AN ANALYTIC HIERARCHY PROCESS APPLICATION FOR THE BEST DRIVER SELECTION IN UNIVERSITIES

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Abstract

Drivers are responsible for the safety and timely delivery of passengers and materials. Universities employ a certain number of drivers and this responsibility is true for them as well. University drivers are usually sent to different duties. Not only road, weather and traffic conditions but also size and type of vehicles change in different duties. Some drivers are more appropriate for some duties while some others are not. Evaluation of alternatives and assigning the best driver to a specific duty is very important for designating authority in universities. The aim of this study is to search whether the Analytic Hierarchy Process (AHP) is applicable to such an environment. In order to do this, the criteria that are necessary for driver selection have been specified. Two examples, which can be encountered in a university environment and contain two different duties, have been given. Based on those criteria, four alternative drivers have been evaluated for both examples. Priority orders of those four alternative drivers are different for both examples when looking at AHP results.

Keywords: *multicriteria decision making, analytic hierarchy process, managerial decision, services, assignment.*

1. Introduction

Since knowledge society grows faster and expands beyond the borders, individuals in knowledge society need to travel frequently, faster, and safely. Universities play a major role in the movements of intellectual people to contribute this expansion. There are many kinds of equipments and materials need to be moved or transported without any damage in the universities of today's knowledge society as well.

Developing knowledge society needs to make decisions with many criteria more than ever before so that multicriteria decision making becomes very important. Making a decision becomes more complicated and it may take a longer time. In order to get rid of those problems, decision makers need to increase their multicriteria decision making abilities. Additionally, developing standard schemes and templates for the similar decision making situations will contribute to increase the speed of any decision.

One of the multicriteria decision making methods is Analytic Hierarchy Process (AHP). There are many application areas of AHP because it is appropriate for many situations. Some multicriteria decision areas about selection among alternatives include supplier or firm (Roman *et al.*, 2014; Koç and Burhan, 2014; Bruno *et al*. 2012), production process (Sharma and Agrawal, 2009), strategy (Lin and Wu, 2008; Wu *et al.*, 2012), planning (Sayyadi and Awasthi, 2013), etc. There are also some researches in literature related to selection of person or employees by using AHP or fuzzy AHP (Ünal, 2011; Doğan and Önder, 2014; Jabri, 1990; Zolfani and Antucheviciene, 2012; İbicioğlu and Ünal, 2014; Eraslan and Algün, 2005; Özdağoğlu, 2008; Swiercz and Ezzedeen, 2001; Torfi and Rashidi, 2011; Güngör *et al*. 2009). On the other hand, there could not be found any research about driver selection by using AHP in literature. Because of this reason, the aim of this study is to search weather AHP is applicable to prioritization of drivers in terms of different duties in universities and develop a useful multicriteria scheme in order to make similar decisions faster.

This paper is organized as follows: to be able to evaluate appropriateness of drivers to duties, necessary criteria are described in second section. Third section explains basic AHP multicriteria decision-making approach. Fourth section gives two real examples about the best driver selection in a university and fifth section is the conclusion section that summarizes findings with recommendations and gives some possible future directions.

2. Criteria for the Best Driver Selection

2.1. Vehicle to be Driven (V)

Vehicles should be well equipped and serviced prior to departure. Bad conditions of vehicles affect drivers badly while good conditions of vehicles decrease the risk of doing an accident and loosing life or property. Size and age of vehicles are among the contributing factors to young driver crashes (Scott-Parker *et al*., 2015). Type of duty, readiness of vehicle, and even sometimes cost of travel can change the type of vehicle that the driver have to use during travel. For example, some duties need a car while some others require a truck or a bus. Some drivers perform well on some kind of vehicles while some others do not. Therefore, decision makers need to consider type (V_1),

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comfort (V_2) and driving safety (V_3) of the vehicle before assigning a driver to any duty.

