



ISSN: 0976-3376

Available Online at <http://www.journalajst.com>

**ASIAN JOURNAL OF  
SCIENCE AND TECHNOLOGY**

*Asian Journal of Science and Technology*  
Vol. 07, Issue, 12, pp.4010-4013, December, 2016

## RESEARCH ARTICLE

### ANALYSIS OF THE CURRENT SITUATION IN THE FIELD OF CIVIL AVIATION'S EDUCATION: APPLICATION IN TURKEY

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#### ARTICLE INFO

##### Article History:

Received 11<sup>th</sup> September, 2016  
Received in revised form  
21<sup>st</sup> October, 2016  
Accepted 19<sup>th</sup> November, 2016  
Published online 30<sup>th</sup> December, 2016

##### Key words:

Aviation, Education,  
Education in the Field of Higher  
Education

#### ABSTRACT

The growth of the Turkish aviation sector in recent years has occurred faster in proportion to worldwide growth. The need for qualified human resources in the aviation sector also takes place in correspondence with growth. The purpose of this study is to investigate higher education institutions which provide education in the field of Turkish aviation, in terms of quality and quantity. In the first part of the study, the aviation training standards which member countries of European Union revealed are given with a literature review. In the second part of the study, the numbers of higher education institutions in the field of aviation which are in Turkey, numbers of students and department variety are given. By using a committed questionnaire study, the content of education given in the education institutions, the foreign language level, the place of aviation courses in total ECTS credits, the number of lecturers/instructors are presented. In the result of the study, suggestions for the future are offered by presenting the current situation of higher education institutions which raise human resources to the sector of Turkish civil aviation.

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#### INTRODUCTION

In the scope of the regional aviation policy from 2003 to 2013 the number of commercial flights were increased by 160%, seat capacity was increased by 176%, cargo capacity was increased by 346% in Turkey (SHGM, 2015). Developing aviation sector has moved The Turkish Civil Aviation Sector to the top of global ranking. According to the data of European Air Navigation Safety Organization (EUROCONTROL) by the year of 2015 Turkey's placement in European Air Transportation Sector is the third in the World airline ranking in terms of number of passenger is 9th, RPK (revenue passenger kilometer) is ranked the 10<sup>th</sup> (SHGM, 2016). In Turkey for 13 airlines and air Cargo business, the number of aircraft is 489 by the end of 2015 (SHGM, 2016). The number of air taxi operating is 50, the number of general aviation operators is 60, the number of balloon business is 25 and the number of agricultural spraying business is 39. The need for Human Resources is as well increasing in parallel with the growth in aviation. In 2003, the number of personnel employed in the aviation industry in Turkey is 65.000 while in 2013 this number has reached 180.570. The number of personnel employed within 10 years has shown an increase of around 20% on an annual average by an increase of 200% (DHMI, 2015).

Four different methods are used in fulfilling the need of human resources in Turkish Civil Aviation Sector:

- Graduates from the aviation departments of higher education institutions,
- Graduates of school, equivalent with high schools, which are connected to the Ministry of Education,
- The ones who pass to civil aviation sector by graduating from military aviation schools,
- Personnel working at aviation by receiving in-service trainings apart from the field of aviation.

Aircraft maintenance standards are given according to the standards which are stated in EASA Part 66/147, designated by EASA (European Aviation Safety Agency), (EASA, 2012). In Turkey, Aviation Authority General Directorate of Civil Aviation (SHGM) has issued the SHY66/147 which contains documents, similar to EASA (SHGM, 2013). Institutions which give education according to these standards are authorized by Civil Aviation Authority, SHGM. The duration of courses, their contents, the level of the courses that will be lectured, the number of questions that will be asked in the exams and absenteeism information of authorized educational institutions are standardized. Requirements are determined in order that the students who take education in this context can obtain the aircraft maintenance license. The necessary trainings to work in the field of airport ground handling services are determined by IATA

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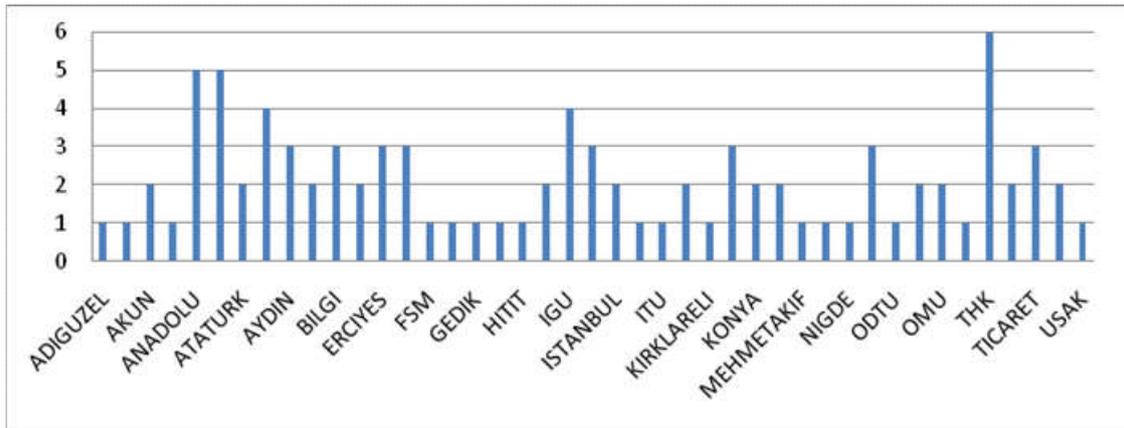


