

# What forms of governance for innovative clusters?

## *The case of ICT clusters in Egypt*

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**Abstract—** This paper examines the forms of governance that promote innovation in industrial clusters; mainly in the field of the Information Technology and Communication (ICT) in Egypt. The study mobilizes the Triple Helix (TH) model to identify the forms of governance through two Egyptian clusters. We use the image of “the valley of death” to describe the gap between universities and the industrial sector thereby exposing the difficulties of creating a truly innovative environment. In this article, we were guided by the following research question: What is the role of public partners in the governance of the industrial clusters in the Middle East and how can they use the Triple-Helix model to promote innovation?

Key words: Governance - Innovation - Clusters- Triple Helix

### I. INTRODUCTION

According to many researchers, economic activities tend to gather geographically in order to create prosperous conditions for technological innovation [1]. These regroupings are usually called “clusters” and mobilize forms of managerial innovations. Various forms and sizes of clusters aim to create a favourable ecosystem to blossom and develop innovation.

The aim of the research reported here is to explore, in the Egyptian context, the form of governance that promotes innovation in industrial clusters. This paper aims to answer the following question: What is the role of the public partners on the governance of industrial clusters in the Middle East and how could they use the Triple-Helix model to promote the innovation?

After introducing the context and having defined our research question, we will state different governance structures then we will propose our theoretical frame The Triple-Helix (TH) Model. We will then specify our research methodology that will be applied into two

industrial clusters based in Cairo, specifically centred on the ICT.

### II. CLUSTER GOVERNANCE

Territorial governance is “an institutional and organizational process for the construction of a compatibility of different modes of coordination between geographically close actors” [2]. Mendez (2005) [3] stated three types of territorial governance structures according to the actors who make it up:

- Private governance: private actors impel and control the devices of coordination and creation of resources.
- Collective private governance: the key actor is a formal institution which gathers private actors.
- Public governance: the public institutions are the engine in the devices of local coordination.

In view of this, many researchers evoke the existence of a level of public governance in which the local authorities are the engine of the devices of local coordination [4]. Since we often find in reality a combination between these modes of governance, Gilly & Perrat (2003) [5] proposed a form of “mixed or partnership” governance. According to Ehlinger & al. (2007) [6], the literature does not propose an explicit typology on this mode of governance. These authors proposed a level of territorial governance which supports coordination between private and local public actors within the framework of the Territorial Networks. It’s for that, making empirical studies on this governance form is necessary.

Concerning the characteristics of the Egyptian clusters and their strategy of governance and innovation, we only found one article in the literature: Huet & al. (2012) [7] which relates mainly to the Tunisian and Moroccan clusters. In the French context, Ehlinger & al. (2007) [6]; Bocquet & Mothe (2009) [8]; Mendez & Bardet

(2009) [9]; Bocquet & al. (2013)[10]; Berthinier-Poncet (2013)[11] evoked the importance of the governance in the development of a dynamic innovation within a cluster. Territorial governance could bring a response to the various degrees of innovations observed between the companies within the same cluster but also between various types of clusters [8].

In addition, within the framework of a territorial governance, empirical work focusing on the practices of governance associated to innovation are rare [10]. Researchers are used to make studies focusing on the key actors of this governance structure (Loubaresse, 2008) [12] not allowing us to measure the direct impact of this governance on the performance of companies' innovation [10].

In the light of this literature review on the governance and the innovation in the clusters, we could observe some gaps. In this context we will mobilize the Triple Helix model to answer the question of the efficiency of the innovation related to governance.

### III. THEORITICAL FRAMEWORK: TRIPLE HELIX MODEL

The TH model was developed to analyze the innovations in an economy based on knowledge [13]. The authors of TH model [14] seek to change the vision of the institutional traditional relations between academia and industry by exposing the role which the State can play in this relation. This model implies the interaction between the academia helix, the industry helix and the state helix, in order to create favourable environment for innovation.

