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## University-industry cooperation in terms of textile-apparel education

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### Abstract

University and industry occurred and developed independently from each other. However, during the development and progress period of societies, they involved in more intensive interaction.

By being an element of science and technology dynamic relationship, university-industry cooperation is a long process with its economic, social, political, and cultural results. This takes important place in academicians', industrialists', researchers', politicians' agenda.

When it's considered about science's technological and technology's scientific content; university-industry cooperation is not a choice for university and industry, it is a vital obligation.

Textile-apparel sector get together with the universities at the university-industry cooperation meetings but they did not have long term cooperation.

The purpose of this study is; to examine university-industry cooperation, to acquaint partners about expectations and sanctions, and to offer suggestions about institutionalization the cooperation according to views of high education institutions in Turkey which give textile-apparel education and textile-apparel industrial managers.

The universe of this study are; department heads of high education institutions which give textile-apparel education at undergraduate and graduate level in Turkey, and textile-apparel industrial managers. While making the sample group the staged sampling method is used. For data collecting technique survey method is preferred. In the surveys likert scale with 5 is used.

The surveys which developed to gain research data are reached to the sample group by Marmara University Survey Site and made answered via internet. The data are evaluated by using SPSS -Statistical Packages for Social Sciences.

As a result of this study, according to the data gained from industrial managers' and department heads' answers, the current situation is summarized and some suggestions are offered for continues cooperation.

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## 1. Introduction

At modern and developed societies, it is not possible for university and industry to develop without a certain interaction and cooperation. Industry needs university for applying new inventions and innovations in basic sciences into production. In contrast to this, continuously growing and increasingly expensed universities need industry in order to find subject and financial source for their researches. Both of the partners need to take their mutual interactions to a common communication platform.

University-industry cooperation as being an element of science and technology's dynamic relationships takes a significant place in academicians', industrialists', researchers', politicians' agenda for a long time with its economic, social, and cultural consequences (Dura, 1994). For university-industry cooperation, science's and technology's togetherness is an irrevocable obligation in terms of university and industry.

The reason of enterprises not cooperating for efficiency rise; technical equipment deficiency at universities, lecturers' knowledge deficiency, limited number of lecturers specialized on technical subjects, enterprise managers not having informed about universities' technical services, universities not informing the enterprises about their services, enterprises' services being related more to practical, universities' services being related more to theory, having bureaucratic processes at services given at universities, for several reasons preferring counseling firms at the market rather than specialized lecturers at the universities, qualified employee deficiency who can apply the given service on new technology at universities (Alpkent, 2005).

At Turkey, industry's progress and industry institutions' countrywide spread brought the university-industry cooperation to graduate degree thesis subject format. In this period, with national congress, seminar, and scientific symposiums arranged by non-governmental organizations and universities, the activities which gather university and industry are increased. Besides this, the industry institution's desires from universities based on education, counseling services, and laboratory services are tangible examples of university-industry cooperation.

After 1980, economy's foreign expansion, export's come into prominence, priority of common investments with foreign firms, increased the educational and technical service support which industry provides from the universities. At this period; while the industry enlarges rapidly, the universities who fall behind at governmental support started to say that they could not find sufficient support from the industry for their researches. Partners tried to develop implements which will give more tangible results on developing university-industry cooperation. At this point, the governments who figure out this situation gave TUBITAK a mission to develop a technology producing industry structure mechanisms, and it is started to talk about priorities in scientific and technologic researches (Başer, 2005).

In this study, it is aimed to evaluate university-industry cooperation in-terms of textile-apparel industry.

## 2. Method

The universe of this study is, department directors of textile-apparel educating associate degree and undergraduate institutions (university) and textile-apparel industry managers (industry) in Turkey. In building the sample group, the stratified sampling method is used. For data gaining technique, the survey method is preferred. At the surveys, the 5 likert scale is used. The developed surveys are reached to the sample mass via Marmara University Survey Site and they are answered over the internet. The gained data are evaluated by using SPSS-Statistical Packages for Social Sciences.

## 3. Results (Findings)

The demographical data belonging to enterprises at the study are given at Table 1. The enterprises evaluated in the study content are 43% micro (1-50 employee), 23% big (251 and more employee), 19% small (51-150 employee), and 15% medium (151-250 employee) enterprises.

When the enterprise activity areas are examined according to the received data; it is seen that the apparel area takes the first line with 19.44%, knitting has 18.06%, and under other title the yarn manufacturing and finishing processes have 12.5%.

When the enterprise activity year is evaluated, it is seen that 39.22% of the enterprises are in function for 21 years or more, 29.41% of them are in function for 11-20 years, and 19.61% of them are in function for 2-5 years.

Also, when it is examined from textile-apparel enterprises working skill, 24.68% of the enterprises are producing for overseas companies' representative firms at Turkey, 22.08% of them are making contract manufacturing, 20.78% of them are producing by their own brand and selling it both to domestic and overseas market.

