

# Cooperation and competition in Information Technology Business: Case of ICT firms in Konya

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## **Abstract**

The notion of clusters has been attracted increasing interest from academics and business practitioners for two decades. The theory and research emphasize their strong and positive influence in promoting industrial development, innovation, and competitiveness and economic growth. Thus clusters, become a useful policy instrument in regional innovation systems (RIS) aiming to promote sustainable regional growth. Related literature suggests that competitive clusters provide a fertile and conducive business environment for companies to collaborate with research institutions, suppliers, customers and competitors located in the same geographical area. They are becoming powerful engines of economic development and drivers. Not all industries can create opportunities for employment, but of which share knowledge and transfer technology both directly and through upstream and downstream linkages with other relevant sectors. Not only they move their production facilities, they also intend to transfer their research and development units from those favorable regions which have relatively higher stage of development than the others in terms of infrastructure facilities, education and training institutions, stable incentives, subsidiary potential, and the presence of other multinational enterprises.

The informatics sector can provide a foundation for the growth of industrial activity in a developing economy. Therefore, as an example of high-tech clusters and potentially high-value added sectors in developing countries, in-depth analysis of the informatics sector with its hardware suppliers as a whole can shed light on the question of how a developing country can structure its strategies to be able to upgrade and be competitive over time. In recent years, Turkey has made an effort as a major player in the global informatics sector. Owing to its skilled labor/brain force, rapid growth and market potential, Turkey has gained tremendous attention of the informatics sector since 1980s. According to a survey of a city of Konya sample, innovation attitudes the company managers operating in the IT sector has been measured. In line with this purpose survey of firms in Konya Teknokent has been conducted.

**Keywords:** Cluster, Innovation, Konya, IT, Competition

## **1.INTRODUCTION**

In our age, globalization reshapes the social, economic and political sphere. In a changing world economic beliefs and paradigms are changing. One of the changing beliefs in business is the pattern of competition. Traditional cost oriented competition patterns replaced with quality and innovation based patterns. Until 1990's cost oriented theories like comparative advantage, dominate the competition theory both in international context and inter firm level. Since 1990's quality and innovation oriented theories has complemented the cost oriented models. Porter (1990) emphasizes geographical proximity as a key to gain competitive advantage through cost advantages. Geographic proximity provides several advantages for firms and industries. Firstly, geographical proximity means a face to face interaction among firms and between firms and organizations. Second it facilitates the creation of social capital, common language and common culture. Thirdly, flow of information and exchange of tacit knowledge is easier under geographic proximity. In addition, diffusion of knowledge spill overs and academic research is easier when firms are close to academic organizations. Thus inter firm or inter organization cooperation is important besides the competition between them. In the proposed new competitive models, cooperation is seen productive than rivalry. Cluster theory which is coined to explain advantages of geographical proximity in case of collaboration and sufficient factor endowment. This study is an attempt to explore clustering trends of Konya ICT industry.

## **2.Cooperation and Cluster for Gaining Advantage**

Beyond possessing physical resources and assets, firms should manage the cooperative process in order to survive and operate in business sphere (Raco, Mike, 1999). In other words firms must learn cooperating while they are competing against each other. This kind of cooperation is strategic because it enables benefiting from main business activities, product lines and technological diversity (Garcia, Cristina Q. and Velasco, Carlos A. B., 2000). A vast of studies that were carried on competition literature attempted to explain pattern of

competition in micro, mezzo or macro level. Despite various applying methods and tools, there have been no consensuses on the concept of competition (Çivi, E. 2001). Clustering has been commonly accepted as a method, a tool and approach to competition since the beginning of 1990s. Although there are many definitions of clusters, most comprehensive one is Porter's definition. Porter (2000) defines clusters:

Clusters are geographic concentrations of interconnected companies, specialized suppliers, service providers, firms in related industries, and associated institutions (e.g., universities, standards Agencies, trade associations) in a particular field that compete but also cooperate. (Porter, 2000:15)

First point in this definition is geographic concentration of companies and their relations with each other and non-firm institutions. Firms have connections either horizontal (supplier and provider) or vertical (related industries and associated institutions.) Second emphasis is the cooperation of competing firms. Thirdly, companies in a particular field (specific market or industry) should concentrate.

