
THE ROLE OF INNOVATION ZONES IN REGIONAL DEVELOPMENT

■ **Abstract:**

Innovation and regional development are two topics that were (separately) very much discussed by scholars and in recent literature there have been attempts to examine how the former is connected to the latter. At the same time, different types of regional agglomeration systems have been developed and discussed such as: clusters, hubs, innovation systems and their roles in regional development. However, there is a significant gap in literature particularly concerning Innovation Zones. Thus, there is a need to look into this concept and examine the benefits that Innovation Zones can provide to the region to which they are affiliated. An essential element that all the agglomeration systems should exploit is knowledge. As current literature indicates, the fundamental drivers for regional development consist of: knowledge agglomeration, appropriation and innovative use of knowledge. Innovation Zones are agglomerations of universities, businesses, research institutes and governmental organisations that cluster together, utilise knowledge, and exploit opportunities in order to generate valuable assets to the involved parties and the region to which they belong. Location, infrastructure and legislations play a very important role in the efficiency and effectiveness of the Innovation Zones. Thus, it is necessary to examine who are the main actors of an Innovation Zone, if the efficiency and the effectiveness of the Innovation Zone conditioned by location and the prerequisites for a successful Innovation Zone.

■ **Keywords:**

Innovation, Innovation Zones, Knowledge, Regional Development

■ **INTRODUCTION**

Innovation and regional development are two realms that (separately) are very much at the centre of scholarly attention. At present, many authors tend to associate innovation to regional development and examine its role in developing specific regions. Porter [18] wrote that “in advanced nations, future prosperity will increasingly hinge on innovation – successfully developing and commercializing new technologies, new products and new processes”. Innovation “is an ubiquitous phenomenon in the modern economy. In practically all parts of the economy, and at all times, we expect to find on-going processes of learning, searching and

exploring, which results in new products, new techniques, new forms of organization and new markets” [7] and it “involve[s] continuous interactivity between suppliers, clients, universities, productivity centers, standard setting bodies, banks and other critical social and economic actors” [7].

According to Drucker [4] innovation is the act that endows resources with a new capacity to create wealth. Innovation leads to competitive advantage, consequently bringing greater profitability [19]. Knowledge is the key source of innovation and at the same time is an essential driver for economic development [18]. Different types of agglomeration systems such as clusters, hubs, innovation systems, knowledge zones etc.

are characterized by high level of knowledge creation and transfer and significant innovation capabilities. Common knowledge groups or clusters are formed by an organized and geographical mixture of firms having similarity in highly harmonizing capabilities for common research and development [15]. The importance of the innovation systems in regional development lies in the fact that the governments, at least in the advanced nations, are supporting regional innovation as a way to boost national competitiveness [2].

There has been a tendency among countries to prepare a plan at national and regional level for development to allocate the national economy at regional stage [8]. Since 1980, the concept of clusters and network has been a central idea for the increase of competitiveness and economic growth. The creation and formation of the clusters brought a new way in doing business in traditional local and regional level. The concept of Innovation Zones (IZ) came from the development of clusters. The difference between the two is that clusters are strongly connected to private incentives, whilst on the other side the creation of the IZs derives from governmental initiatives [13]. Engaging firms and other actors in playing a role in the regional development is a complicated task. This requires a constructive environment for research and development and drive for innovation and learning. IZs are agglomeration systems of innovation and major models for creating a supportive technology based advancements, innovation, learning, and knowledge-based regional development.

■ METHOD AND PURPOSE OF THE STUDY

IZ is an agglomeration concept that is not so much discussed by scholars. As a result during this research, significant difficulties were encountered in obtaining information related to this matter. Also, it proved challenging to find information and statistical data for the IZs case studies that were used (such as employment rate of the IZ, number of business creation especially in comparison to previous years, or any statistical information specifically on innovation zones). Therefore, in this study official and academic documents and interviews were used. The interviewees are people from the academic world that deal with regional development issues and people that are employed in science parks. The interview questions aim at defining

the concept of IZs and obtain information on the role of IZs in the development of the regions they belong. Also, these questions attempted clarify the difference between similar agglomeration concepts such as clusters, innovation systems and IZs in order to orientate the research towards the correct sources. Also, due to the nature of the questions (from the interviews), and particularly the answers, direct quotations by the interviewees shall not be used. Instead this paper includes the suggestions, leads and resources made available to the author through talking to the interviewers.