We distinguish three generations:

- The TH 1, in which the State gathers industry and academia. It controls the relation between them by the legislation or the directives;
- The TH 2, in which the elements are strictly separated but connected between them by various channels of communication;
- The TH 3, in which the three elements are nested and support the emergence of trilateral networks and hybrid organizations.

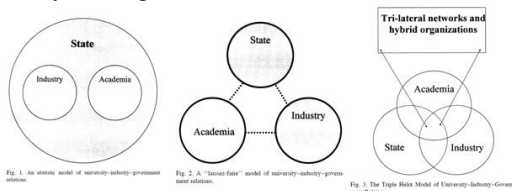


Fig. 1 three different generation of the Triple Helix model according to Leydesdorff & Etzkowitz (2000)

We are interested in this article in the approach of the Triple Helix 3, which seeks to break the

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borders between industry, state and academia. The principle of the TH model was extended to the regional level as a way of building a competing advantage [15] and formulating the "linear model assisted by regional economic growth" [13]. The article aims to mobilize this theoretical framework within the case of the Egyptian clusters. We propose to identify the form of governance that fosters the innovation within the ICT clusters in Egypt.

### IV. RESEARCH METHODOLOGY

The methodology of this work mobilizes the TH model and is based on two case studies [16]. We explore two ICT clusters in Egypt "Smart Village in Cairo (SVC) "and "Maadi Technology Park (MTP)". According to our research objective, the data were collected from different sources using incremental and qualitative methods:

-Utilization of secondary data: archival documents, extracts of press on the clusters (SVC & MTP), website of the Ministry for Information and the Technological Communication (MCIT) and different cluster trends were consulted in order to have a global vision of our case study.

-Nonparticipating observation have made it possible to impregnate various clusters and to organize several sessions of investigation in 2014. We observed the events sponsored by « Smart Villages Development and Management Company » (Leader firm of the SVC cluster). This investigation enabled us to gradually acquire a vision on the services offered to the members of the cluster.

-Semi-directive interviews were organized between 2014 and 2016 with the persons in charge for the governance and innovation of both clusters. An interview guide served us to structure our meetings around three themes: 1) Genesis of the cluster and its management; 2) The role of the State in the installation of the cluster; 3) The innovation within the cluster.

Twenty-six interviews were carried out on the whole. We recorded them in order to extract some verbatims. They were also translated from English and Arabic into French in order to carry out the coding and the analysis of the data.

We applied this methodology into two Egyptian ICT industrial clusters and analysed their structures of governance and innovation strategies.

### V. DESCRIPTION OF TWO CLUSTERS

#### A. Cluster 1 « Smart village in Cairo » (SVC)

The first phase of the project of SVC cluster was inaugurated in 2003 by the "Smart Villages Development and Management Company"

	SVC	MTP
Governance Structure	Private-Public Partnership	Public governance
Degree of involvement of public actors	20% (weak)	100% (strong)
Operation policy	Bottom Up	Top Down
Strategic Governance (number of board members)	6.66% public, 93.33% private 15 members	100% public 17 members

(SVDMC) within the framework of Public-Private Partnership (PPP). SVC represents the first ICT cluster fully operational in Egypt. This technological park offers three main poles and gather around a common infrastructure: local & multinationals companies in the field of ICT, governmental agencies, financial authorities, educational establishments and Research and Development (R & D) centers.

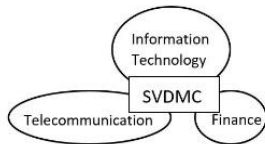


Fig.2 Organization of Smart Village in Cairo cluster

The SVC gathers in particular multinationals that were looking to develop their businesses in Egypt. Around this opportunity, a network of local companies could federate. This dynamic became in thirteen years the focal point for more than 500 companies, employing more than 100.000 people from different origins and cultures.