Figure 1. Higher Education Institutions in The Field of Aviation Education

Table 1. Education Time According to the Department Type

Department Type	Education Time		
	Bachelor's Degree	Associate Degree	Total
Maintenance Services	12	15	27
Cabin Services	0	19	19
Aviation Business Services	10	24	34
Total	22	58	80

(International Air Transport Association) (IATA, 2016). These trainings being advisory, some may be mandatory by National Aviation Authority. In order to work as a flight dispatcher in airline operations, it is required to receive trainings according to Doc. 7192-D3 Manual and pass the exams which will be made by national authority (ICAO, 1998). So as to work as a flight dispatcher in Turkey, it is needed to receive training according to Flight Dispatcher License Regulations and past the exam successfully (SHGM, 2016). The research was carried out within the scope of the aviation departments of higher education institutions. With the aim of revealing the current situation of higher education institutions which raise human resources to Turkish Civil Aviation Sector, data were analyzed by collecting along with survey method in more than 100 departments

## AIMS AND METHODS

Research was made with instructors who give education at higher education institutions that provide aviation training. The data in this study were collected through a survey method. The collection of data, in training assignment aviation training software was used by Directorate General of civil aviation and the Higher Education Council. The survey was carried out in 91 departments/program sat 43 higher education institutions. Survey was answered by 80 departments/programs.

## RESULTS AND DISCUSSION

### Findings and Analysis

As a result of the survey work in 17 of the 43 higher education institutions in Turkey there are 1 department / program, in 13 of them 2 departments / programs, in 8 of them 3 departments / programs, in 2 of them 4 departments / programs, in 2 of them 5 departments / programs, and in 1 of them 1 program and 6 departments / programs. According to survey results in different departments and programs of the University name in aviation training in 91

sections that present higher education institutions in 19 different departments / programs are emerging from the results of a survey conducted in the name of education. Although different department/program names in Turkey aviation education are generally in 6 branches. This branches into technical departments (airplane or Aviation Electric Electronics, aircraft maintenance engineering, Aircraft technology), pilot age, air traffic control, cabin services, Aviation business (Civil Aviation Management or Aviation Administration), it is possible to generalize. The results reveal that the majority of higher education institutions didn't give educations in all of the all branches. In this survey the number of departments / programs in the field of Maintenance Services are 31, in the field of Cabin Services are 20 and Aviation Businesses Services are 40. In addition, 5 departments/programs in the field of Pilot education and also 1 Air Traffic Control department are not located in the survey.

### Department/The establishment years of the program

In Higher education level which providing education departments that have begun established in 1986, when evaluated 69 departments that responds to the survey, after the year 2012 the number of drop-down department appears to be a rapid increase. The main reason for this increase is the result of development in the aviation sector after 2002 that the need for qualified personnel is increasing. After the year 2012 in Turkey at aviation sector growth rate has been approximately every year about 15% and future growth predictions are also expected at the ratio of 10-15%, while the number of higher education institutions has shown an increase of approximately 100-200% for 2012 and beyond, each year.

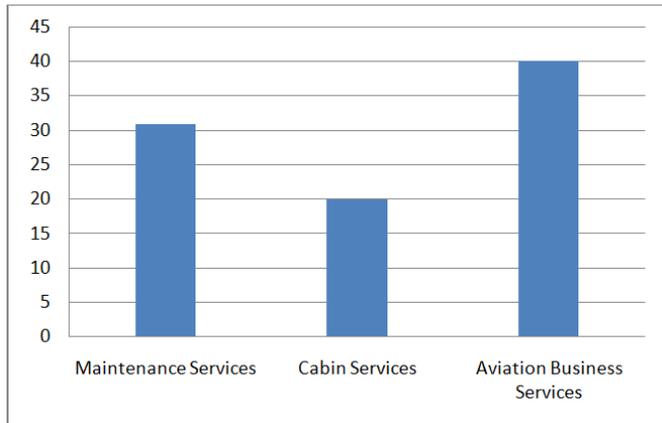
### Bachelor's Degree/Associate Degree Distribution

