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The cluster as a factor of growth of digital companies in Algeria.

Illustration by the sidi-abdallah technopole

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ABSTRACT

At a time when we are living increasingly globalized economies, we observe that local productive and innovative spaces are not tending to disappear, bet rather seem to be generalizing on a global scale.

Research and development; network structuring of innovation actors (learning, cooperation, competition...); regional growth (spatial and institutional contextual conditions)…, clusters, often referenced to the fabulous destiny of the Silicon Valley, are evolving exponentially, particularly in the field of the digital economy.

In this latter, Algeria is lagging far behind. So, policies and incentives are implemented by the Algerian government to develop this field, including the creation of techno-parks equipped with incubators promoting the installation, development and creation of hi-tech companies. Thus, this article will cover the example of the sidi abdellah techno pole dedicated to the digital economy and its potential impact on the creation and development of enterprises

INTRODUCTION

Paradoxically to the traditional concepts of increasing returns and reducing transaction costs, the cluster concept fits into the framework of innovation and knowledge-based economies based on territorial performance, where the porosity of the frontiers between science and industry is increasing, favoring academic research and competition that goes beyond the limits of a single company but extends over an entire territory.

In order to stimulate economic growth in the face of this strategic challenge, many industrial and regional policies focused on the dynamics of territories over come, whose novelty lies in the good governance of territorial structures. So, governments and industry organizations in many countries around the world are turning to these new concepts such as clusters; districts; competitiveness poles; industrial districts ... inspired by theoretical and / or empirical research and conceptual models.

As such, a large number of programs took advantage of the concrete aspect of these and multiple grouping organizations appeared in the 1990s, and the trend continues…

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In Algeria, an industrial policy has been led through the national regional planning scheme (NRPS) in order to create and promote competitiveness clusters. It aimed at stimulating innovation by encouraging cooperation between organizations of different sizes, research laboratories or training organizations located in the same geographic locality (official journal of the algerian republic N°61, 2010). The aim is to enable a group of players in a sector to pool their efforts, pose problems together and find answers together, and to move towards a group purchasing method for raw materials upstream and prospecting markets downstream, which gives them more chances of success in a cost-effective way.

In this study, we will analyze the impact that sidi-abdallah cluster has on the creation of digital economy's companies as well as on the development of these. In the same context, we will relate the effect of this group of companies on the establishment of public measures supporting them. We will therefore try to answer the following explorative research question

Does the creation of clusters encourage the emergence of new companies in the same sector? In other words, does it lead to the growth of a sector in term of number of firms and innovation?

In fact, the overview of the different cluster theories reveals that the analysis of these is as much a matter of localization theories as it is of innovation policies (VINCENTE.J, 2005) and to understand the phenomenon of cluster development; economic theory uses the concept of endogenous growth, so-called Schumpeterian theory, which stems from the theory of economic evolution.

In order to answer this question, we referred firstly to theoretical data relating to the factors explaining the creation of clusters and the orientation of economic policies towards this type of industrial economy. In this sense, we will try to review the main part of the various theoretical and empirical contributions that have contributed to the enrichment of the knowledge related to the object of this study. Secondly, we used the data from our survey conducted at the sidi-abdellah techno-park, where we used the semi-directive interview method. The interview was specifically established with the people in charge of the incubator and the business center. In the meantime, we used the internal documents provided by the above-mentioned managers.

I CLUSTER PERFORMANCE

We can consider that the term clusters is an expression used to qualify the local forms of organization of innovation activities also called: growth poles, competitiveness poles, industrial districts, localized production environments, local production systems, technopoles, technological districts, innovative environments, etc.

All these qualifications are just simple transfers, imitations, or renewal of thoughts based on explanatory theses of the factors of spatial concentration and the advantages that can be drawn from them (A.Torre, 2006).