2.2. Road to be Used (R)

Duties can take place in the city that the university is already located on or in other cities or destinations away from the university. Because of this reason, long or short distance travels is a major concern for any driver. Sometimes drivers can not be in a good condition to go a long distance since they can be tired, do not have much time or enough experience. Traffic is heavy and complicated on some roads and high ways especially in big cities. Slower speeds, longer trip times and increased queuing occurs in urban traffic network with traffic congestion. Driving is very difficult in traffic congestion because drivers have no freedom of choice with respect to driving decisions, they are forced to follow the leading vehicles, and they can hardly maintain desired speed and adjust lane choice (Wang *et al.*, 2011). Finding an address can be difficult for some drivers if they are not familiar with the city or location that the duty will take place. Roads can be dangerous because of not only their construction materials but also geographical conditions. They can have many curves, holes, and bumps. Road infrastructure is among actors influencing young driver road safety in the study of Scott-Parker *et al*. (2015). On the other hand, climate changes from region to region. Rainy, snowy and icy roads are possible challenges that the drivers must deal with. It has been proven that the choice of speed, reaction time and driving behavior of drivers are negatively affected during adverse weather conditions (Chakrabartya and Guptab, 2013). Some drivers may be much careful in bad weather conditions and dangerous roads. Therefore, decision makers need to consider distance (R_1), traffic density (R_2), weather condition (R_3), and surface quality (R_4) of the road before choosing a driver for any duty.

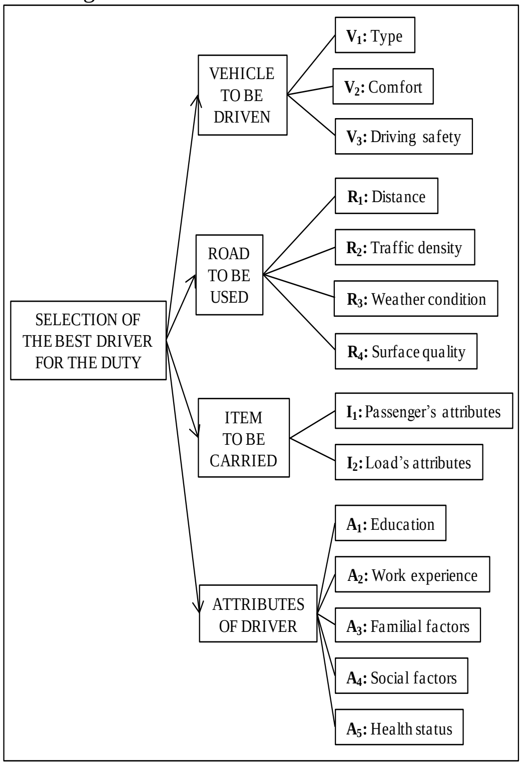
2.3. Item to be Carried (I)

The most important responsibility of drivers is to carry items to destinations without causing any damage, harm, or dissatisfaction. Items include humans, animals, products, devices, materials, and equipments. Passengers can have different kind of attitudes, attributes, and careers. They can be academicians, bureaucrats, students, athletes, managers, workers etc. They can expect different behaviors from drives. For example, bureaucrats or managers may expect dialogue that is more formal while students or workers may be comfortable with informal communications. Some passengers like travel with some music while some others like it within a quiet atmosphere. Some drivers' personalities are more appropriate for traveling with some kind of passengers. Items like devices, equipments or materials have to be carried without any physical damage. Sometimes they need to be handled by the driver and moved to or from the vehicle. They can be heavy, light or fragile. Some drivers are not strong enough to carry them. Therefore, decision makers need to consider passenger's attributes (I_1) and load's attributes (I_2) when choosing the best driver for any duty.