#### B. Cluster 2 «Maadi Technology Park» (MTP)

MTP was created in 2010 by the co-operation of three governmental agencies: The Ministry for the Communication and Information Technologies (MCIT), the Ministry for the Investment and the Governorate of Cairo. Since 2012, Information Technology Industry Development Agency (ITIDA) ensures the supervision and management of it. ITIDA, was founded in 2004 as an executive IT arm of the Ministry of Communications and Information Technology (MCIT) to spearhead the process of developing the Egyptian IT industry. The agency is regarded as an independent entity whose goal is to ensure the development of the ICT industry in a favourable environment. ITIDA seeks to attract companies specialized in Business Outsourcing Process, call centers and other foreign investments. Twenty-seven companies are currently established within cluster MTP, allowing to employ between 25.000 and 30.000 people.

## VI. ANALYSIS OF TERRITORIAL GOVERNANCE STRUCTURE

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We observe two different modes of governance according to the implication of public actors:

Table1 : synthesis of governance form within the Egyptian Clusters realized by the author

#### A. The case of SVC

##### 1) Partnership governance: Public Private Partnership (PPP)

In the framework of the PPP, SVDMC holds estimated capital of 100 million Egyptian pounds (approximately 11,7 M€). The stocks were shared between MCIT with a percentage for 20% (contribution in kind: 300 acres of ground) and a group of private investors who hold the 80% of the remaining stocks. Among the private investors, a majority of companies are at the same time shareholders and recipients. The role of the government is mainly establishing the infrastructure of the cluster. Its contribution has facilitated also administrative paper work and the issuing of authorizations. The members of the clusters were also exempted from certain taxes.

Mr. Ahmed NAZIF<sup>1</sup> is regarded as the godfather of this project. The energy deployed by his government benefited investors and the development of the project. His initial idea concerning the SVC cluster was to create a business park that looks a little like the Silicon Valley in the United States. The goal of this cluster is to provide highly technological infrastructures that meet the needs of ICT companies hence contributing to the development of the country's economy.

##### 2) Bottom Up Policy

The decentralized operational policy of SVC cluster is characterized by an ascending policy known as "Bottom Up". Currently, more than 50% of the members of the cluster are shareholders of SVDMC. Two strategies are adopted by investors who have developed their activities in the SVC cluster. The first consists in benefiting from all their installations (property & infrastructures), the second consists in signing leasing agreements for part of their installations to other partners. SVC cluster is controlled collectively by the participants themselves. We found that entrepreneurs seek to profit from the co-operation within the cluster. The cluster members pay rents

<sup>1</sup> The prime minister of Egypt from 14 July 2004 to 29 January 2011

(expenses of membership of the cluster) which cover the overheads of Cluster.

### 3) *Strategic governance*

The board of directors of SVDCM is composed of 15 members including only one-member representative of the government (MCIT), which does not reflect the distribution of the stocks between the private and public actors of the company's capital structure (80/20).

The director of SVDCM is also the CEO of *Telecommunication Company for Information Systems*. The board of directors define strategic objectives and the cluster strategies. Besides, they make decisions concerning the new investments, the change of the activities and the pricing strategy.

### 4) *Operational governance*

The 150 employees of the SVDCM are responsible of implementing all the strategies defined by the board of directors. They ensure the daily activities to serve the member of the cluster. They organize several events to stimulate the interactions within the community.

## B. *The case of MTP*

### 1) *Public governance*

The governance structure of MTP cluster is designated by the public authorities. The project is initiated by the cooperation of governmental agencies and is managed under a governmental authority.

### 2) *Top Down Policy*

The descending operational policy of the MTP cluster is known as "Top Down" policy because the cluster is managed formally by the government. Since 2012, ITIDA assumes the supervision of the MTP cluster. ITIDA acts according to an independent hybrid model as an economic subsidiary company of service under the supervision of the government. It holds the privilege to offer high wages what enables it to recruit the industry experts.