While the principles underlying clusters date from the late of 19th century with the work of Marshall (1890) in his book "Principles of Economics", it is the classical economist David Ricardo who initiated this principle through the theory of comparative advantage (1817). This thought was enriched by (G.BECATTINI, 1989), then takes shape with the publication of (M.Porter, « the competitive advantage of nations », 1993). Many other authors have worked on competitiveness clusters, namely: (Stiglitz & Dasgupta, 1980), (G.BECATTINI, 1989), (P.Krugman, 1991) (M.Porter, 1993), (Enright, 1996) (Edquist, 1997), Lundvall (1992); (Aydalot, 1986); (Camagni & Maillat, 2006), (Pecqueur.B, 2008)…

The majority of studies in the 1990s were conducted on data from the United States (Sherman, 1998) where technological clusters and techno poles have evolved sufficiently and have drawn their resources from technology generators such as universities, national laboratories, private laboratories research and development (R&D) and other high-tech firms (Markley D. M., 1995). Thus, following the growth of clusters and business incubation phenomenon, the study of the contribution of Technological Business Incubators to economic growth started to gain momentum (Gill, 1986).

I.1 POSITIVE EXTERNALITIES

« Set up with competitors and measure yourself to the best of them» (M.Porter, 1993).

The benefits that derive from cluster policies appear as vectors of entrepreneurial, regional and even national competition. So whatever the origin of the emergence of competitiveness clusters within a nation (initiated by the State or developed spontaneously), they are there to lead competition,

It would then be a question here of understanding both the micro and macroeconomic factors that push firms to converge towards a choice of location.

Several research studies - attempting to explain the reasons why organizations of different natures sharing a common activity converged towards a common geographical space - have been carried out, 1990 (M.Porter, 1993) ; (Aernoudt, 2004) ; (VINCENTE.J, 2005) ; (A.Torre, 2006) ; (Pecqueur.B, 2008) ; (Duranton, 2011).

In this sense, several forms of positive externalities resulting from the emergence of a cluster have been treated:

- Marshal's or specialization externalities generating location externalities: according to (Duranton, 2011), the location of firms in a limited geographical area would make it possible to generate increasing returns . Marshall emphasizes the industrial specialization of territories where each firm benefits from the location of other firms nearby producing similar goods. Moreover, he explains that firms set up in a locality in view of the technological dynamics deployed at the local level, regardless of the location of consumers. Network externalities and increasing yields (VINCENTE.J, 2005), developed by (Arthur W.B, 1990)

- Informational externalities (Sushil Bikhchandani, 1998) relating to the geographical charisma (VINCENTE.J, 2005) generated by the grouping of companies forming a cluster. More than that, the grouping allows firms to benefit from a cognitive proximity that facilitates the acquisition of tacit or non-transferable information.

- Externalities of knowledge and innovation :

The strategic approach to knowledge management introduced the knowledge management approach states that Knowledge grows when you share it (Eunika, 2011). Thus, specialized know-how specific to the cluster can be valorized by its actors either individually or collectively, which can give rise to any kind of innovation.

I.2 CLUSTER POLICIES

In order to stimulate economic growth, many industrial and regional policies based on territorial dynamics have emerged. In this study, we will focus in particular on the digital economy's clustering policies.

The ICT sector is made up of clusters with a wide variety of activities such as telecommunications, digital content companies, electronics, optics and photonics. These clusters are faced with a perplexing environment explained by the advent of the "new economy": the economic prospects that nanotechnologies suggest for the medium term; increasingly blurred boundaries between nanosciences, biology, chemistry and physics, in addition to the context of the rise of emerging countries, which after positioning themselves in semiconductors and basic electronics are gradually specializing in optics, nanotechnologies and NBICs[1]: the shift of markets towards Asia is a major trend that marks the sector.

The objective of innovation defined by the State takes the form of setting up cooperative ventures that promote the conditions for exploration. These innovations must be visible and differentiated at the global level or at least at the national level in the first instance (Aliouat, 2010).