Table 1. Communication Suficiency Findings (%)

Criteria	Evaluator	Deficient	Prospering	Medium	Good	Very Good
University-Industry Communication	Industry	37,25	45,10	11,76	3,92	1,96
	University	33,33	16,67	23,33	23,33	3,33
Lecturers-Industry Communication	Industry	39,22	43,14	11,76	3,92	1,96
	University	20,00	23,33	16,67	30,00	10,00
Student-Industry Communication	Industry	43,14	39,22	13,73	3,92	0,00
	University	23,33	26,67	16,67	26,67	6,67

When Table 1 is examined; the industry joined in the study evaluates the university-industry cooperation as prospering with 45.10%, but the university stated this issue as deficient with 33.33%. The industry evaluated the lecturers-industry communication as prospering with 43.14%, and the university evaluated this as good with 30.00%. The industry evaluated the student-industry communication as deficient with 43.14%. However, the university's view on this subject is both prospering and good with 26.67% each.

Table 2. Knowledge Transfer Findings (%)

Criteria	Evaluator	Deficient	Prospering	Medium	Good	Very Good
From University To Industry	Industry	50,98	45,10	3,92	0,00	0,00
	University	30,00	30,00	16,67	20,00	3,33
From Industry To University	Industry	50,98	41,18	5,88	1,96	0,00
	University	30,00	33,33	20,00	13,33	3,33

When the Table 2 is analyzed; the industry evaluated the knowledge transfer from university to industry subject as deficient with 50.98%, and the university evaluated the same subject both as deficient and prospering with 30% each. The industry evaluated the knowledge transfer from industry to university as deficient again with 50.98% and university by being more optimistic stated this value as prospering with 33.33%.

Table 3. Technology Transfer Findings (%)

Criteria	Evaluator	Deficient	Prospering	Medium	Good	Very Good
From University To Industry	Industry	54,90	39,22	5,88	0,00	0,00
	University	36,67	23,33	30,00	6,67	3,33
From Industry to University	Industry	56,86	33,33	7,84	1,96	0,00
	University	40,00	23,33	23,33	10,00	3,33

When the Table 3 is examined; both the industry and the university evaluated the technology transfer from university to industry as deficient with 54.90%, and 36.67% respectively. Similar to this, both the industry and the university evaluated the technology transfer from industry to university as deficient with 56.86% and 40.00% respectively. At this point, it is striking that the partners are at an objective point of view.

Table 4. Technical And Financial Support Taken From The Industry Findings (%)

Criteria	Evaluator	Deficient	Prospering	Medium	Good	Very Good
Technical Support	Industry	45,10	49,02	1,96	1,96	1,96
	University	50,00	20,00	16,67	10,00	3,33
Financial Support	Industry	45,10	47,06	5,88	0,00	1,96
	University	56,67	23,33	13,33	3,33	3,33

When the Table 4 is analyzed; the industry evaluates the technical support taken from the industry subject as prospering with 49.02%, and the university states this as deficient with 50%. The industry evaluated the financial support subject as prospering with 47.06%, and the university evaluated this as deficient with 56.67%.

Table 5. Courses' Suitability to Industry's Expectations Findings (%)

Criteria	Evaluator	Deficient	Prospering	Medium	Good	Very Good
Theoretical Courses	Industry	31,37	49,02	17,65	1,96	0,00
	University	3,33	23,33	20,00	36,67	16,67
Practical Courses	Industry	33,33	49,02	15,69	1,96	0,00
	University	16,67	26,67	20,00	23,33	13,33
Graduation Projects	Industry	29,41	50,98	15,69	3,92	0,00
	University	13,33	36,67	20,00	16,67	13,33

When the theoretical and practical courses' and graduation projects' suitability to industry's expectations subjects are examined by both industry and university (Table 5), it is seen that common thought is influencing strongly on prospering way (Ayla, 2008).

#### 4. Discussion

University-industry cooperation came into agenda at mid-1980s in our country. This cooperation appeared as research centers' activities of TUBITAK, KOSGEB, Chamber of Industry, and many universities leading by ITU and ODTU. Most of these founded very old but their productiveness is in last ten years. In Turkey, the activities done in university-industry cooperation frame are supported by "University Industry Relations Coordination Board" in constitution of YOK.

The results of this study gave an opportunity to textile-apparel sector's partners to make self-criticism with actual data.

#### 5. Conclusion and Recommendation

When the desires of the university and the industry are examined, all the time both of the partners stated each other as deficient. At the same time, they could not provide the expected attendance to the gathering calls. However, the data of this study showed that both of the partners are feeling objective to the subjects on making close evaluations, and they are able to make self-criticism.

When the research results are examined in total, the conclusions and the recommendations at the below are developed:

- When the university-industry communication is analyzed by its lecturer-industry communication, and student-industry communication subtitles, it is seen that both industry's and the university's given answers are condensed at deficient and prospering way. This situation shows that both of the partners are interested in cooperation, and they both think that the cooperation actions will be useful when it is institutionalized.
- When the mutual cooperation's analyze subject is evaluated with knowledge transfer and technology transfer subtitles, both the industry and the university find the knowledge and technology transfer from industry to university and from university to industry as deficient. This shows that they accept that they are deficient at making contribution to the other partner on their own specialized areas.
- Technical and financial support taken from industry subjects are evaluated as deficient by the university and the industry pointed this as prospering. These findings show that both of the partners demand that supports taken from the industry must taken into institutional analyze.
- When university's reply to industry's demands are analyzed by its theoretical and practical courses and graduation projects subtitles, the industry gave a feedback about their demands are not replied and the university gave a feedback about their programs must be developed.
- All of these data show that university and industry are complementary part of an whole and it is necessary to have persistence cooperation at legal base.

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