

EDUCATION NEEDS ANALYSIS OF SMES IN ANKARA OSTIM INDUSTRIAL ZONE IN THE FRAMEWORK OF UNIVERSITY-INDUSTRY COOPERATION

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Abstract

In today's world where competition has increased in all sectors, it is extremely important for companies to reach their goals using efficient and productive methods. Gaining competitive advantage over the others has direct relationship with possessing information and performing well in information sciences. Companies aiming profit maximization and meeting the expectations of the customers do well in competition by their new business processes, obtaining the state-of-the art knowledge and aligning their management approaches in this direction. Business world feels the competition both in local and global context regardless of the scale. In this sense, analyzing the education needs of the companies located at the first Organized Industrial Zone (OIZ) of Ankara (OSTIM) has attracted us as a research topic. Educational dimension of university-industry cooperation is the first part of our research. A literature review is conducted in this part. In the second part, the scope and methodology of the research is presented. Education need profiles of the companies are determined by a survey with upper-level managers of 116 Small-Medium Size (SME) companies operating in 9 sub-sectors in the OSTIM OIZ. It is identified how these companies provide the education that the sector needs. Also the cooperation activities of both public and foundation universities in vocational training is tested. In the third part, the findings and conclusions of the research is provided. It is concluded that the cooperation of universities with SMEs has great importance in increasing the professional knowledge and practical skills of the human resource working in the zone.

Keywords: professional education, university-industry cooperation, practical skill.

I. UNIVERSITY-INDUSTRY COOPERATION

University-industry cooperation, by its general and classical definition, relies on long-term and effective relationships between universities and firms. The aim is to facilitate the adaptation of university students to business life, on one hand, and ensure that firms can have opportunity to work with universities' successful students and well-equipped laboratories. Being a popular concept that is always on the agenda, university-industry cooperation can be thrilling when carried out in a concrete manner. As the concept has a flexible structure, it can be implemented and sustained in virtually all units of many firms. It is now a widely shared belief among universities, firms and public authorities that economic, social and cultural development entails improved R&D skills and innovation capacities in advanced technologies (Çetin and Tandiroğlu).

Education, given inside or outside the firms, is the only way to maintain the innovative edge in the market through acquisition of new skills, sustain employment and adapt to changing conditions. Education provided at the workplace or outside it boosts employee skills and reinforces their work-related capabilities. If education systems in a country lack the infrastructure to create such a qualified workforce, it is not possible for that country, and, also for the firms in that country, to resist the winds of change, survive or compete successfully (Can and Doğuç, 2015, 35).

In intrinsic growth theories, the contribution made by accumulation of knowledge to the emergence of new products and technologies came to be seen as the basis of economic development (Romer, 1990; Grossman and Helpman, 1991). In the economic growth model proposed by Lucas, the only input in the process of human capital accumulation is the time the community devotes to education and learning (Lucas, 1988: 22/1: 3-42). Human capital can be defined as the sum of knowledge and skilled contained in the workforce (Easterly and Wetzel, 1989: 4). For Sorensen, of the factors that stimulate human capital accumulation, education and technology policies play a major role in the growth of economy and these two policies should never be dissociated (Sorensen, 1991:6).

Accumulation of knowledge is considered as one of the major dynamics that form the very basis of the innovation systems approach and that lead to technological change through the process of production and dissemination of knowledge. If we take universities as the source of new knowledge and ideas, it is of strategic

importance for industrial enterprises to have direct access to academic members who produce knowledge and the research-based technologies in universities (Schartinger et al., 2001).

As producers of knowledge, universities make significant contribution to economy in the field of innovation. Interaction between academic and external organizations can facilitate transfer of knowledge and encourage production of new knowledge. However, how this transfer should be facilitated and understood is a major issue (Gertner, Roberts and Charles, 2011, p. 625).

Table 1. Potential Gains from University-Industry Cooperation

Industry	University
<ul style="list-style-type: none"> • Systematical evaluation of research findings. • Access to the sophisticated technological information • Specific skills and knowledge pool established in consultation with faculty members • Training technical personnel in the industry • Access to the highly equipped scientific/technical workforce • Fast technological advancement in less developed fields • Solution of specific problems in the industrial projects • Opportunity of working together, establishing new firms and gaining economic benefits • Access to the universities' resources • Prestige of working with universities 	<ul style="list-style-type: none"> • Supporting the knowledge of faculty members, researches and students with practical applications • Access to the research funds • Curriculum development • Providing internship and similar opportunities for the students • Access to the potential job opportunities for university graduates • Having members from industry in the university advisory boards • Access to the resources of the industry • Opportunity of using government funds available for applied researches with the industry