ITIDA is funded by the levy of 1% on all the contracts of telecommunications companies. The annual budget is established between 300 and 400 million Egyptian pounds (approximately 35 M€ to 47 M€). These funds are managed by ITIDA for the development of the ICT industry as well as the economic development of Egypt. For this purpose, several programs are launched by ITIDA to support the export and offshoring for ICT companies, their participation in international events (ex: GITEX, Mobile World Congress) and other activities for

developing the domestic demand of the ICT sector. We observe here that the public actors play a role of support and accompaniment for the private actors.

### 3) *Strategic governance*

The board of directors of ITIDA with the minister of ICT are in total 17 members. They ensure the strategic governance of the MTP cluster. It is the Prime Minister who designates the members of the board of directors after the appointment of the ICT Minister. The members of the council are selected according to their experience. The ICT Minister is delegated by law.

### 4) *Operational governance*

The operational and administrative management of MTP cluster is assumed by an office established within the network. There are 6 seniors' representatives of ITIDA and MCIT.

## VII. INNOVATION POLICY

The Egyptian government aims to stimulate the innovation and the entrepreneurship in the field of ICT through Technology Innovation and Entrepreneurship Center (TIEC). TIEC was created in 2009 within the framework of United Nations Development Programme under the supervision of the Ministry. A budget of three million dollars (approximately 2,76 M€) is allocated to this center per year. It is currently managed by ITIDA with 27 employees. ITIDA finances TIEC since July 2015. In order to achieve its objectives, TIEC sets strategies to promote the innovation, the entrepreneurship, the incubation and obtaining the intellectual property in ICT projects.

ITIDA launched ITAC (Information Technology Academia Collaboration) program in order to promote the innovation by the collaboration between universities and industries. The team of ITAC made up from 3 to 5 people, works closely with the team of TIEC. This collaboration has like objective to create synergies between the services of incubation of TIEC and the technical services of Small and Medium enterprises of ITAC employees. It is logically necessary to the creation of added value in the ICT field and the dynamics of innovation and entrepreneurship. Several competitions are organized so that the young researchers propose their innovative projects in order to develop them in the industrial market. ITAC has several modes of financing selected projects defined in three categories: development of products projects, advanced research projects and

preliminary research projects. Thus, 57 projects were financed by ITAC in 2013. We observe that universities or companies who are not members of the clusters, can be partners of the funded innovating projects.

### VIII. DISCUSSION AND CONCLUSION

This article contributes to new knowledge on the Egyptian Clusters and their strategy of governance and innovation which are seldom treated in the literature. The mobilization of the TH model within the case of Egyptian clusters enabled us to confront the theoretical elements with the practical applications. We will now announce some limits in our research. Suggestions for future research will be then proposed.

We note the existence of certain difficulties on the Egyptian case. Even if programs were launched to support the innovation, the number of incubators remains limited and the activity of the innovation is not sufficient. Mr. Ahmed Darwish<sup>2</sup> illustrated us that by mobilizing the image of 'the valley of death'.

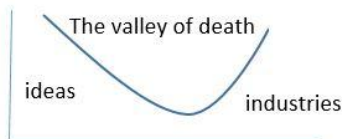


Fig. 3 valley of death schema illustrated by Mr. Ahmed Darwish

*“On one side, the young researchers have many ideas of innovative projects and on the other side companies have means in growing market... between them exists the valley of death... the death of all these ideas before being marketed on the market or being supported by the companies... There is not a bridge of confidence between the universities and industries... they do not collaborate .....” [...] “the sector was built on islands which we need to connect”*

This reflects Butcher & Jeffrey (2005) [17] research work, which indicate that academicians, leaders of industry and politicians were recently interested in the collaboration of the industry and

the university. Nowadays, these relations have an enormous value for the innovation. This perspective makes sense with the TH model and specifically for the TH 3 which proposes an imbrication between academia, industry and state. In both clusters SVC and MTP, the TH 3 is unbalanced due to the academia helix. The lack of academic structures in both clusters poses the problem of the death of researchers' innovative ideas before its commercialization in the industrial market. What illustrates the image of “valley of death” which could be reduced by a rebalancing between the three helixes.