Algerian Cluster Policy

The concept of cluster is relatively recent in the Algerian entrepreneurial strategy. Thus, since the year 2000, the Algerian government, through the Algerian national land use planning scheme has provided for an organization of territorial programming spaces based on Poles of Attractiveness and Integrated Industrial Development Zones that will improve and diversify the infrastructural offer, develop scientific, technological and innovative capacities, while ensuring the development of the territory.

Table N°1: Competitive clusters determined by the ANLPS:

[1] NBIC's : nanotechnologies, biotechnologies, informatique & cognitives sciences

Region	Cities/poles of attractiveness	Sectors
Algiers	Sidi Abdellah – Bouinan	ICT ; Advanced Technologies ; Biotechnologies
Ouest	Oran- Mostaganem; Sidi Bel Abbès; Tlemcen	Organic Chemistry And Energy ; Telecommunications
East	Constantine ; Annaba ; Skikda	Biotechnologies (Foods And Health) Mechanical ; Metallurgy ; Petrochemistry
Bejaia	Akbou- toudja	Agroalimentaire
Bordj bouariridj		Electronique, Électrotechnique

Source: Official journal of the Algerian republic n°61 of 13 dhou el kaada 1431/ 21 October 2010

Today several clusters are still being created, particularly in the field of the digital economy, where Algeria has a strong dependence on imports. Thus, the development of this branch is essential.

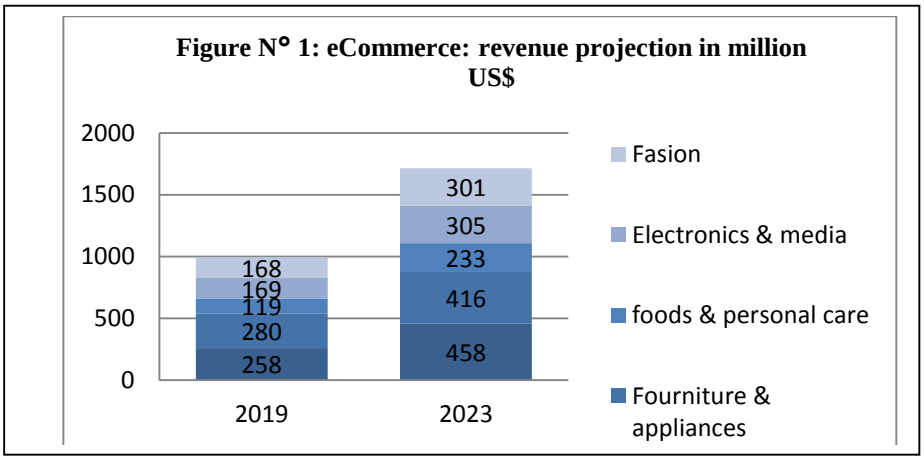
II DEVELOPMENT OF DIGITAL START UP IN ALGERIA

The digital economy is assimilated to ICTs, and in particular to the productive sectors. According to the OECD and INSEE, the ICT sector includes enterprises that produce goods and services that support the process of digitzation of the economy, i.e. the transformation of information used or provided into digital information. (Information technology, telecommunications, electronics) (Philippe Lemoine, 2011)

II.1 ALGERIAN DIGITAL ECONOMY IN FIGURES

The importance of digital economy provides that digital transition appears to be unavoidable for all countries and companies.

