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The importance of cooperation between vocational schools and industry

Nuriye Çevik İşgören[a*], Ayşe Çınar[a], Necla Tektaş[a], Bekir Oral[a], Gülhan Büyükpehlivan[a], Leyla Ulusman[a], Demet Öznaz[a], Zuhal Polat[a], Selçuk Uzmanoğlu[a]

[a] *Marmara University Vocational School of Technical Sciences, Goztepe Campus, Istanbul, 34722, Turkey*

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Abstract

Technology takes place in every area of the daily life and its importance raise increasingly. For this reason; with the purpose of fitting to developing technologies; through the cooperation with industry, the education programs in vocational schools, which educate occupation, should be updated orderly.
In this sense; who successfully gives education in between present facilities, and who refreshes itself according to new technologies to give more active and dynamic education; the Marmara University Vocational School of Technical Sciences started an infrastructural development project, to strengthen the cooperation between industries related to the programs in the vocational school. In the scope of the talked project; parallel to the developing technologies the subjects about; infrastructural development, making update on course name or course contents, developing laboratory and workshops' technological infrastructure, developing training course facilities, building research-development center, and according to the practice ability of graduation projects in industry developing common goods takes place.
In this study; the industry survey results according to the programs in vocational school related to industries is examined. Research results provided contribution to determine industries' present situation and their expectations from vocational schools.

Keywords: Technology, infrastructure, industry, cooperation, vocational school (VS).

1. Introduction

In today's globalizing world; the continuous develop in every area, and the changes occur according to this makes the competition conditions more and more important day by day. The changing technological reflections as a result of developments; take place in individuals, managements, and all foundations live rapidly.

* Nuriye Çevik İşgören.
E-mail address: nisgoren@marmara.edu.tr

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The developed countries, managements, and individuals who understood the importance of technology and knowledge target to be on the technology and knowledge producible position where they can increase their prosperous level more and be able to become more advantaged in the difficult competition ambience.

Nowadays it is almost impossible for the managements which especially do not develop technology and knowledge, and do not provide any innovation to become; economically successful in long-term, maintain life, and getting developed.

In global competition conditions having the knowledge which can provide advantage to managements and industry, and using this knowledge to produce technology involves both in universities and industry's common responsibility area. For this reason; in order to gather universities' present resources like knowledge and staff in one method and system to make them useful to both university-industry and community, the actions like education and research-development should be done. This situation reveals the university-industry solidarity. (Dura, 1994)

University-industry cooperation is gross of systematic works to make them strengthen in scientific, technological, and economical ways by bonding universities' and industry's present possibilities (Bayrak and Halis, 2006). This cooperation includes; development of new products for the industry, establishment of joint-solutions to industrial problems, provision of training and consultancy, and long-term cooperation in solving research tasks (Ivanco et al. 1998).

On the other hand, the reasons for universities to seek cooperation with industry appear to be relatively simple. Peters and Fusfeld (1982) have identified several reasons for this interaction: industry provides a new source of money for university, industrial money involves less "red tape" than government money, industrially sponsored research provides student with exposure to real world research problems, industrially sponsored research provides university researchers a chance to work on an intellectually challenging research programs, some government funds are available for applied research based upon a joint effort between university and industry.

Similarly, Barber (1985) has identified three factors which appear to have been most instrumental in stimulating university interest in enhanced university-industry relations. These are: reduced federal support of research, deteriorating university research equipment, and economic benefits to university.

In our country there are a lot of middle and higher-education institutions which gives occupational and technical education. As being one of these, vocational schools are defined in the higher-education laws as; aimed to educate well-qualified staff labor, higher-education institutions giving education in 4 semesters. Increasing day by day; 578 of the 704 vocational schools are presently active (Anonymous, 2008). To these schools which spilt almost every region of the country, community's and local government's interest and support continue to develop pleasingly.

However; it is a known truth that based both on quantity and quality the occupational and technical education in Turkey is not at adequate level. Well-qualified staff labor's strengthen has a great importance on eliminating the troubled periods occur in our country's economics. Growing with developed vocational schools and educated well-qualified technicians, competition strength of the Turkish economy can be increased in the international market.