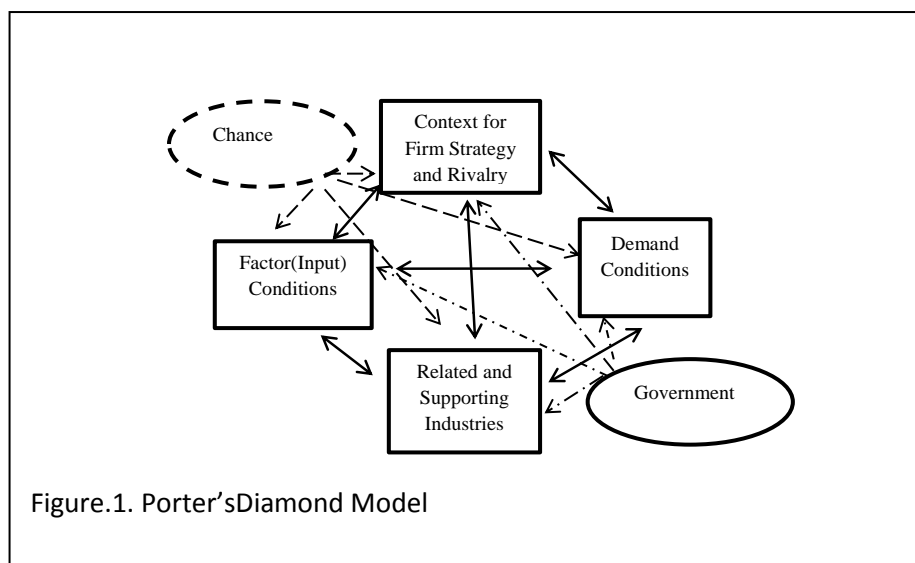
Studies on clustering mostly focus on qualified workforce, information providers, physical infrastructures and sustainability. They concluded that these components would attract international companies to the region and provide region a competitive advantage. (Avnimelech, G. & Schwartz, D. & Bar-El, R 2007, Haan, U. 2008, Parto, S. 2008, Brenner, T. & Gildner, A. ,2006., Lazonick, W. ,2008., Narula, R. & Marin, A. 2005)

In the clustering literature, Porter's works shed light to other studies which emphasized on aspects above. It has been known that the coined approach was widely attracted attention in international context.

### 3. Porter's Diamond Model

Porter (2000) introduces four aspects that have influence on the competitive advantage for firms. These four aspects, (i) factor(input) conditions, (ii) demand conditions, (iii) context for firm's strategy and rivalry (iv) relating and supporting industries are the four corners of diamond. Porter employed this model for determining which firms and industries have competitive advantage and role relating and supporting industries. This theory encourages the further exploration of clustering. The model gives an insight to detect which industries locate which regions.

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## **Analysis of Konya ICT Sector in Clustering Level with Diamond Model**

### **A Survey on Firms in Konya Technopolis**

Konya techno polis is chosen for assessing the situation of ICT industry and for analyzing the competition in this industry.

### **4.Objectives and Methodology**

Objective of the study is exploring the competitive advantage of software firms and detecting their clustering level. In line with these objectives Porter's Diamond Model is used as analytical tool. Great majority of the surveyed ICT firms operate in Konya techno polis. There are 62 software firms in the city, 53 of them are operating in technopolis. Sample of 34 firms surveyed by questionnaires which asks 20 Likert type questions based on Diamond theory. The level of clustering is measured by scale of 10. The questionnaire is derived from DTM methodology which is built up for clustering map of Turkey.

## **5.Results**

### **5.1.Factor Conditions**

Location of Firms: Selçuk University Centre of Technology Advancement was established in TGB-1 and TGB-2 regions. The center has 332,000 meter square area. It locate besides the Selçuk University Campus, its distance from centrum is 20 km, 8 km from Industry district of Konya, 8 km from Konya Airport and 5 km from bus station. Elmas Blok (Diamond Block) in the Selçuk Campus which has 2000 meter square area has been in use since 2004. Surveyed ICT firms ranked 5th among 38 centers of Technology Advancement in Turkey. The techno polis is operating by a governance principle and it has been established by the cooperation of Selçuk University, Foundation of Selçuk University, Konya Chamber

of Industries, Konya Chamber of Commerce, Konya Commerce Market and the Directorate of Konya Industrial District. It also supports the university-industry collaboration.

Firms operating in tecnopolis have opportunity to improve their technology and outputs by utilizing infrastructure and knowledge base. Thus they are improving their competitiveness. There are 109 firms in technopolis of which 64 firms engage in software developing activities.

Due to ICT firms locate in technopolis, they have geographical proximity to public institutions, university, R&D centers.

**Human Capital:** Selcuk University is one of the great universities in Turkey, with having 21 faculties, 6 institutes, 23 vocational schools, 1 conservatory, 42,000 students and about 3,500 academic staff. Workforce of surveyed ICT firms composed of 77 % has undergraduate degrees, % 14 university students, and % 9 graduate students. It is found that employees have access to sufficient technical equipment, but there is a need for support for basic research. In marketing dimension, in domestic market and especially in foreign market, there is a lack of expertise.

**Physical Infrastructure:** Firms use ICT infrastructure provided by techno polis. Besides they have high quality work place and office environments with meeting halls, social facilities. Firms can use university's IT labs.

**Information Infrastructure:** University campus has 21 applied research centers. IT organization BILMER provides information to the firms in the techno polis. Academic staff supports the firms by consulting them for whenever they need further information. Thus university-industry linkages are quite strong. In the information infrastructure university units have important role on producing, transferring information to private businesses.

**Social Facilities:** Firms benefit from social amenities which have located in the university campus. Posting and banking services are adequate to reduce transaction costs. Social amenities in the campus are attractive for talent. There are recreational, societal, catering and health service amenities.