Consequently, the resources used in the course of this study, as well as the structure and certain views have been significantly shaped by the outcomes of these interviews. This research is a part of a larger study examining the Newark IZ in New Jersey, USA and the under construction IZ in Thessaloniki, Greece. The present paper refer to the case study of Thessaloniki IZ since the latter is not operating properly yet and it is not related to the purpose of this study which is to analyze the role of IZs in regional development and define the possible benefits that they offer to the regions to which they are affiliated through the use of theories and case studies.

■ REGIONAL DEVELOPMENT

Regional development deals with the analysis of a particular region in order to formulate a planned structure of development approach for that specific area. The theoretical literature of regional development encompasses a large number of theories for the development of the regions. According to regional development literature, diminishing the regional inequalities and gaps will result in economic development. Higgins and Savoie, (through the theory of Cumulative Causation) explain that the countries where regional gaps were large, they were increasing further and where regional gaps were small they were diminishing [8]. Further, Myrdal noted that the more advanced countries are more likely to introduce an effective welfare state, introducing the measures to reduce regional inequalities, and thus keeping the upward cumulative movement going [8]. He justifies his argument by saying "The more effectively a national state becomes a welfare state the stronger will be both the urge and the capacity to counteract the blind market forces which tend to result in regional inequalities; and

this, again, will spur economic development in the country, and so on and so on, in circular causation” [8].

But this circular effect should be seconded by the appropriate infrastructure and acts towards accumulation of diverse players in the region. According to endogenous growth theory the economic development comes from inside of a system. “The endogenous growth models and analyses stress that agglomeration and localization phenomena generate positive external effects that outweigh the negative effects, especially if these phenomena are accompanied by appropriate regional infrastructure investments” [11]. This theory points out the importance of investing in new knowledge creation in order to sustain the growth [3]. The main point of this theory is that knowledge brings growth. Bringing growth to a specific regional can control and manage the different economic activities of the region.

The location of economic activities can be determined on the regional level or narrowly on some kind of specific zones. Several writers have explained the theory of location through utilisation of theories of prices, production, employment and distribution [8]. Hoover [9] explained the personal preferences of managers, scientists and engineers as vital. In this theory as he explains in his book, “Everyone has some preference as to consumer location, i.e., where he would like to live and spend his income. For all but an envied minority there is also the question of producer location, i.e., the best place to earn an income... Most people come to prefer the kind of environment in which they have been living rather than some other social, racial or institutional atmosphere; unfamiliar climate and landscape, or change from urban to rural living or vice versa” [9]. Mobility in regional economics is important, as noted in Higgins and Savoie book, since many enterprises like to work where they were born and stay. “Personal factors such as proximity to home and family location preferences features prominently in the result of location surveys” [8]. These factors of governing mobility are of prime importance in the theory at hand from the perspective of regional development.

■ **THE ROLE OF KNOWLEDGE AND INFRASTRUCTURE**

According to Munnich, Schrock and Cook, [17] knowledge is clustering geographically not only

because it is complex nature, but also because it is embedded in individuals and it is difficult to be transferred across space, be it tacit or explicit. Thus, it is necessary for this knowledge to be obtained through actual interaction with the environment in a specific time and place [6] and have the people collaborate with one other.

Knowledge infrastructure, knowledge generation and protection, knowledge agglomeration and appropriation and innovative use of knowledge are the fundamental drivers for regional development [10]. Knowledge can deliver growing profits to scale and it can be used again with almost no marginal cost [3]. Cortright [3] mentioned that in order to achieve continuous growth, it is important to reach increasing knowledge, rather than increase of capital or labour. Although the new information technology has enabled world-wide transfer of explicit knowledge, the mobility of tacit knowledge – which is important source of regional development - is not easy and the present of face-to-face interaction is essential [16].