Resource: Geisler ve Rubenstein (1982) and Norman (1982)

The collaboration between universities and firms suffer from certain problems. Academicians believe that these problems have become more salient as university-industry collaboration has emerged as a popular concept. Many argue that this collaboration serves primarily to boost income for stakeholders and it also constitutes a medium for technology transfer. Accordingly, the increased academic capital tapped through increased collaboration will give rise both to opportunities and problems (Welsh, Glenna, Lacy, & Biscotti, 2008: 1863). A working university-industry collaboration model should ensure that a good balance is established between academic purposes and industries' priorities. Such a model should also develop the active administration of university-industry collaboration must enable stakeholders to carry out their responsibilities during, and obtain benefits from, the process (Barnes, Pashby, & Gibbons, 2002: 284). Even if they lead to some major technologic or other outputs, collaboration efforts frequently suffer from perceived disappointments. Therefore, emphasis should be placed on universal components of successful collaboration, namely responsibility, trust, continuity of staff, previous project process and concrete outputs (Barnes et al., 2002: 277 281).

In the global competitive business climate, knowledge can certainly provide firms and executives with advantages, and the process of using this knowledge to produce technology entails the involvement both of universities and firms. In this connection, in order to mobilize universities' present resources like knowledge and staff under and make them useful for universities, industries and the society, education and research and development should be prioritized. This indicates if there is solidarity between universities and industries (Dura, 1994).

A firm that collaborates with outstanding academic institutions will have significant benefits, including reaching out to the students with higher education, recruiting talented ones, boosting its image and other opportunities (Santoro, & Chakrabarti, 2002: 1164). In literature, the scientific or technical interaction between universities and sectors was studied extensively, the concepts of social capital and human capital coming to the fore (Boardman, 2009: 1505). There were also studies for developing academic consultancy typology for this collaboration.

From the sector perspective, the following obstacles may emerge to hinder successful collaboration (Othman, & Omar, 2012: 577):

- Firms may be reluctant to make financial contributions to the education program;
- They may not be sufficiently persuaded about the necessity of the education program or whether universities will be able to make serious contribution; and
- Looking at the education programs, firms may tend to believe universities don't have much to offer.

From the university perspective, the potential obstacles include:

- Educators may fail to correctly assess the firms' time limitations and develop the expert productive power;
- Universities may unaware of the real problems facing the industry and may come up with programs that are not attractive; and
- Universities may not have capabilities to address the sector's needs.

II. SCOPE AND METHODOLOGY

The limitations of the study included costs, timing and the difficulties encountered in contacting firms and drawing their attention to the survey. The firms operating within the borders of OSTIM Organized Industrial Zone constitute the study's universe as they are representative of the small- and medium-sized enterprises (SMEs) in Turkey. OSTIM stands for the Middle East Trade and Industry Center. It is an Organized Industrial Zone (OIZ) housing mostly manufacturing firms in Ankara. It is Turkey's largest OIZ and it is among leading OIZs around the globe. The firms in OSTIM are mainly in machinery production, metal working, electric/electronic, construction equipment, automotive, plastic/rubber, medical devices and equipment sectors. The zone has emerged as one of the major sources of employment in Turkey. It covers an area of 5 million square meters and is home to around 5,000 firms operating in 100 different sub-sectors and employing 50,000 people. (<http://www.ostim.org.tr>.)

In the study, the firms in the zone are groups into three categories: "very small-sized" if they employ 1-19 people, "small-sized" if they employ 20-49 people and "medium-sized" if they employ 50-99 people. The firms included in the study were selected using the systematic random sampling method. Surveys were conducted with the face-to-face interview method.

116 small- and medium-sized firms that were surveyed were from 9 different sectors, namely, defense, trade, paper/plastic, automotive, computer/information, health, construction, metal/machinery, and electronic/electronic. The education profiles and professional areas needed by the firms were identified.

After the surveys were conducted, the questionnaires were coded to obtain data that can be entered into the computer. The coded data were entered into MS Excel and analyzed using the STATA 13 software program. Classification and analysis of the tests were performed using the significance level of 0.05.

III. FINDINGS AND SUGGESTIONS

The firms' sectors and employee numbers were determined. At the second phase, the education levels and numbers of the people employed were inquired. In the survey, we asked whether employees received any training during the last year and identified the types of training attended by senior managers and employees as well as the institutions that have that training.