- **Developpement of e.commerce in Algeria**

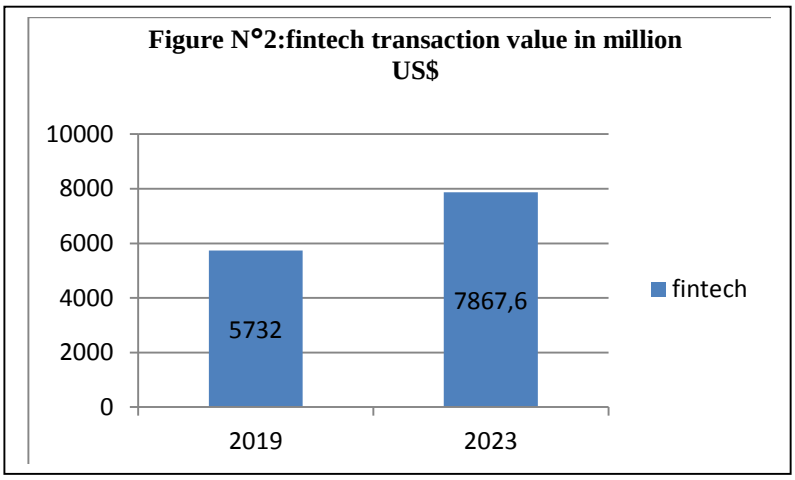


Source: (STATISTA, 2019)Digital Market Outlook 2019, Algeria statista country report

We notice that: (STATISTA, 2019)

- Revenue in the eCommerce market amounts to US$993.6m in 2019
- Revenue is expected to show an annual growth (CAGR 2019-2023) of 14.6%, resulting in a market **volume of** US$1,711.4m in 2023
- User penetration is 50.9% in 2019 and may hit 55.2% in 2023
- The average revenue per user (ARPU) amounts to US$45.76 in 2019

- ***Development of Fintech In Algeria***



Source : (STATISTA, 2019)Digital Market Outlook 2019,

In this diagram, fintech includes Digital payments, Personal finance, Alternative financing and Alternative lending. Also, the total FinTech transaction value is forecast to grow by 46.5% from 2019 to 2023.Thus: (STATISTA, 2019)

- The transaction value in the FinTech market amounts to US$5,379.2m in 2019;
- The transaction value is expected to show an annual growth (CAGR 2019-2023) of 10.0%, resulting in a volume of US$7,880.7m in 2023
- The largest segment is the digital payments segment with a volume of US$5,372.0m in 2019
- User penetration in digital payments is 47.5% in 2017 and is expected to hit 55.2% in 2023
- The average transaction value per user in digital payments amounts to US$265.09 in 2019

Algeria had the 90th highest internet penetration in the world in 2018 (DataBank) , and in order to develop and promote the digital economy and achieve the financial and infrastructural objectives previously established, technology parks has been set up.

II.2 START-UP DEVELOPMENT SUPPORT MEASURES

Having undergone rapid but recent development in Algeria, start-ups had no legal status or specific definition allowing them to benefit from specific and particular advantages. However, with the appearance of the first techno-pole bringing together more than 32 companies working in NICTs (in sidi-abdallah), followed by several others both in the wilaya of Algiers and in other wilayas, an influential company was created and calls for the imperative need to initiate an urgent program aimed at removing the constraints hindering the development of start-ups are made every day by these companies to the public authorities.

With the creation of a Ministry of micro-enterprises, start-ups and knowledge economy in Algeria, the 2020 finance law provides for Fiscal, state owned and financial incentives for start-ups as well as technology parks. Thus, tarts ups are now exempt from the PAT[2] GIT[3]; CIT[4]; from the flat tax. Equipments acquired by start-ups are moreover exempt from Value Added Tax. As tax is an incentive system, these measures help to strengthen the cash flow of start-ups.

In addition to these tax incentives, state-owned lands has been deployed and are currently being prepared to accommodate new start-ups and companies in the field of the digital economy, thereby facilitating the creation, installation and development of these companies. Several other mechanisms are in the process of creation

[2] Professional Activity Tax
[3] Global Income Tax
[4] Corporate Income Tax.

III EFFECT OF THE ICT CLUSTER ON THE GROWTH OF THE FIRM'S NUMBER, DISCUSSION AND ANALYSIS OF RESULTS:

Algeria has set up through the ANPT technological parks (cyber parks) located in many regions of the country namely:

- Algiers: operational since February 2009
- Bordj Bouariridj: whose incubator is already operational
- Oran: whose incubator is already operational
- Sidi Belabbas: whose incubator will soon be opend (Development plans established, covering 17 hectares)

Our study focuses on the sidi-abdellah cluster located in the city of Algiers. It has an area of 93 Ha 16 Ares 87 Ca. It is an area of activities and research focused on ICT that is supposed to bring together different market players namely, private and public companies, education and training institutions, R & D institutes, think tanks and market research companies, business center, business incubators, conference centers, all with the aim of creating synergies thanks to the proximity and interactions among the members of the ICT cluster. This cluster is therefore part of the ***top down*** approach.