■ **INFRASTRUCTURE & KNOWLEDGE BASED INFRASTRUCTURE**

In order for the IZs to function and survive the possible challenges, it is essential that infrastructure and especially technology infrastructure exist in the region. Technology and innovation are two very close meanings. Consequently, technology infrastructure is a characteristic a region should demonstrate in order to host an IZ. George Tassej said: “The technology infrastructure consists of science, engineering and technological knowledge available to private industry. Such knowledge can be embodied in human, institutional or facility forms. More specifically, technology infrastructure includes generic technologies, infra-technologies, technical information and research, and test facilities as well as less technically-explicit areas including information relevant for strategic planning and market development, forums for joint industry government planning and collaboration, and assignment of intellectual property rights” [5]. Considering infrastructure as generic, multiuser and indivisible enabling activity can lead us to understand the existence of ‘knowledge’ infrastructure [5]. The infrastructure has great significance for the economics of a country, as

the industrial production is dependent on the knowledge transfer and utilization. Such knowledge can either be formal or tacit [5]. Thus, the presence of universities, research centres and any knowledge transfer or creation vehicle is necessary.

■ INNOVATION ZONES

When firms; highly skilled labour; and knowledge institutions (typically universities and research facilities) cluster together [14] can generate valuable assets to the involved enterprises and their customers. Also, they can produce strong networks inside this system, and lead the region in which they operate to high level of growth. This shows that interaction between universities, companies and research institutes can have a positive effect on a region, and the industries in this region can benefit from this. In that way, the regions can produce regional innovation systems in order to accumulate innovation activities and networking and exchange tacit knowledge [12]. Innovation Zone is a kind of agglomeration systems that is characterised by high level of interaction between its actors. Unfortunately, research on European and International level showed that there is no official and specific definition for the IZs. The definition of IZ varies according to the initiatives that are created in national and regional level. The definitions of IZ that are found are known as Keystone IZs (USA compilation) or Knowledge IZs (international compilation) [13]. An IZ is a geographical area that is located close to universities and hospitals and the enterprises that belong to the IZ will be given support, financial benefits and specialized supportive consulting services [13]. "It is a geographic defined area, with specific geographic borders leading to the formation of an island of land with entry and exit points. This land can also become unique and privileged and through the institution of a special legislative framework applicable only to the Zone area" [1]. The purpose of IZ is the fast transfer of the knowledge and ideas from the laboratories to the market, in order to introduce new opportunities for economic development and creation of new employment opportunities [13]. The stages that are followed in order to form an IZ and implement such ventures are the following:

- Discussions and analysis of the competitive issues of this venture before the start of the project.
 - Initiation of the venture by specialising the section of the different activities; the promotion of the venture through exhibitions and presentation of it to the interested parties.
 - The implementation of this idea in order to attract more prospective interested parties
 - The venture gets a more official & stable form
- The actors of the IZ are categorised in the main groups of Academic (universities), Businesses (Incubators, enterprises), Government (governmental organizations) and Research (Research Institutes). The idea of the IZ is a governmental initiative and most of the actors in the IZ receive financial benefits from governmental sources and enjoy special legislations that ease their economic and business activity in the IZ.
- IZs such as those in New Jersey (IZ of Newark, Camden and Brunswick) or in Pennsylvania offer a variety of benefits for the people and the businesses that belong to the zones. The companies that are located in these zones can enjoy benefits such as opportunities that are highly related with partnerships and are coordinated by the state. Some examples are:
- The provision of a funded incubator for small firms and start-ups that can enjoy a big number of services in a technology and business related environment.
 - The zones enable the relationships between the universities and the high-tech businesses and the industry researchers have the opportunity to access university labs and the students can be placed in industrial labs.
 - Provision of technical assistance to the start-up, and the collaborative research facilities provide strategic cooperation.