Table 2. Sectorial Distribution

Sectors	%
Metal/machinery	33,3
Electric/electronic	21,2
Construction	8,8
Health	8,8
Computer	10,1
Automotive	3,3
Paper-plastic	6,6
Defense	1,1
Trade	8,8

In which sector is your firm operating?

116 firms are placed in 9 sub-sectors. Majority of the firms are in the metal/machinery and electric/electronic sectors.

Table 3. How many employees do you have?

1-19	20-49	50- above
%57,5	%35,8	%6,7

How many employees do you have?

Majority of the firms surveyed are micro and small size enterprises. Only 7% of the firms are of medium size.

Table 4. What are the educational backgrounds of your employees?

Education	%
Elementary	12,88
Secondary	9,87
Technical High School	21,03
High School	14,59
Vocational School	18,88
Undergraduate	16,31
Master/Doctorate	6,44
Total	100,00

Nearly 20% of the personnel are graduates of vocational schools. 50% are high school and primary education. Thus, indicating a demand for courses and seminars. The education obtained during the primary and high school education are away from meeting the demand of the business world, thus it is required to improve the professional skills and knowledge through on-job training or other methods in order to gain practical knowledge and job orientation.

Table 5. Has any of your employees attended an educational course during the last year?

e-course	Freq.	Percent	Cum.
Yes	60	60.61	60.61
No	39	30.39	100.00
Total	99	100.00	

The rate of the employees attending an educational course during the last year is 60% which indicates that the firms demand education in order to stay competitive and follow the new trends.

Table 6. What are the topics of the educations received (firm owner and top management)?

Management	23
Vocational application	26
Sales and marketing	23
Communication skills	16
Computer	26
Budget and accounting	14
Personnel education	18
Job orientation	18
Personal development	15
Foreign language	17
Other	11

Majority of the firm owners and managers have had education in business and marketing fields such as human resources, management skills, sales, marketing, communication skills. On the other hand, the education obtained in technical fields like budget management and accounting is more limited.

Table 7. What are the topics of the educations received (employees)?

Management	4
Vocational application	32
Sales and marketing	17
Communication skills	19
Computer	18
Budget and accounting	11
Personnel education	10
Job orientation	13
Personal development	9
Foreign language	7
Other	6

According to the responses given during the survey, vocational application and communication skills are demanded more than the others while foreign languages and management are relatively less in demand. Majority of the employees have obtained education in business and marketing topics.

Table 8. Have you ever received any kind of education from the organizations below? Please indicate all kinds of in-service training, vocational training, foreign language and others.

OSTIM Management	17
Vocational and Technical Education Schools (MEB)	26
Vocational and Technical Education Centre (METEM)	21
Ministry of Education (MEB)	29
Turkish Labor Agency	15
Public Education Center	12
Any Public University	12
Any Foundation University	13
Chambers of Commerce	20
Municipalities	13
SME Development Agency (KOSGEB)	19

The firms preferred vocational training over other forms of training and opted to receive vocational training from trade associations and the Education Ministry. The training received from the state and private universities was the bottom of the list. State and private universities didn't differ much in terms of providing training services to the firms. The universities should make plans for offering seminars, training and course programs that take into consideration the needs of our universities.

CONCLUSION

The world's developed countries tend to plan and change their education systems in way to create qualified workforce. In today's world economy, the balance of power is determined by competitive advantages. As a well-trained workforce will enhance quality and productivity, education emerges as an important factor for firms to secure competitive edge in terms of productivity and at the same time, adapt to technological changes.

As a result of the study, it was found that 50 percent of the people employed at small and medium-sized enterprises in the OSTIM are graduates of primary education or high schools. These employees tended to attend vocational training courses given by the Educational Ministry, the Turkish Employment Agency (İŞKUR) and universities for enhancing their professional skills and qualifications. It was concluded that the training programs by universities and other non-governmental organizations were performing poorly. For vocational education, employees tended to go for training in practices areas, technical skills, communication, marketing, and sales while senior managers and firm owners opted to receive training on administrative duties. Overall, communication, foreign language and information technologies were popular for both groups. In conclusion, it is obvious that universities have to develop novel approaches to the problem of how to provide the professional competence and practical skills needed by small and medium-sized enterprises. Universities have responsibilities for facilitating the effective and efficient use of the country's economic resources through their efforts for producing knowledge and conducting research and driving the innovation.

The government alone cannot tackle the huge problems related to vocational education and training. Industrialists, trade unions, businessmen, nongovernmental organizations and universities should step in as stakeholders and contribute to the solution of these problems.

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