The done researches show that; the occupational education system does not respond to country's needs, the university-industry cooperation conditions does not exactly established, the graduates qualification is deficient to have a better job, the present programs does not responds to industry's needs, and the vocational schools' facilities are restricted and deficient.

Leading to these data; with the purpose of determining the contributions to country's economy we as being Marmara University Vocational School of Technical Sciences started a project titled with "Marmara University Vocational School of Technical Sciences-Industry Cooperation" which also supported by Marmara University Scientific Research Projects Unit.

2. Materials and Methods

Marmara University Vocational School of Technical Sciences Technical Programs Department gives education on Electrics, Industrial Electronics, Mechanics, Computer Technology and Programming, Textile, Designing and Printing Publishing, Electronics-Communications, Fisheries, Technology of Biomedical Equipment, and Applied Jewelery Technology.

In our vocational school, which educates sub-workers to Turkey's 10 different and important industries, there are 1985 students presently having education in 2008-2009 academic years. Which always evaluate their geographical and economical positions very well; all of the programs in our vocational school kept their education's quality powerful all the time, by keeping their connections strong with related industries.

In order to the project named above, by researching; industry's view about university cooperation, companies' existing technological situations, and ideas about vocational school graduates' performances; according to the gained results from this study, which have been done with the industries related to our vocational school's programs, some data have been submitted below. These data will be a guide to our vocational school's programs on giving a direction to the cooperation between related industries.

The survey developed on this purpose have been attained to 1823 managements, according to the addresses received from the occupation institutions like Istanbul Chamber of Industry (İSO), Istanbul Textile and Apparel Exporter Associations (İTKİB), Istanbul Chamber of Jewelry (İKO), Printing Industry Educational Foundation (BASEV). On the other hand; after checking variously the results received from the companies placed on related sectors, 493 of these companies' data have been analyzed and interpreted by evaluating with SPSS package program.

3. Findings

In this survey; by determining industries' present situations, their expectations from our vocational school have been stated and cooperation orientated facilities have been researched, after that the received data have been distributed by graphics.

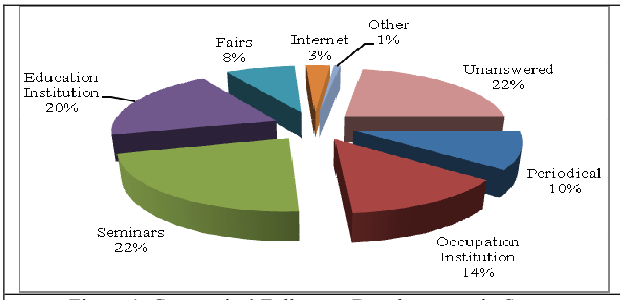

Figure 1. Companies' Follow on Developments in Sector

When it is looked to the companies keeping update on present develops about their sectors; seminars take the first place with 22%, and cooperation with education institutions take the second place with 20%. It is determined that the companies follow the occupational develops through the occupation institutions which presents related sectors by 14%, and through periodicals by 10%. However; 22% of the companies did not answered this question, and have been showed their insensitivity.

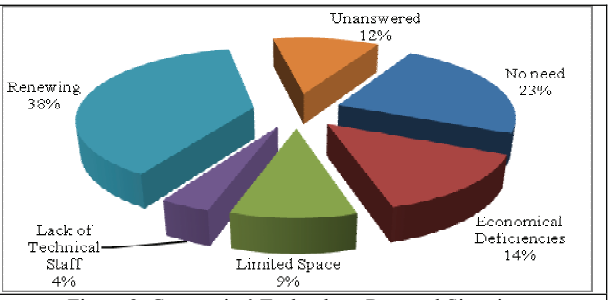

Figure 2. Companies' Technology Renewal Situation

When it is looked to companies' technology renewal situation 37% of the companies have a tendency on renewing their technology. However; in total 24% of the companies have been explained their fall behind on renewal by providing some reasons like, economical deficiencies and having limited space. On the other hand; 23% of the companies which have been participated to this survey stated that they do not need any renovation on their technologies.