2.4. Attributes of Driver (A)

Personnel attributes of any driver are very important criteria in order to make a good selection for decision makers. Without concerning those attributes, the link that connects drivers with above-mentioned criteria is not established properly and any decision becomes ambiguous. Drivers may come from different backgrounds and living conditions. Their education levels may be different. Higher education helps drivers when communicating with passengers in a formal way. It has been shown that the higher education facilitates to overcome stress as well (Özmutaf, 2006). The drivers with higher education can easily deal with stress. Additionally, work experience is as important as education for being a good driver. In the research of Güngör *et al*. (2009), İbicioğlu and Ünal (2014), Özdağoğlu (2008), Doğan and Önder (2014), and Torfi and Rashidi (2011), work experience and education are included personnel selection criteria. Experienced drivers are familiar with the conditions of vehicles, roads and loads. They can rarely make mistakes. Familial and social factors can affect drivers as well. Married drivers have to thing about their families. Driving after hours can be stressful and wistful for them. Drivers with some social problems like bad living conditions and credit debts can be more pensive and careless. Some criteria such as bringing familial problems to work, being in a healthy condition, having abilities in the social relations with other people are included in ideal performance evaluation forms in the study of Eraslan and Algün (2005). Some kind of illnesses may affect the driving safety as well. For example healthy eyes, ears, and nerve system are very important for driving safely. Therefore, decision makers need to consider education (A_1), work experience (A_2), familial factors (A_3), social factors (A_4), and health status (A_5) of drivers when deciding which driver is more appropriate for the duty. All of the above mentioned criteria and subcriteria are shown with their abbreviations in Figure 1.

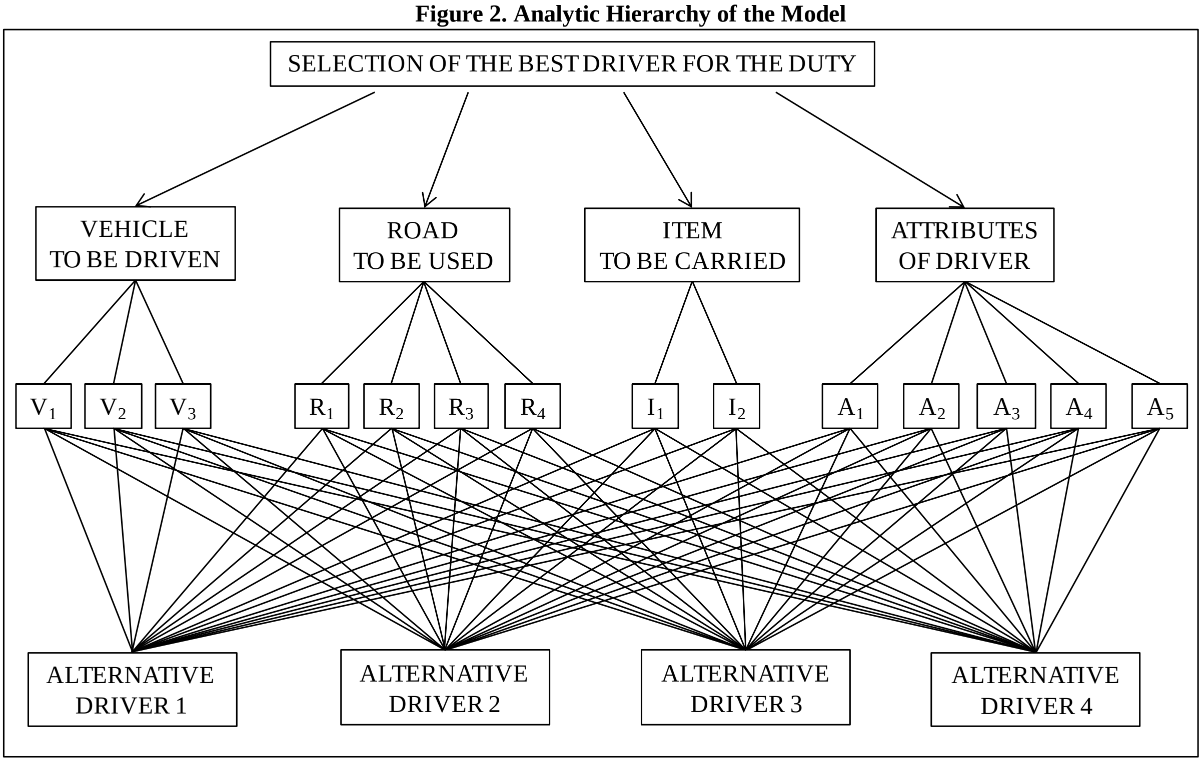
Figure 1. Criteria and Subcriteria for the Model