III.1. ICT START-UP CREATION

While incubation is increasingly being used as a tool for promoting entrepreneurship and start-ups, leading to new policy incentives, the content of the concept is becoming more and more polysemic. (Aernoudt, 2004)

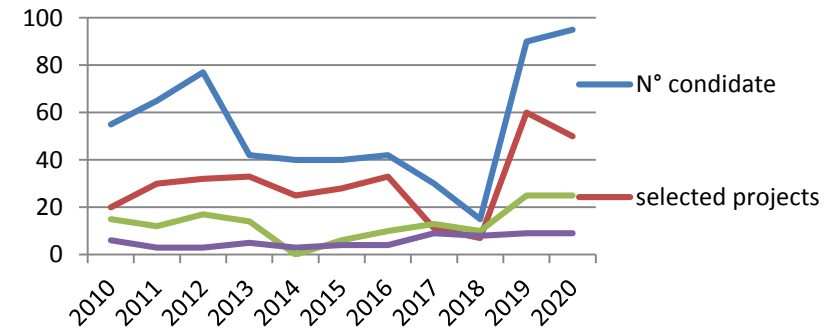
Table N°2: Entrepreneurship projects from incubation to post incubation

Year:	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	total
Number of candidates	55	65	77	42	40	40	42	30	15	90	95	591
Selected projects	20	30	32	33	25	28	33	11	7	60	50	284
Project leader in the incubation phase	15	12	17	14	--	6	10	13	10	25	25	147
Companies (post-Incubation)	6	3	3	5	3	4	4	9	8	09	09	63

Source: internal documents, incubator, sidi abdllah technopark

We have summarized the figures obtained in the following diagram:

Figure N° 3 Evolution of entreprenarialship projects fromincubation to post incubation



Source: internal documents, incubator, sidi abdllah technopark

We note a considerable decrease in the number of candidates presenting their projects to the ANPT for the year 2018. But in fact, according to the director of the incubator, W. Knatef, it is not a drop in applications but rather a change

in method resulting in the addition of a pre-selection stage in which applications are studied to pre-select only those projects that correspond to the mandatory selection criteria which are the ICT field and the innovative nature of the project, after which only the pre-selected projects are called before the selection committee for final selection.

Following the study of the files of the project leaders, the granting of approvals is increasingly strict and selective. Past experiences have made it possible to detect projects that can lead to a minimum viable Project.

But in 2019 and 2020, we are noticing a sharp rise in the number of projects selected. This can be seen in the significant media coverage of the incubator's offers, particularly at the level of nearby universities and in the advertising events on social networks, fairs and events organized by the agency, as well as in the success of the companies that have emerged from the incubator. Other incubators have been opened by the NAPT, notably at Oran and at Bordj-Bouareridj, to which are added the incubators created by private individuals in particular at the level of Algiers, offering to project promoters a geographic proximity and opportunities which are advantageous to them but at much higher membership and rental costs.

From another point of view, we note that 63 ICT SMEs have been created by the ANPT since the opening of the incubator.

Among them, several have been able to evolve and make their reputation both on the national and international market, such as Talabastore ; Smart Suite Technologies ; Bri Marketing ; Netbeopen Prime ; Weasydoo ; Synoos Studio ; Ibn Hamza..

In order to choose promising and innovative projects that can turn into start-ups and then into firms, an incubation process is usually set up. This last has three phases (ANPT): Pre incubation; Incubation; After incubation

The pre-incubation or co-working phase consists of calls for projects open to any project leader in the ICT field, using various communication methods such as on the Internet or on other specialized media platforms or through the organization of events at the incubator or other level.