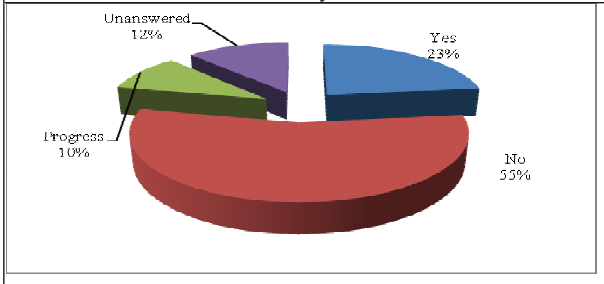

Figure 3. Research-Development Centers at Companies

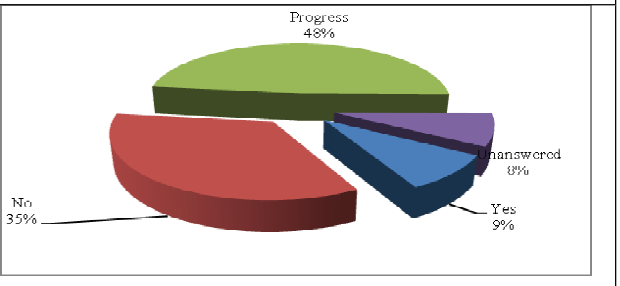

Figure 4. Product-Development Centers at Companies

As it is seen in the figures above; 55% of the companies does not have Research-Development centers, and 35% of the companies does not have Product-Development centers. However; it is obvious that 23% of the companies have Research-Development centers, and 9% of the companies have Product-Development center. On the other hand; 10% of the companies have been stated that they are at progression on building Research-Development centers, and 48% of the companies have been stated the same about Product-Development. When all the other data of the research have been considered, it has been revealed that; companies will to build Product-Development center, but they think that Research-Development centers should be built by Universities.

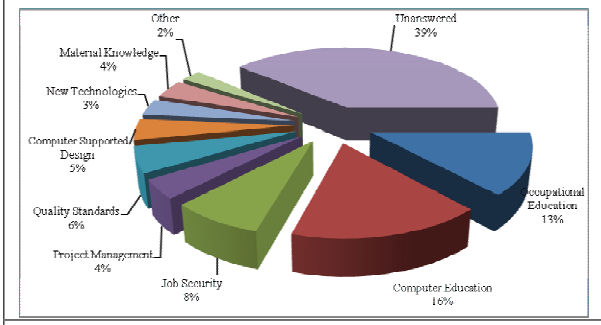

Figure 5. Education Subjects that Companies Need

When the education subject, which takes place in this study and has a significant importance for our vocational school, have been analyzed; it has been figured out that 16% of the companies need an education about occupational subjects. It has been determined that, in total 38% of the companies desire to take an education from our vocational school on the following subjects: computer education, computer supported design, job security, project management, quality standards, and new technologies. Companies rated with 39% did not responded to this question and they have been showed their insensitivity. Results received for this question has been contributed, to gain important clues on the subjects that our vocational school can be helpful to its related industries.

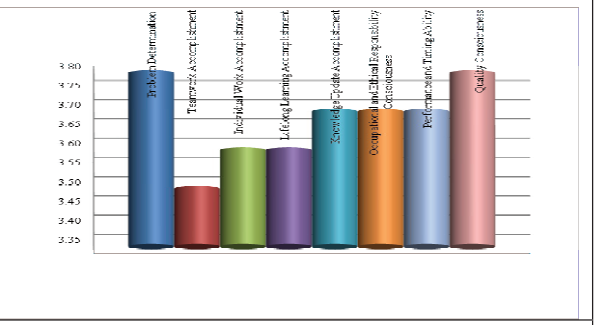

Figure 6. Vocational School Graduates' Company Performances

As it is seen in the figure 6; when our graduates' company performances have been evaluated by the employers, the performance averages have been determined as good. When our graduates have been evaluated out of 5 on the following subjects; from problem determination and quality consciousness they have been degreed as 3.8, from occupational and ethical responsibility consciousness they have been degreed as 3.7, from knowledge update accomplishment they have been again degreed as 3.7, and from performance and timing ability they have been degreed as 3.7 as well. Also; individual work and life-long learning accomplishments have been stated as 3.6, and team work has been stated as 3.5.

