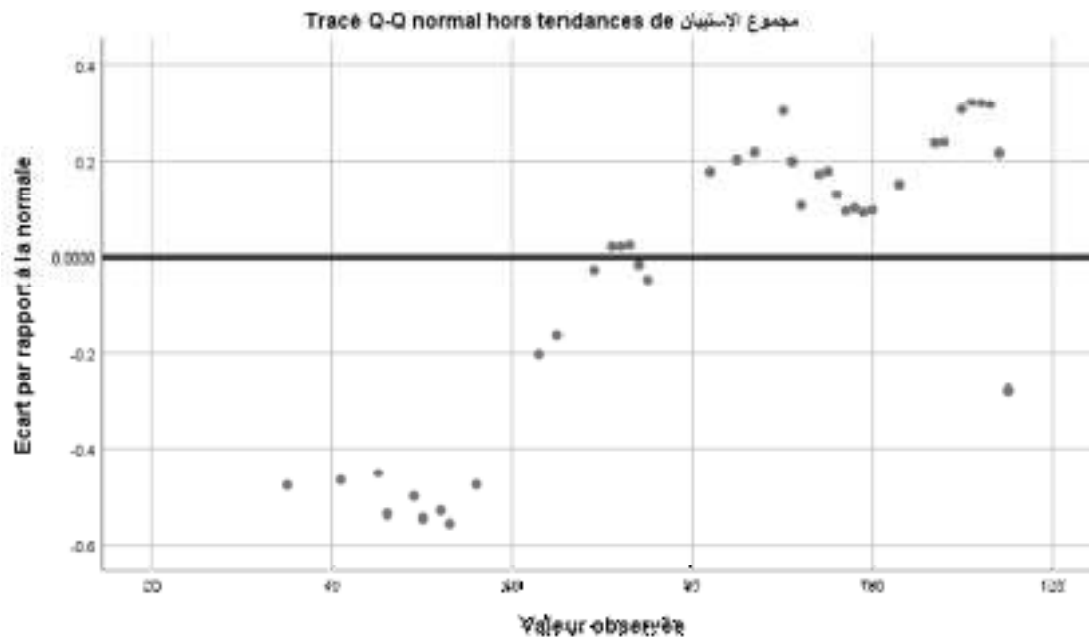
Statistiques de fiabilité	
Alpha de Cronbach	Nombre d'éléments
,980	8

Statistiques de fiabilité	
Alpha de Cronbach	Nombre d'éléments
,992	23

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistiques	ddl	Sig.	Statistiques	ddl	Sig.
مجموع الإستراتيجيات	,143	89	,000	,892	89	,000

*. Il s'agit de la borne inférieure de la vraie signification.

a. Correction de signification de Lilliefors



Statistiques descriptives			
	N	Moyenne	Ecart type
المحور_الأول	89	60,966	13,443
المحور_الثاني	89	31,752	7,523
الاستبيان	89	92,72	20,87
N valide (liste)	89		

Récapitulatif des modèles^b

Modèle	R	R-deux	R-deux ajusté	Erreur standard de l'estimation
1	.980 ^a	.961	.960	2.68661

a. Prédicteurs : (Constante), الثاني المحور مجموع

b. Variable dépendante : المحاور الأول مجموع

ANOVA

	Somme des carrés	ddl	Carré moyen	F	Sig.
Intergroupes	15740.207	10	904.207	450.295	.000
Intragroupes	154.632	72	2.148		
Total	15902.899	88			

Coefficients^a

Modèle		Coefficients non standardisés		Coefficients standardisés Bêta	t	Sig.
		B	Erreur standard			
1	(Constante)	5.359	1.242		4.315	.000
	الثاني المحور مجموع	1.751	.038	.980	46.003	.000

a. Variable dépendante : الأول المحور مجموع

Annex 01 : Survey form

First section : General information

Please tick (✓) the appropriate alternative for each of the following statements:

1. Sex :

Sex	Femmes	Hommes
Signal		

2. Age :

Age	moins de 30 ans	30-40 ans	41-50 ans	plus de 50 ans
Signal				

3. Educational qualification:

Educational qualification	Univairsitaire	Post univairsitaire	secondaire
Signal			

4. Professional experience :

Professional experience	03-07 ans	08-12 ans	13-17 ans	18-22 ans	moins de 3 ans	plus 27 ans
Signal						

Second part ; Questions about the subject of the study

Qestions	Answers				
	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
First axis : Dynamic capabilities					
1. Les attentes de l'organisation concernant les prochains mouvements de ses concurrents sont					

souvent correctes.					
2. Des nouvelles opportunités contribuent à activer les capacités dynamiques du l'organisation .					
3. Vous vous fiez à l'intuition lorsque vous formulez une stratégie de l'organisation.					
4. Une fois que de nouvelles connaissances sont développées ,les utiliseriez-vous autant de fois que possible					
5. Vous utilisez les connaissances et les compétences du personnel pour élaborer de nouvelles stratégies créatives.					
6. Vous analysez les facteurs de concurrence interne et les autres concurrents lors de l'élaboration du plan .					
7. Vous définissez une stratégie appropriée pour combler le fossé entre les événements passés, présents et futurs.					
8. L'organisation					

permet- elle à ses employés de participer à l'élaboration d'une planification stratégique					
Comment évaluer la performance de votre organisation par rapport au principaux concurrents ?					
9. Elle est plus efficace					
10. Elle plus efficiente					
11. Elle a un puissant statut concurrentiel					
12. Elle innove de nouveaux produits et services de haute qualité					
13. Elle développe des compétences hautement qualifiés					
14. Elle a une grande part du marché					
15. Elle a un puissant statut concurrentiel					
Second axis : open innovaton					
16. L'organisation investit dans la recherche et le développement					
17. L'organisation offre une formation externe aux employés					
18. L'organisation prend en compte les changements environnementaux					
19. La technologie utilisée est mise à jour en fonction des évolutions de l'environnement écologique.					
20. La gestion de votre organisation implique ses employés dans des sessions de génération d'idées.					
21. L'organisation s'ouvre					

à de nouvelles expériences à travers des contrats de partenariat					
22.Est-ce que vous etes capables de créer et d'acquérir de nouvelle connaissance					
23.Les TIC sont utilisés effectivement dans votre organisation pour favoriser l'apprentissage et pour faciliter la création et le partagedes connaissances					

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