3. Analytic Hierarchy Process

AHP is one of multicriteria decision-making method that was originally developed by Saaty (1980). The approach allows the decision maker to structure complex problems in the form of a hierarchy or a set of integrated levels. Generally, the hierarchy has at least three levels, namely, the goal, the criteria, and the alternatives (Liberatore et al., 1992). The goal of this study's problem is to select the best driver of a university in terms of a certain duty. The goal is placed on the first level of the hierarchy as shown in Figure 2. The second level of the hierarchy occupies the criteria and subcriteria that are defined in previous section. The alternatives are four drivers in the third level in Figure 2.

Figure 2. Analytic Hierarchy of the Model



AHP is a measurement theory, which is performed by pairwise comparisons, and depends on the opinions of experts for defining priority measures (Ahmed *et al.*, 2006). First, each criterion is compared with others in terms of importance level in AHP. For example, when comparing criteria A_i and A_j, linguistic preference judgments and numerical ratings of them are used as shown in Table 1.

Table 1. The Fundamental Scale (Saaty, 2006)

Intensity of Importance	Definition	Explanation
1	Equal importance	Two activities contribute equally to the objective
3	Moderate importance	Experience and judgement slightly favor one activity over another
5	Strong importance	Experience or judgement strongly favor one activity over another
7	Very strong or demonstrated importance	An activity is favored very strongly over another; its dominance demonstrated in practice
9	Extreme importance	The evidence favoring one activity over another is of the highest possible order of affirmation
2, 4, 6, 8	Intermediate values when compromise is needed	

The number of comparison for n criteria is $m = n(n - 1)/2$. Obtained pairwise comparisons are shown in a single matrix. Priority weights of criteria are calculated by using this matrix. The maximum eigenvalue is found and normalized eigenvector is calculated corresponding to this eigenvalue. The elements of this normalized eigenvector give the weights of criteria.

Having made all the pairwise comparisons, the consistency is determined by using the eigenvalue, λ_{max}, to calculate the consistency index, CI as follows: $CI = (\lambda_{max} - n)/(n - 1)$, where n is the matrix size. Judgment consistency can be checked by taking the consistency ratio (CR) of CI with the appropriate value in Table 2. The CR is acceptable if it does not exceed 0.10. If it is more, the judgment matrix is inconsistent. In order to obtain a consistent matrix, judgments should be reviewed and improved (Al-Harbi, 2001).

Table 2. Average random consistency index (RI) (Saaty, 2006).

n	1	2	3	4	5	6	7	8	9	10
RI	0	0	0.52	0.89	1.11	1.25	1.35	1.40	1.45	1.49

4. An Application on University Drivers

The application took place a public university in Turkey. There is a driver crew consisting of nine drivers in the university. The drivers can be assigned to some different duties within a day. Sometimes the time of a duty can exceed working hours. Although there are nine drivers to choose for a duty, about four of them are usually available and appropriate because of some reasons when selection is a matter of concern.

In order to show that the priority order of drivers can change from duty to duty, AHP is applied on the same four drivers in two different duties. These duties are given as two examples below.