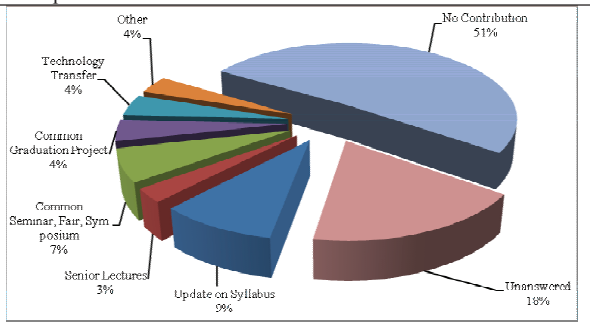

Figure 7. The Fields That Companies Will To Contribute Vocational School

When it has been asked to the sectors about which fields do they will to contribute to vocational school's programs; 9% of the companies have been stated that they can contribute to update on syllabus. Also with the following suggestions companies have been willing to contribute our vocational school: providing senior lecturer to the courses, common seminars, fairs, arranging symposiums, preparing common graduation project, building common research-development centers, and contributing to senior lecturers' researches. On the other hand; some of the companies have been responding to this question with "no contribution" with the rate of 51%. This situation is an expected condition for small companies, but this data is attractive for developing efforts on university-industry cooperation.

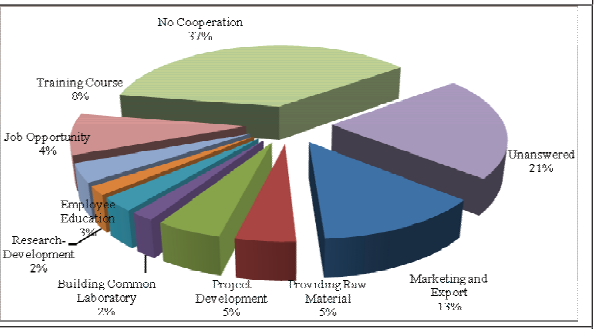

Figure 8. The Fields That Companies Think for Cooperation

When the data received from the applied survey have been evaluated, it has been seen that 13% of the companies want to cooperate with our vocational school on the fields about marketing and exporting. From the studies' data, it has been figured out that; 9% of the companies want to provide training course, and 4% of the companies wants to provide employment opportunities to our graduates. The following are also belong to the subjects that companies have been wanted to cooperate with: providing raw material, project development, building common laboratory, employee education, and research-development. As a result of this study, like being in all the other fields unfortunately there have been also some companies insensitive to university-industry cooperation.

4. Conclusions and Suggestions

For being able to fit present technological developments, and producing technology and knowledge; with common studies, educational institutions and industry enterprises collaborate is one of the most effective elements for today's communities. With university-industry cooperation, some solutions can be stated to companies' problems like; product development, production problems, and well-qualified staff need. Also; some sources suitable to universities' researches, and strengthen education underground are provided. As a result of this cooperation, common interests like; educating students according to industries' need, and providing working facilities in industry are created.

In order to have vocational schools more active; constant cooperation should be done between sector and civil society institutions, and according to the technological developments sectors' expected qualifications from the graduates should be updated. Vocational schools need to be reconstructed, according to have graduates who covers the qualifications which sector needs. In this sense; the following suggestions can be given, in order to increase and activate the university-industry cooperation.

1. Every Vocational school should search for cooperation on existing sector at their zone and should create cooperation environments.
2. Vocational school syllabus and course contents should be created with Vocational school-Industry cooperation and by periodically arranged meetings these should be updated according to technologic developments if necessary.
3. Providing opportunities to professional representatives of the sector, about teaching a course, and running a seminary.
4. Vocational school's permanent senior lecturers should be provoked to make projects associated with industry also supply for national and international researches.
5. Vocational school should extend its education period and at the last semester of its education period vocational school should supply an education opportunity under industry's structure.
6. According to the natural structure of dynamic education, university-industry cooperation should be institutionalized. In this sense, under universities' structure a centre should be build to develop and coordinate the cooperation.
7. The technology transfer from industry to vocational school should be encouraged. In this respect, common studies should be done between regional Trade and Industry Chambers, and in order to have incentive sanctions getting in contact with Ministries should be done.

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