When evaluated in terms of department types, those who completed the survey, 22 bachelor's degree, 58 give education at the associate degree level. The training time of departments

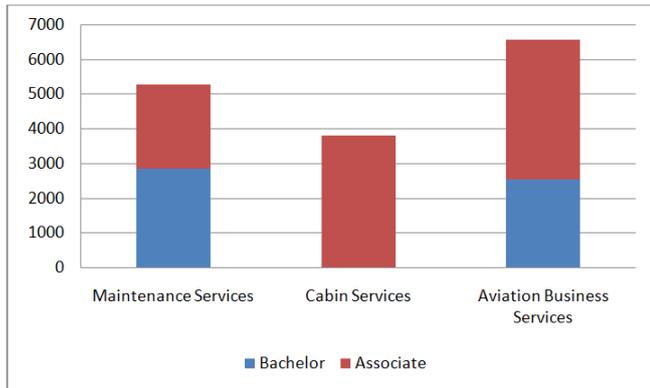
when evaluated according to departments type, it is observed that all cabin services students take education at the undergraduate level.

**The Number of Students Who Study at Higher Education Level in The Field of Aviation**

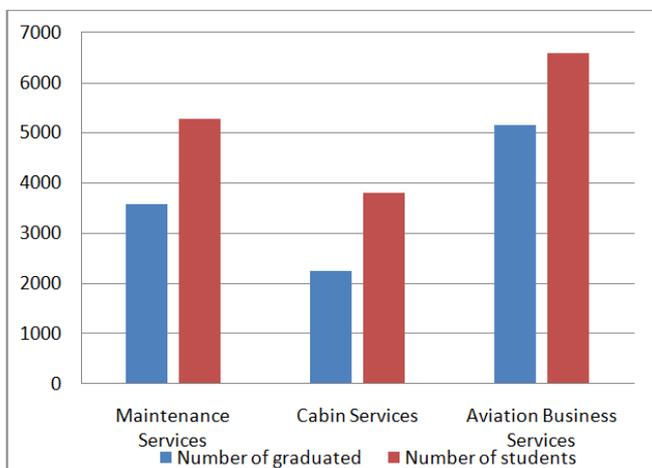
In 80 Higher Education Departments/Programs total number of students who answered the survey are 15.700. Students 5.393 4 year degree (bachelor's degree), 10.307 2 years degree (associate degree) department/program training.