Our empirical study goes beyond of Elhinger & al (2007) [6] work because it offers a confrontation of TH on a ground of research (SVC) with a PPP territorial governance form. In the case of the SVC, the industry helix is almost dominant. This governance form encouraged the actors to adopt investment strategies. Its impact on the development of the ICT sector is remarkable. The SVC contributed to the progression of the sales turnover of this sector 14,6% in 2009, contributing largely to maintain Egyptian growth (+ 4,7%) in spite of the world-wide crisis [7]. Although these results are extremely encouraging, it still remains greater margin, in particular via the increase of the academia helix. We found only two universities in the SVC cluster. Concretely only 3 projects are issued from one of these two universities, out of the 78 projects chosen to be funded (ITAC program competition 2015 - 2016). The academia helix is not represented on the strategic governance level. In light of our literary and empirical study, we deduce that the fact of increasing R&D activities in relation with the private or public universities and the company's cluster members, would be favourable for the innovation. By this fact, collaborations between the young researchers and the industrial companies could be developed in order to avoid the death of their innovating ideas.

Contrary in the MTP cluster case, we observe that the State helix is quasi-dominant. The role of the State is not limited to the definition of the strategies but also guiding the entrepreneurship program. Thus, the projects resulting from collaboration between the helix of industries and the helix of the academia (ITAC program) are funded largely through ITIDA. We observe here that the public actors play a role of support and accompaniment for private actors and universities. Branciard & Verdier (2003) [18] declare that the public intervention falls under an aggregation logic based on organized knowledge and creation of innovation capacities at the macro-economic level. In both cases, the academic helix remains very little developed. However, the fact of having a balance

<sup>2</sup> Member of the board of directors of ITIDA. He was the former Minister of State for Administrative Development (2004 - 2011).

between the three helixes would make it possible to increase the activity of innovation. We suggest creating for the MTP cluster a PPP holding company, as SVC model, would make it possible to increase the industrial activity and to decrease the influence of the public actors. An academic development would also increase R & D activities. This reorganization will offer a rebalancing of the TH model. In light of SVC case, we can note also that a good institutional actor within the framework of a PPP is necessary to the development of the cluster.

Huet & al. (2012) [7] research has indicated that the implication of key actors on the one hand and the effective governance on the other hand, are two key factors of success in the development of the technology parks in the emergent countries. We propose to add a third key factor of success by highlighting the development of the academic activities. It's necessary for the creation of an environment of innovation in the emergent countries.

In synthesis, our research highlights three essential points to foster the innovation within a cluster through governance form; the search for a balance between the three helixes (State, industry, academia), strategic governance in line with the operational governance and finally a good support from institutional actor within the frame work of a PPP.

The article presented the form of territorial governance which supports the innovation by the confrontation of TH model. This work goes beyond a descriptive study. We find here an empirical study that presents the working procedure of two Egyptian clusters through governance form to support the innovation. The study showed also the impact of governance form on the innovation by the implication of various actors in the Egyptian context. In term of limit, the results presented in this article are restricted by the exploitation of mainly qualitative data. The combination between the quantitative and qualitative data can make it possible to expose relations which are not projecting to the researcher and prevent him of being carried by sharp impressions, but distort, while being based only on qualitative data [19]. In addition to linguistics, the results obtained in this article are specific to the Afro-Eastern cultures, so we cannot generalize them at this stage. We suggest doing future research in other countries.

Lastly, we made a point of specifying that the Egyptian government planned the development of 6 others clusters including 2 that will be inaugurated before the end of the year 2016. They established a

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leading joint stock company *Silicon Waha* for managing the new clusters. We were contacted by the governmental structure that is responsible of these projects to give advices and recommendations on the forms of governance that contribute dynamic innovation.