4.1. Example One

The university arranges talk meetings about topics in history and culture once a week. Usually one speaker is brought from another university or institution. The speakers may be academicians, authors, journalists and experts in their fields. The first example is about this kind of event. That week's speaker is a dean of a faculty of science and letters of a university in İstanbul. That speaker will be taken from İstanbul and brought to the university in the other city. That will be the duty of selected driver and the vehicle to be used for that duty will be an automobile. The designating authority, which is usually a senior staff member related to drivers, will decide which one of the four drivers is the most appropriate for this duty. Therefore, this senior staff member has made pairwise comparisons and below matrices have been filled accordingly. CRs are in parentheses at the top of matrices.

Main Criteria (CR = 0.07).

	V	R	I	A	
V	1	5	3	5	0.064
R	1/5	1	1/3	3	0.271
I	1/3	3	1	5	0.172
A	1/5	1/3	1/5	1	0.544

Vehicle to be driven (CR = 0.04).

	V_1	V_2	V_3	
V_1	1	3	5	0.105
V_2	1/3	1	3	0.258
V_3	1/5	1/3	1	0.637

Road to be used (CR = 0.06).

	R_1	R_2	R_3	R_4	
R_1	1	3	3	1	0.127
R_2	1/3	1	3	1	0.223
R_3	1/3	1/3	1	1/3	0.487
R_4	1	1	3	1	0.162

Item to be carried (CR = 0.00).

	I_1	I_2	
I_1	1	1/3	0.750
I_2	3	1	0.250

Attributes of driver (CR = 0.03).

	A_1	A_2	A_3	A_4	A_5	
A_1	1	7	1	3	3	0.061
A_2	1/7	1	1/7	1/3	1/3	0.483
A_3	1	7	1	1/5	1/7	0.048
A_4	1/3	3	5	1	1	0.194
A_5	1/3	3	7	1	1	0.213

Subcriteria Type (CR = 0.04).

	A	B	C	D	
A	1	1/3	1/3	1/5	0.526
B	3	1	1	1	0.158
C	3	1	1	1/3	0.210
D	5	1	3	1	0.107

Comfort (CR = 0.06).

	A	B	C	D	
A	1	1/3	1	1/3	0.368
B	3	1	3	3	0.096
C	1	1/3	1	1/3	0.368
D	3	1/3	3	1	0.169

Driving safety (CR = 0.06).

	A	B	C	D	
A	1	1/3	1	1/3	0.389
B	3	1	3	1	0.130
C	1	1/3	1	1	0.303
D	3	1	1	1	0.178

Distance (CR = 0.07).

	A	B	C	D	
A	1	5	5	1	0.085
B	1/5	1	3	1/3	0.292
C	1/5	1/3	1	1/3	0.512
D	1	3	3	1	0.111

Traffic dencity (CR = 0.06).

	A	B	C	D	
A	1	3	1	3	0.394
B	1/3	1	1/3	1/3	0.096
C	1	3	1	1	0.287
D	1/3	3	1	1	0.223

Weather condition (CR = 0.06).

	A	B	C	D	
A	1	1/5	3	1/5	0.305
B	5	1	5	1	0.078
C	1/3	1/5	1	5	0.538
D	5	1	1/5	1	0.078

Surface quality (CR = 0.07).

	A	B	C	D	
A	1	1/3	1/3	1/5	0.508
B	3	1	3	1/3	0.151
C	3	1/3	1	1/3	0.265
D	5	3	3	1	0.075

Passenger's attributes (CR = 0.06).

	A	B	C	D	
A	1	1/3	1	1/3	0.368
B	3	1	3	1/3	0.169
C	1	1/3	1	1/3	0.368
D	3	3	3	1	0.096

Load's attributes (CR = 0.00).

	A	B	C	D	
A	1	1/3	1	1/3	0.375
B	3	1	3	1	0.125
C	1	1/3	1	1/3	0.375
D	3	1	3	1	0.125

Education (CR = 0.06)

	A	B	C	D		
A	1	1	3	3		0.130
B	1	1	1	3	=	0.178
C	1/3	1	1	1		0.303
D	1/3	1/3	1	1		0.389

Work experience (CR = 0.00).

