

Comparing distance education versus traditional education in Engineering Management Masters Program: Sakarya University Sample

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Abstract: Corporations have to consider the demands emerging in the market in order to catch up with the rapid developments in the business world. In this regard the most discussed topic is the content of management concept. Engineering management as well brings in new dimensions to this discussion. The Engineering management masters programs were designed to meet the growing need in this field. The primary target groups of these programs are engineering students as well engineering personnel. The programs are offered in different forms with respect to thesis; with theses or without thesis, distance or traditional learning etc. In this study, the engineering management master's program at Sakarya University will be investigated with a comparison between distance and traditional education

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1. INTRODUCTION

Socio-technical knowledge refers to an understanding of the inter-play between the world of technology and engineering, and the human world of organization and communication. Engineering management is an excellent example of an applied socio-technical knowledge domain. (Kopacek and Stapleton 2010)

2. ENGINEERING MANAGEMENT

Engineering management is the discipline addressed to making and implementing decisions for strategic and operational leadership in current and emerging technologies and their impacts on interrelated systems. (Kocaoglu 1990)

First introduced in the 40s and seen a steady growth from the mid-70s on, we have encountered this steadily growing program under different names (such as engineering management, technology management, Management of Technology, engineering and technology management). The program finally exceeded 200 departments by mid 90s and although it is mainly a master program, it has been offered in bachelor and doctorate levels as well. (Kocaoglu, Daim et al. 2008)

(Kocaoglu, Alvear et al. 2006) presents an analysis of 142 universities offering degree granting programs in Engineering and Technology Management (ETM) worldwide.

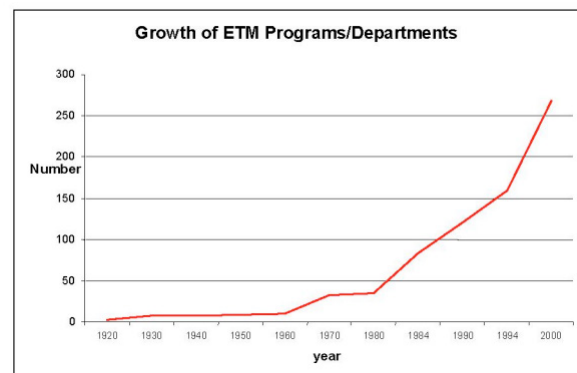


Figure 1: Growth of ETM Programs (Kocaoglu, 2006)

ETM programs are offered in various academic units within a university, and under various titles and with different goals and strategies unique to their institutional mission and geographic location. However, they all have a common objective. That objective can be summarized as “the generation of knowledge for leadership in the management of science, engineering and technology and their interfaces with the interrelated systems”.

(Fischer 2004) and (Kopacek, Hajrizi et al. 2013) described the following key dimensions of educational competence:

1. Technical Competence
2. Administrative Competence

3. Ethical Competence

4. Productive Competence

5. Personal Competence (Hajrizi and Kopacek 2014)

According to “Program Criteria for Engineering Management and Similarly Named Engineering Programs” prepared by ABET, its curriculum is defined as follows: “The curriculum must prepare graduates to understand the engineering relationships between the management tasks of planning, organization, leadership, control, and the human element in production, research, and service organizations; to understand and deal with the stochastic nature of management systems. The curriculum must also prepare graduates to integrate management systems into a series of different technological environments”. (Commission 2014) (abet.org)

3. ENGINEERING MANAGEMENT IN TURKEY

In Turkey, starting a new program requires the authorization of the Higher Education Council. (Guide 2005).

In later years, in parallel to the growing number of programs worldwide, there has been an increase in the number of engineering management programs in Turkey. As stated by (Cömertoglu 2012), these are mainly master degree programs and are being offered by a large number of universities. These programs are offered as program with thesis, program without thesis, or distance education program. There are also formal educations or secondary educations for working people. In order to graduate from these programs both in state and in private universities one has to complete all the required and elective courses and, in programs with thesis submit a thesis or, in programs without thesis, complete a dissertation at the end of teaching period. According to data from the Higher Education Council, there are 178 universities in Turkey including both private and state institutions, and of these 29 universities offer engineering management programs under different names.

(<http://www.yok.gov.tr/web/guest/universitelerimiz>)

In the introduction of their program, introduced by the name “Engineering and Technology Management”, one of the leading Universities in Turkey, Boğaziçi University defines the program as an interdisciplinary graduate program combining the necessary knowledge, technique and skills from the field of engineering, technology and management, in order to train engineers with a managerial perspective, who would be well suited to take leadership roles in 21st century high tech businesses.

According to their definition the program’s aim to train leaders suited for today’s high-tech companies in the areas of manufacturing, government and industry of the global economy but at the same time mindful of the environment, quality and ethics. In order to be able to survive in the global competitive environment, technology oriented businesses have to integrate the system viewpoint and keep pace with the rapidity of the change taking place in the markets. In a business environment that accommodates such a frantic pace of change, all throughout their careers, engineers need to reinforce their technical abilities and managerial skills. (boun.edu.tr)

4. THE PROGRAM AT SAKARYA UNIVERSITY

Two programs are offered at Sakarya University, the first one introduced in 2008 as distance learning master program without thesis (e-EM) and the second one introduced in 2012 as formal secondary education master program without thesis. As of 2016-2017 Fall Semester, these two master programs have the same quota of 50 students. All engineering graduates are allowed to apply to these programs. Those who fail to complete the program in three semesters are discharged from the institute. Over the years the program’s tuition fees are as follows:

-Between 2008-2012: 1500TL per semester

-Between 2013-2016: 1750TL per semester

-From 2016-2017 onwards: 2000TL per semester.

The same fees apply to both programs for 2016, the tuition for the first two semesters is 2000TL per semester and for the 3rd semester the tuition is 500TL, adding up to a total of 4500TL.

5. COMPARING ENGINEERING MANAGEMENT PROGRAMS IN TU VIENNA AND SAKARYA UNIVERSITY

TU Vienna introduced the EM program in 1995. The time required to graduate from EM program is the same for both universities, all three programs graduates in 3 semesters. While there is a thesis requirement in TU Vienna’s program, both programs in Sakarya University is without thesis and requires a dissertation project. Both universities targets students with basic engineering knowledge for their programs.

TU Vienna offers face to face courses in certain periods from Tuesday to Friday as block classes. On the other hand in Sakarya University the secondary education program offers its face to face classes on weekends while the distance education program has no attendance requirement and the courses can be followed via the internet. Also in Sakarya University the program’s language of education is in Turkish whereas in TU Vienna the program is taught in English instead of German language and for this reason it attracts students from all around the world. Despite attracting a worldwide student base, the program offered in TU Vienna produced only 130 graduates in 20 years, while the more locally biased program in Sakarya University produced 249 graduates in 6 years in large parts due to the distance education program. The flexibility offered by distance education, provides convenience for students and thus appeals to a large population. This difference in preference can be seen locally between two different Sakarya University programs as well. The tuition fees for programs could also play part in students’ choices. In Sakarya University both programs’ tuition is 4500TL, while in TU Vienna the tuition fee is 19.500€. Considering both in terms of the worldwide economics and the local country wide economics, the fee asked by Sakarya University is a lot more convenient and easier to meet than what is asked by TU Vienna. Also while the traditional education has additional costs like

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