**Figure 2. Higher Education Institutions in The Field of Aviation Education Programs/Departments**

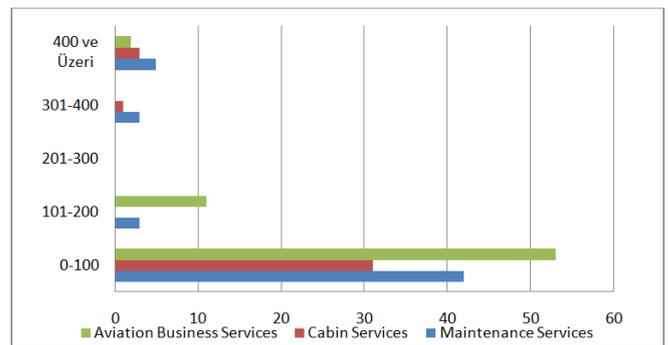


**Figure 3. The Number of Students by Field of Education Distribution**

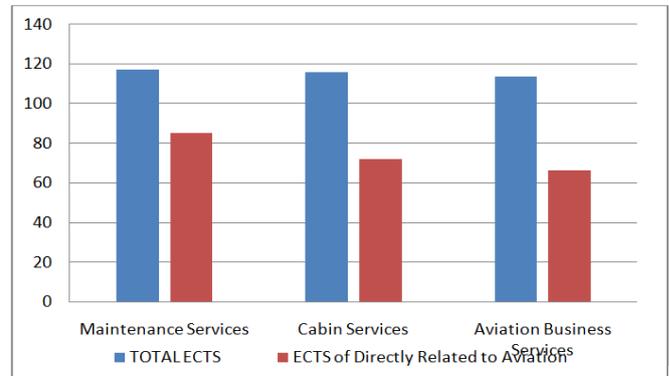


**Figure 4. Ratio of Graduate Students' and Students' Number**

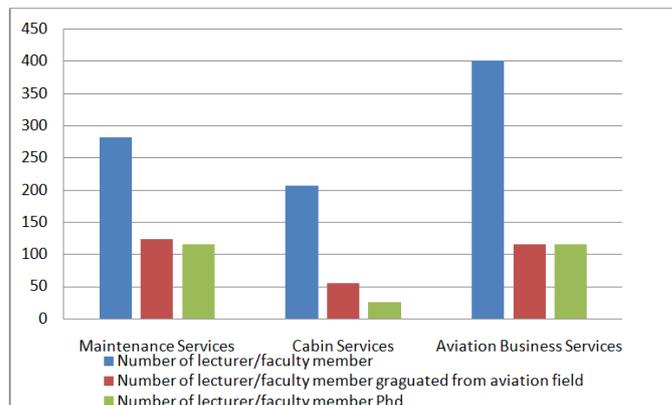
Over 16.000 students in higher education institutions who do not respond to the survey are estimated. A total of 15.700 students is studying in higher education institutions in the field of aviation 8.262 students was accepted and has registered to the sections in the academic year 2015-2016. Over the last few years the increase in the number of students in institutions of higher education required as a result of the growth of the sector, it is observed that the demand for skilled personnel is much higher. From higher education institutions who answered the survey the number of students who graduates the field of aviation is 11.017 from 1986 until today. The number of students in these institutions are 15.700. The number of students who will be graduating next 4 years is more than graduated students in the period of 1986-2016. This meaning is a kind of inflation at the aviation human resource. The increase in the number of higher education's students is higher than the target of aviation human resource demand in Turkey.



**Figure 5. Except Preparations English Course Hours**



**Figure 7. In Associate Degree Level Education Departments Courses Directly Related to Aviation of General Class of Rate**



**Figure 8. The Number of Lecturer**

## Educations Contents

Among those responding to the survey, providing aviation education from higher education institution 50, of them are offering ESL (English as a Second Language) education. Even though, almost all of literature is English in aviation training, lack of the foreign language preparatory education is a quality problem of graduated students which leads to the problem of a decline in employment. Aside from the English preparatory education, students were asked about total of hours of English instruction they received. When the responses obtained are grouped, into aviation business services, cabin services and maintenance, the maximum number of students who take courses in the range of from 0 to 100 hours is higher than others. It is clear that the results of Turkish students are far below the training time necessary for the international language proficiency of English educational institutions. This situation has led to a difficulty in obtaining the language scores of graduates needed for employment. Total number of ECTS credits for the students graduating from aviation higher education and the total number of ECTS credits of directly related to aviation courses were asked and figure 7 was prepared. The ECTS credits of directly related to aviation courses in maintenance services departments/programs is higher than others, because the number of the ECTS credits in licensed maintenance services education is directly related to the standards of European Aviation Safety Agency. Three questions were asked about the lecturer/faculty members of higher education institutions. First question was about the total number of lecturer/faculty members, second was about how many of them are graduated in the aviation field, and third was about how many of them are titled with a Phd. With the obtained data Figure 8 has been prepared

## Conclusion

Turkish aviation sector growth of the average between the years of 2003-2013 is above the average of the world. When this growth caused the need of educated human resources in the aviation sector, 91 departments/programs about aviation training were established in 43 Turkish Higher Education Institutions. However, the growth of departments/programs about aviation training is over the sector average. The number of aviation students studying at higher education institutions in the 2015-2016 academic year is more than graduates in the last 30 years. Even if rapid growth of the quantity on trained undergraduate level human resources in Turkish aviation sector, the quality of human resources is not at a satisfactory level on the dimension of foreign language, lecturer/faculty member and the ECTS credits of directly related to aviation courses. There are only 2 higher education institutions (Anadolu University and Cappadocia vocational college) are licensed by the Directorate General of civil aviation in Turkey in the field of maintenance services education. Educational institutions don't prefer to be licensed by the Directorate General of civil aviation in Turkey, because of restrictions on the instructor standards, restrictions on the number of students in the class, restrictions on contents of the courses, etc.

The students who are graduated from unauthorized maintenance services departments/programs in the higher education have to exceed the barriers in the aviation sector. For example, a maintenance services personnel who graduated from an authorized higher education institution after gaining 3 years' experience can operate an aircraft as Aircraft Technician (CS). The projections for the next 10 years should be used for the calculation of the quota of higher education in the field of aviation. In this direction the students and higher education institutions should be encouraged to continue their education in order to provide training according to the standards. The number of student quotas should be restricted in the higher education institutions which are under the standard level of aviation education. Nevertheless, the number of graduates is still greater than the needs of human resources, the number of student quotas in the higher education should be decreased. The future trends of the Turkish aviation sector should follow to balanced the educated human resource capacity year by year. Turkish Higher Education Council and Turkish General Directorate of Civil Aviation should work simultaneously to find a stable equilibrium supply and demand level of qualified human resource in aviation sector. 850 out of 1950 aircraft maintenance students was provided compulsory internships according to figures from Directorate General of Civil Aviation. More than 50% of the students who are on the field of aviation in Turkish higher institutions couldn't be provided with opportunities about compulsory internships. If quotas of students continue to increase, graduated students will face problem of unemployment in Turkish aviation industry. The needs of the aviation industry can be met with the cooperation of Turkish Directorate General of Civil Aviation and Turkish Higher Education Council.

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