	A	B	C	D		
A	1	3	3	3		0.225
B	1/3	1	3	3	=	0.125
C	1/3	1/3	1	1		0.375
D	1/3	1/3	1	1		0.375

Familial factors (CR = 0.06).

	A	B	C	D		
A	1	3	1	1		0.162
B	1/3	1	1/3	1/3	=	0.487
C	1	3	1	1/3		0.223
D	1	3	3	1		0.127

Social factors (CR = 0.00).

	A	B	C	D		
A	1	3	1	3		0.125
B	1/3	1	1/3	1	=	0.375
C	1	3	1	3		0.125
D	1/3	1	1/3	1		0.375

Health status (CR = 0.02).

	A	B	C	D		
A	1	3	5	1		0.095
B	1/3	1	3	1/3	=	0.249
C	1/5	1/3	1	1/5		0.560
D	1	3	5	1		0.095

4.2. Example Two

There will be a national folk dances competition in Antalya. Antalya is a city located on south coasts of Turkey. This event will continue six days. The university plans to send its folk dances club, which consists of 40 students, for that event. A bus will be dedicated and two drivers be assigned to this bus for that duty. The same senior staff member in example one has made pairwise comparisons here again and below matrices have been filled accordingly. CRs are in parentheses at the top of matrices.

Main criteria (CR = 0.07).

	V	R	I	A		
V	1	3	5	5		0.064
R	1/3	1	3	5	=	0.172
I	1/5	1/3	1	3		0.271
A	1/5	1/5	1/3	1		0.544

Vehicle to be driven (CR = 0.00).

	V_1	V_2	V_3		
V_1	1	1	7		0.111
V_2	1	1	7	=	0.111
V_3	1/7	1/7	1		0.778

Road to be used (CR = 0.09).

	R_1	R_2	R_3	R_4		
R_1	1	3	5	5		0.102
R_2	1/3	1	7	5	=	0.053
R_3	1/5	1/7	1	3		0.549
R_4	1/5	1/5	1/3	1		0.297

Item to be carried (CR = 0.00).

	I_1	I_2		
I_1	1	1/7	=	0.875
I_2	7	1		0.125

Attributes of driver (CR = 0.09).

	A_1	A_2	A_3	A_4	A_5		
A_1	1	7	3	3	3		0.053
A_2	1/7	1	1/5	1/5	1		0.431
A_3	1/3	5	1	1/3	1	=	0.171
A_4	1/3	5	3	1	5		0.081
A_5	1/3	1	1	1/5	1		0.265

Subcriteria Type (CR = 0.06).

	A	B	C	D		
A	1	1/5	1/5	1/5		0.613
B	5	1	1	3	=	0.089
C	5	1	1	3		0.089
D	5	1/3	1/3	1		0.208

Comfort (CR = 0.07).

	A	B	C	D		
A	1	1/5	1/3	1/5		0.549
B	5	1	3	3	=	0.074
C	3	1/3	1	1/3		0.248
D	5	1/3	3	1		0.129

Driving safety (CR = 0.06).

	A	B	C	D		
A	1	1	1	1/3		0.303
B	1	1	3	1	=	0.178
C	1	1/3	1	1/3		0.389
D	3	1	3	1		0.130

Distance (CR = 0.05).