The access to the incubator follows the granting of an agreement issued from the director of the establishment, after the submission of an eligibility file submitted for approval to the project approval committee set up at this effect.

This phase spans a period ranging from 30 to 45 days, where project leaders benefit from various training and personalized coaching in the area of ICT and business management in order to achieve a rigorous business plan.

The main objective of the incubation phase is to transform a detailed business plan into an MVP (minimum viable project). Considered as a learning phase, the incubation period can range from 3 months to 9 months during which the project leaders are assisted by professional teams. At the end of this period, the validation or invalidation of the initial hypotheses formulated before launching the digital project is pronounced. If a minimum version of the proposed product is produced, the project leader can claim the post-incubation phase which consists of transforming the MVP into a start-up. The project leader signs a rental contract for a well-equipped box at the incubator level for a period ranging from 12 to 18 months during which he is assisted.

At the end of this phase, the owner of the start-up can, if desired, be accommodated and supported at the level of the incubator for a period of 24 months.

He can benefit from all the advantages offered by the incubator, namely a quality telecom infrastructure: LTE for 4G (for the benefit of startups), FTTX, WIMAX, WIFI, MSAN; meetings; support (coaching, accommodation, etc.); professional training; low rental costs; adequate environment (composed of start-ups in the same field)…

III.2. ICT COMPANIES INSTALLATION AND DEVELOPMENT

Sidi abdellah technopark is today housing private and public companies installed in a business center called "the multi-tenant" as well as in the business incubator.

The survey carried out on the premises allowed us to learn about the infrastructures deployed by the State for the development of this cluster as well as its growth through the evolutionary figures that were communicated to us.

- **The contribution of Business center to the cluster growth**

The business center is a structure built at the level of the cyber park, near the incubator. This one is occupied by different and multiple companies having a legal status opening all in the NICT.

Table N°3: Business center companies

Post incubation phase companies	20 including	Talabastore ;Smart Suite Technologies ; Bri Marketing ; Netbeopen Prime ; Weasydoo; Synoos Studio ; Ibn Hamza; Satim; Fanos; M3soft
Public enterprises	06:	Ats; Saticom; Algérie Telecom; Mobilis; Algérie Poste ; Eadn
Private companies	Depends on the space whose oldest ones:	Access Media; Iradis; Netfer Smart Solutions; Ayrade; Big Data Solution ; Ideal Forme; Datagx

Source: (ANPT) Algiers on 01/2020

The business center, offers to the tenants several advantages allowing the companies adhering to it to be competitive on the ICT market namely:

- Various forums, events and socio-cultural initiatives organized within the business centre itself, thanks to the cooperation between employees and employers.
- Internet speed quality, diesel power generators and a high-tech Cloud Datacenter for better cyber security.
- Stability of location standards and long-term dynamics

Companies at the multi-tenant level showed that a number of them have already benefited from the reputation effect acquired by the cyber park. As an example, in 2019 the company NETFER SMART SOLLUTIONS has been chosen to take part in the SILA 2019 project by creating a downloadable application that serves as a digital guide of the international book fair, and this by taking advantage of the excellent internet speed, diesel energy generators and a high tech Cloud Datacenter for better cyber security installed in the cyber park with the presence of MOBILIS, SATICOM and Algérie Telecom.

So in order to develop the SME created at the incubator level, the project leader can be funded up to 30% using a partnership with the incubator. The latter, by financing the SME takes shares in it. This partnership can last up to 5 years and the incubator withdraws. The ANPT wants to go beyond this offer, planning the creation of a seed fund to support young entrepreneurs.