## References

- [1] L. A. G. Oerlemans, M. T. H. Meeus and F. W. M. Boekema, "Firm clustering and innovation". *Papers in Regional Science* 80 n°3, pp. 336-356, Jul. 2001.
- [2] G. Collectis, J-P. Gilly, I. Leroux, B. Pecqueur, J. Perrat, F. Rychen., J-B Zimmermann, "Construction territoriale et dynamiques économiques", *Sciences de la Société*, n° 48, pp.25-47, 1999.
- [3] A. Mendez, "Les effets de la mondialisation sur l'organisation et la compétitivité des districts industriels", *Revue International sur le travail et la société*, Université du Québec, Vol. 3, n°2, pp.756-786, Oct. 2005.
- [4] G. Collectis, P. Gilly, B. Pecqueur, "Inscription spatiale des firmes, gouvernance des territoires et régulation d'ensemble", *Journées de la Proximité*, 13-14 décembre, Paris, 2001.
- [5] Gilly J.-P. and Perrat J. "Gouvernance et dynamiques institutionnelles des territoires", in *Actes du colloque Gouvernance territoriale : pratique, discours et théories*, IEP de Toulouse, 16 mai, 2003
- [6] S. Ehlinger, V. Perret, D. Chabaud. "Quelle gouvernance pour les réseaux territorialisés d'organisation?", *Revue Française de Gestion*, n°170, pp. 155-171, 2007
- [7] J.-M. Huet, I. Viennois, R. Striffling and A. Khediri, "Les technopoles, moteurs de développement", *L'Expansion Management Review*, (4), n° 147, pp. 112-119, 2012.
- [8] R. Bocquet and C. Mothe, "Gouvernance et performance des pôles de PME", *Revue Française de Gestion*, (190), pp.101-122., 2009.
- [9] Mendez A., Bardet M. (2009), "Quelle gouvernance pour les pôles de compétitivité constitués de PME ?", *Revue Française de Gestion*, Vol. 35, n°190, p.123-142
- [10] Bocquet R., Brion S., Mothe C., (2013), "Gouvernance et innovation au sein des technopôles", *Revue Française de Gestion*, Vol. 39, n° 232, pp. 101-118
- [11] A. Berthinier-Poncet, "Gouvernance et innovation dans les clusters à la française, le rôle stratégique du travail institutionnel", *Revue Française de Gestion* n° 232, pp. 119-138, 2013.
- [12] E. Loubaresse, "Qui pilote les réseaux interorganisationnels ? Caractéristiques des brokers de réseaux locaux d'organisations", 18<sup>ème</sup> Conférence AIMS, Nice, France, session thématique « Stratégies, Espaces, Territoires », 2008.
- [13] L. Leydesdorff, H. Etzkowitz, "The Triple Helix as a model for innovation studies". *Science & Public Policy* 25 n°3, pp.195-203, 1998.

- [14] L. Leydesdorff and H. Etzkowitz "Le "Mode 2" et la globalisation des systèmes d'innovation "nationaux": le modèle à Triple hélice des relations entre université, industrie et gouvernement ", vol. 32 n° 1, pp. 135-156, 2000.
- [15] P. Cooke and L. Leydesdorff "Regional Development in the Knowledge-Based Economy: The Construction of Advantages", *Journal of Technology Transfer*, 31 n°1, pp. 5-15, Jan. 2006.
- [16] R. Yin, *Case Study Research: Design and Methods, Applied Social Research Methods Series*, Sage Publications, 2003.
- [17] J. Butcher and P. Jeffrey "The use of bibliometric indicators to explore industry academia collaboration trends over time in the field of membrane use for water treatment, *Technovation*", 25, pp. 1273-1280, 2005.
- [18] A. Branciard, E. Verdier "La réforme de la politique scientifique française face à la mondialisation : l'émergence incertaine d'un nouveau référentiel d'action publique", *Politiques et Management public, Institut de management public*, 21 n°2, pp. 61-81, 2003.
- [19] K. M. Eisenhardt "Building Theories from case study research", *Academy of Management Review* 14 n° 4, pp. 532-550, Oct. 1989.