	A	B	C	D		
A	1	7	5	1		0.069
B	1/7	1	1/3	1/5	=	0.560
C	1/5	3	1	1/5		0.294
D	1	5	5	1		0.077

Traffic density (CR = 0.06).

$$\begin{array}{c|cccc|} & A & B & C & D \\ \hline A & 1 & 1/3 & 1 & 3 \\ B & 3 & 1 & 3 & 3 \\ C & 1 & 1/3 & 1 & 3 \\ D & 1/3 & 1/3 & 1/3 & 1 \end{array} = \begin{bmatrix} 0.223 \\ 0.096 \\ 0.287 \\ 0.394 \end{bmatrix}$$

Weather condition (CR = 0.06).

$$\begin{array}{c|cccc|} & A & B & C & D \\ \hline A & 1 & 1/5 & 3 & 1/5 \\ B & 5 & 1 & 5 & 1 \\ C & 1/3 & 1/5 & 1 & 5 \\ D & 5 & 1 & 1/5 & 1 \end{array} = \begin{bmatrix} 0.305 \\ 0.078 \\ 0.538 \\ 0.078 \end{bmatrix}$$

Surface quality (CR = 0.07).

$$\begin{array}{c|cccc|} & A & B & C & D \\ \hline A & 1 & 1/5 & 1/3 & 1/5 \\ B & 5 & 1 & 5 & 3 \\ C & 3 & 1/5 & 1 & 1/3 \\ D & 5 & 1/3 & 3 & 1 \end{array} = \begin{bmatrix} 0.544 \\ 0.064 \\ 0.271 \\ 0.122 \end{bmatrix}$$

Passenger's attributes (CR = 0.03).

$$\begin{array}{c|cccc|} & A & B & C & D \\ \hline A & 1 & 1/5 & 1/5 & 1/7 \\ B & 5 & 1 & 1 & 1/3 \\ C & 5 & 1 & 1 & 1/3 \\ D & 7 & 3 & 3 & 1 \end{array} = \begin{bmatrix} 0.635 \\ 0.151 \\ 0.151 \\ 0.062 \end{bmatrix}$$

Load's attributes (CR = 0.08).

$$\begin{array}{c|cccc|} & A & B & C & D \\ \hline A & 1 & 1 & 1/3 & 1/5 \\ B & 1 & 1 & 1/5 & 1/3 \\ C & 3 & 5 & 1 & 1/3 \\ D & 5 & 3 & 3 & 1 \end{array} = \begin{bmatrix} 0.377 \\ 0.405 \\ 0.138 \\ 0.080 \end{bmatrix}$$

Education (CR = 0.06).

$$\begin{array}{c|cccc|} & A & B & C & D \\ \hline A & 1 & 1 & 3 & 3 \\ B & 1 & 1 & 1 & 3 \\ C & 1/3 & 1 & 1 & 1 \\ D & 1/3 & 1/3 & 1 & 1 \end{array} = \begin{bmatrix} 0.130 \\ 0.178 \\ 0.303 \\ 0.389 \end{bmatrix}$$

Work experience (CR = 0.05).

$$\begin{array}{c|cccc|} & A & B & C & D \\ \hline A & 1 & 7 & 5 & 5 \\ B & 1/7 & 1 & 1/3 & 1 \\ C & 1/5 & 3 & 1 & 3 \\ D & 1/5 & 1 & 1/3 & 1 \end{array} = \begin{bmatrix} 0.053 \\ 0.402 \\ 0.169 \\ 0.376 \end{bmatrix}$$

Familial factors (CR = 0.06).

$$\begin{array}{c|cccc|} & A & B & C & D \\ \hline A & 1 & 3 & 3 & 1 \\ B & 1/3 & 1 & 1/3 & 1/3 \\ C & 1/3 & 3 & 1 & 1 \\ D & 1 & 3 & 1 & 1 \end{array} = \begin{bmatrix} 0.127 \\ 0.487 \\ 0.223 \\ 0.162 \end{bmatrix}$$

Social factors (CR = 0.04).

$$\begin{array}{c|cccc|} & A & B & C & D \\ \hline A & 1 & 5 & 3 & 5 \\ B & 1/5 & 1 & 1/5 & 1 \\ C & 1/3 & 5 & 1 & 3 \\ D & 1/5 & 1 & 1/3 & 1 \end{array} = \begin{bmatrix} 0.066 \\ 0.434 \\ 0.131 \\ 0.370 \end{bmatrix}$$