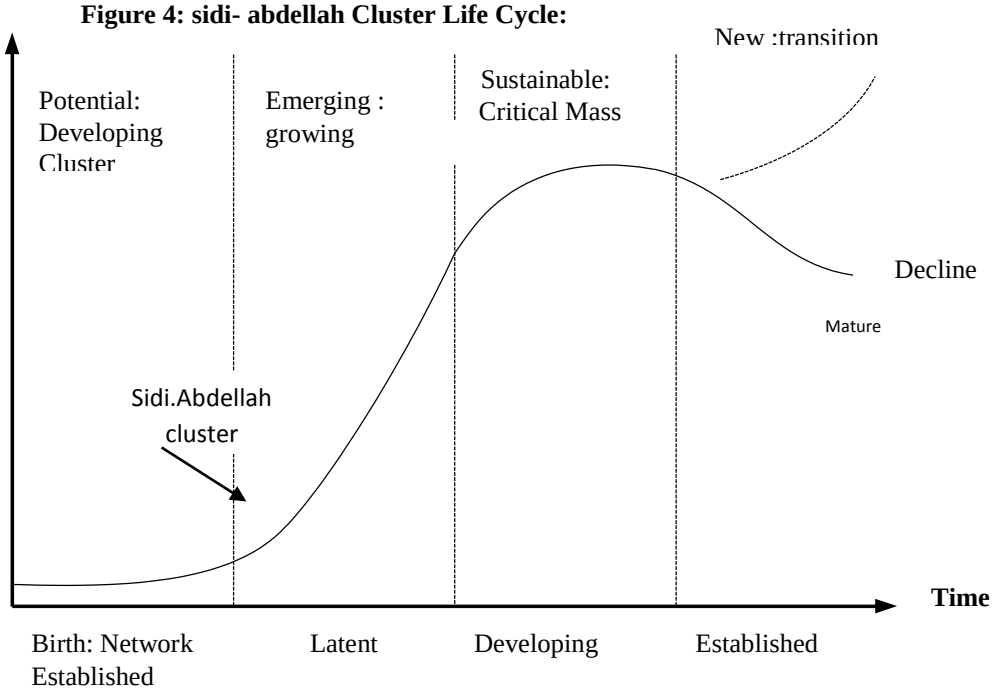
CONCLUSION

In this article, we tried to present a theoretical framework concerning clusters and the explanatory factors in a first step, and their creation as well as the orientation of economic policies towards this type of industrial economy, especially the case of Algeria in a second step. We have therefore relied on the results of the survey conducted at the Technopark of Sidi Abdallah through which we found that 122 start-ups have been created and 54 have today the profile of companies, nearby, about 40 are installed at the business center. all taking advantage of the cluster and its specialized infrastructures on the one hand and participate in the creation and development of new innovative companies on the other hand, and this, by attracting new entrants wanting to benefit from the advantages of this one in particular of the

incubator and the assistance which is proposed there, the infrastructures, the rental costs in the business center, as well as the networks and alliances which are created between the companies since they all work in the related activities.

Also through the various events, specialized coaching offered, training and research centers nearby (IMPS, ESC, HEC, INI, universities ...), the cluster promotes access to highly qualified personnel and its evolution with one objective: to improve the creation, circulation and dissemination of knowledge in order to transform ideas into opportunities for future markets.

Figure 4: sidi- abdellah Cluster Life Cycle:



Source: established by us from NAPT datas and National research council Canada, "Portfolio Evaluation of the NRC Technology Cluster Initiatives, final report", September 2009, p 11

The cluster of sidi abdellah is certainly far from the fabulous destiny of the silicon valley. Attempt of identification or replication, it presents itself today in an embryonic state in weak development. this could be due (in a context of stable economic situation) to its limited capacity of reception. But in the contrary case that lives Algeria, many factors are involved in particular the country risk or the low rate of doing business. However, during our field survey, the infrastructures deployed in the field of sidi-abdellah point to significant growth in the cluster, whose capacity to host companies and create start-ups through incubation will increase significantly.

Thus, considering that a cluster at an embryonic stage like sidi-abdellah was able to stimulate the development (even shy) of the digital economy in Algeria, we can conclude by affirming that clusters are locomotives for the development of business sectors as well in terms of innovation as in terms of number of companies.

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