Figure 1 Newark Innovation Zone

For example the Newark IZ is located in the centre of the city of Newark, which gives it the advantage of being very close to vital infrastructure. It is also close to commercial and industrial centres and it includes governmental, education and medical facilities.

There are some critical factors for success or failure of an IZ that are enlisted as follows:

- Existence of one or more well defined economic activities
- Existence of infrastructure of knowledge creation and provision of technological services (Universities, research institutes, laboratories, etc)
- The research activity is oriented towards the technological development and diffusion
- Existence of entrepreneurship that is oriented towards specific sectors of interest of innovation
- Strong linkages and networks (common research, exchange of personnel, common patents, relationships between customer-supplier) among the different enterprises and between them, universities and institutes
- Existence of Media infrastructure
- Existence of entrepreneurial, innovative and collaborative culture in the enterprises, universities and institutes
- Existence of investment capital and innovative funding methods
- Commitment of the government and existence of a common vision and plan of the development of the venture [13].

IZs are located in places with strategic location and essential infrastructure that plays a very important role in the development of the zones. Due to these assets that their locations have, the IZ can attract easier business activities and develop further their operation and consequently create job opportunities and sustain their population. According to location theory, the people and the firms prefer to live and work in places that are familiar with and where they have been born. Thus, IZs can maintain they population by keeping their residents in their cities. The location in which the IZ belongs plays an important role in the efficiency and effectiveness of the latter especially if this location contains the appropriate infrastructure and knowledge infrastructure to support agglomeration systems such as IZs.

IZs attract a large number of businesses and economic activities. These activities maintain their interactive nature by the innovative use of knowledge. In the zone that creation and transfer of tacit or explicit knowledge is essential for the growth and development of the involved parties in the zones. The agglomeration of the above mentioned phenomena creates a general positive effect. At this point it is essential to refer to the importance of the government's role in the development of the innovation zone lies mainly, on the need of financial support. Innovation zone is a large range project that needs a consistent financial commitment in order to sustain the support of new businesses and development of the zone. Finally, another important part of the government's role is the flexibility that it can perform in terms of legislations and taxes.

CONCLUSION

IZ is a geographical area that is located close to universities and hospitals and the enterprises that belong to the IZ will be given support, financial benefits and specialised supportive consulting services. "It is a geographic defined area, with specific geographic borders leading to the formation of an island of land with entry and exit points. This land can also become unique and privileged and through the institution of a special legislative framework applicable only to the Zone area". The purpose of IZ is the fast transfer of the knowledge and ideas from the laboratories to the market, in order to introduce new opportunities for economic development and creation of new employment opportunities. IZs attract a large number of businesses and economic activities. These activities maintain their interactive nature by the innovative use of knowledge. In the zone that creation and transfer of tacit or explicit knowledge is essential for the growth and development of the involved parties in the zones. Based on the reviewed literature and the different regional development theories, IZs are in a position to deliver regional development by bringing together academics, businesses institutes and foster innovation and business creation. What helps them to develop and grow is not only the high level of collaboration, but also the appropriate regional infrastructure and knowledge infrastructure that is surrounding them and the privileged location in where the IZ

is situated, that plays an important role in the efficiency and effectiveness of the latter especially if this location.

Finally, considering that Innovation Zones are governmental incentives, the government's commitment to its legislative support and the consistent financial reinforcement to the zone is essential driver for development not only of the innovation zones but also for the whole region in which they belong.

■ FURTHER RESEARCH

Quantitative analyses of the innovation zones that could bring numerical results and statistics on the direct contribution of the zones to the development of the regions they belong could prove essential not only for the identification of the real involvement of the innovation zone in regional development but it might help in improving the performances of the innovation zones. For instance, the number of the businesses that the innovation zones create and at the same time the job opportunities that are generated in the zone can show how the innovation zones are involved in the reduction of the unemployment by presenting statistical data and make a comparison to previous years. Also, a continuous quantitative research the comparison of the performance of an innovation zone over the years will actually show that if the innovation zones can bring a sustainable growth to the regions they belong.

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