In line with survey results, the firms emphasize their demand for specialized talent, strategic information, assessing consumer preferences, technology transfer and financial resources. A Degree factor condition is observed medium level. Factor endowment is not adequate solely, to improve competitive advantage. Thus factor conditions are not main advantage of the surveyed firms.

## **5.2.Demand Conditions**

ICT clustering cases in the literature show that demand conditions in the home market can cause competitive power, if sophisticated home market buyers pressure firms to innovate faster and to create more advanced products than those of competitors. Therefore both public

organizations and private sector should demand more specialized and innovative services. For the case of Konya ICT, since public sector strategies are mostly administrated from Ankara, access into public sector is not easy to develop services and goods for meeting public demand. Thus there are frictions in public market. Private industry demand is not sufficiently to pressure to innovate. Private sector demand mostly comes from health industry and share of the manufacturing industries are low in market demand for software products. Because the share of the industry demand is low, the firms do not incentive to improve competitive advantage. Another disadvantage of the ICT cluster, it is organized to meet local demand so that it has not supply capacity to meet national and foreign demand.

According the questionnaire results, demand conditions are sufficient in the regional dimension. ICT cluster has regional competitive advantage. However, in the home market the cluster is not an effective actor. This makes the firms disadvantageous in meeting global market and competition conditions. Moreover, firms are not sufficient to serve desired level for national auctions. Therefore demand conditions to gain competitive advantages can be said weak for Konya ICT firms.

### **5.3.Firm Strategy and Rivalry**

In the techno polis 89 % of firms are SME's, remaining firms are branches of big software firms. Firms are developing software for mainly health, automotive supply industry, packaging industries which are regional industries. Firms get projects which are prepared in cooperation with regional entities or firms. This project based works divert ICT sector to work with regional industries. Some of the projects meet the national demands. Firms declared that after-sell services, human resource for basic research and collaborative work increase competition. In addition they believe that foreign investors will raise the total quality. The firms which collaborate foreign firms as solution partners , report that the local firms benefit from these kind of collaborating.

When examining firms strategy, rivalry and cooperation, the firms assert that they attribute high importance on cooperation and collaboration. However in practice they practice medium level cooperation. Because they locate on a shared place like techno polis, they purchase services associatively and they are spatially proximate; they are expected to cooperate high level. Medium level cooperation is an handicap for the ICT firms. In a cluster high level of collaboration and high level of information sharing is crucial. Firms are aware of these benefits but in practice collaboration is not at desired level. Firms perception about collaboration supports the clustering thesis.

### **5.4.Related and Supporting Industries**

When the external relations of the firms are inquired, below results are reached:

Due to university-industry partnership, university students, graduate students and academic staff have the opportunity to make applied research and this contributes to industry by helping problem solving.

Although they attribute high value for university support in improving talent, technology transfer, contributing cluster development; the current situation shows medium level linkages about these functions.

Academic staff is working techno polis via only the project based duties.

Collaboration with the local university is inadequate and relations between university-industry are not effective.

Despite the fact that close spatial proximity between university and firms, academic staff could contribute in project based duties, so if the firm is not running on project based duties they do not get support from academia. In addition, firms assert that they do not benefit from brain power which is improved in university. Firms complain that the talented graduates do not prefer these firms because they expect higher wages and different career plans. According to them the talented workforce prefers other regions. They believe that low level of corporatization is another reason for this talent preference.

### **5.5.Public Institutions**

The relationship between ICT firms and public institutions are weaker than desired level. ICT firms revealed that public institutions do not recognize them to collaborate. In this case they feel lack of support of public and they are not defined in public administrative processes. This situation is closely related to absence of legal framework and regulations. For instance, support mechanism, subsidy conditions, and structural definition of the clusters are not elucidated in legal institutions. Consequently ambiguities emerge when developing strategies for clusters and creating relationships with public universities. ICT firms also face this kind of ambiguity. Due to their project based works they have relationships between (TÜBİTAK), TİGEM, TİDEP, Directorate of Improvement and Supporting SME'S (KOSGEB).

Analysis reveals that firms believe that cooperation with public institutions are not effective. They believe that public-private partnership is highly important for gaining competitive advantage. This situation arise questions on how the firms are familiar with clustering and how do they involved in clustering efforts.

### **6.CONCLUSION**

Evaluations and expectations show that core competency, marketing and advertising activities rank first. Surveyed firms state that determining software activities as core competence would cause competitive advantage in home market and foreign markets. Their

job requires advertising and information sharing among the firms, but trust is reported a precondition for sharing information.

Owners and managers of ICT firms state that beyond the adequacy of amount of firms, they think that financial support, planning, coordination are included in clustering attempts. They also point out the importance of relationships with foreign firms and foreign investments in the industry. They believe that high level of corporatization will contribute into cluster making. Current situation they have not enough employees and they work on demanded projects which have been seen irregular works. Members of the surveyed firms emphasize the high return of investing in human resources in their industry. They believe that if the level of collaboration increases, the efficiency of firms would also increase. It has been understood that the firms' beliefs on cooperation are strong and their tendency to cooperate is high.

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