Health status (CR = 0.04).

$$\begin{array}{c|cccc|} & A & B & C & D \\ \hline A & 1 & 1 & 5 & 1 \\ B & 1 & 1 & 1/3 & 1/3 \\ C & 1/5 & 3 & 1 & 1/5 \\ D & 1 & 3 & 5 & 1 \end{array} = \begin{bmatrix} 0.133 \\ 0.200 \\ 0.567 \\ 0.100 \end{bmatrix}$$

4.3. Analysis of the Results

As can be seen in pairwise comparison matrices in the sections 4.1 and 4.2, all CRs are below 0.10. These mean that the results are consistent. Table 3 shows AHP results of both examples. Overall CRs are also below 0.10 for two examples as shown at the bottom of Table 3. Therefore, inconsistency is not a matter of concern for both examples. Although the drivers are same for both examples, their priority orders are not equal. Driver C is the most demanded one for the duty in example one while driver B is the most appropriate one for the duty in example two when looking at the alternative section of Table 3. Driver B is the least appropriate one in example one however. Because of two drivers are needed, driver B and C should be chosen for the duty in example two. On the other hand, only driver C should be chosen for the duty in example one.

Since the priority orders are different for different duties, the results show that AHP is applicable for such a driver selection process in universities. The most important problem here is that the frequency of this kind of selection process is quite a few in universities although AHP usage takes time. It is known that making pairwise comparisons and having consistent comparison matrices take time for any decision maker. However, AHP methodology is still beneficial because the same or similar duties repeat in certain periods even though they can be seen different at the beginning. After doing AHP and assigning the most suitable driver to a certain duty, it is also possible to find another duty similar to this one and assign the same driver without any calculation or deeply thinking in the future.

Table 3. AHP results of both examples

	Example 1	Example 2
Main Criteria		
Vehicle to be driven	0.064	0.064
Road to be used	0.271	0.122
Item to be carried	0.122	0.271
Attributes of driver	0.544	0.544
Subcriteria for vehicle to be driven		
Type	0.105	0.111
Comfort	0.258	0.111
Driving safety	0.637	0.778
Subcriteria for road to be used		
Distance	0.127	0.102
Traffic density	0.223	0.053
Weather condition	0.487	0.549
Surface quality	0.162	0.297
Subcriteria for item to be carried		
Passenger's attributes	0.750	0.875
Load's attributes	0.250	0.125
Subcriteria for attributes of driver		
Education	0.061	0.053
Work experience	0.483	0.431
Familial factors	0.048	0.171
Social factors	0.194	0.081
Health status	0.213	0.265
Alternatives		
Driver A	0.225	0.248
Driver B	0.179	0.283
Driver C	0.361	0.264
Driver D	0.235	0.205
Overal consistency ratio	0.05	0.07

5. Conclusions

A driver's license shows only a permit that a driver can use a certain kind of vehicle. It does not explain a driver's abilities or attributes. Some drivers can be appropriate for weather, road and vehicle conditions as a whole while some others can be advantageous for several of those conditions. Recognizing the attributes of any driver is very important for the authority that in charge of assigning the driver for a duty since taking account of those attributes in the assignment process increases the safety of travel. Thus, the risk of doing accident decreases and any conflict or friction between the driver and passengers does not appear.

The most important contribution of this study to literature is the specification of criteria for evaluation of any driver. Those criteria are divided into four main categories such as vehicle to be driven, road to be used, item to be carried, and attributes of driver and those categories are divided into fourteen subcriteria. Illustrating the applicability of AHP in the selection of best university drivers by using those criteria is another contribution of this study to literature. The criteria have been tested by using ordinary AHP method within two examples. It is possible to say that the results are promising. Some possible extensions of this study may be searching the applicability of fuzzy AHP, TOPSIS, and fuzzy TOPSIS methods in future researches.

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