Job Choice with Multi-Criteria Decision Making Approach in a Fuzzy Environment

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ABSTRACT

One of the most important decisions that a fact in individual's life is job choice. Job choice can be defined as opting for the optimum type of entity one can practise his profession among the businesses that exist in a society. In this study, job choice problem is considered as a multi-criteria decision making (MCDM) problem and it has been analyzed by using fuzzy technique for order preference by similarity to ideal solutions method; one of the MCDM methods. 275 surveys have been carried out in total for seven different job choice criteria determined (wage level, job security, location of the business, vested benefits, respectability in the society, the difficulty level of the business, flexible working time opportunity) and four different types of entity choice alternative (public corporation, special purpose entity, foreign capital enterprises, one's own business). As a result of the analysis, it has been found that in general, the preferred job choice criteria of the decision makers (the individuals who participated in the survey) is respectively as follows; the respectability level of the business in the society, wage level, and flexible working time opportunity. Thus, these criteria have been considered more important when compared with other criteria. It has also been determined that the type of entity choices in which the decision makers wish to work are listed respectively as foreign capital enterprises, in one's own business as an enterpreneur, public corporation and lastly special purpose entity. Moreover, the decision makers have been grouped as regards to the types of each entity and the fields they have worked in and similar analysis have been carried out and the results obtained have been evaluated.

Keywords: Fuzzy Technique for Order Preference by Similarity to Ideal Solutions, Job Choice, Multi-Criteria Decision Making
JEL Classifications: C61, J2

1. INTRODUCTION

Occupation is defined as the whole set of regular and organised activities that are based on the knowledge and skills provided by education and that are carried out in order to make a living. Occupations vary in terms of the qualities they require and the opportunities they provide. Job choice is the decision of the individual about which occupation is the most suitable for him. It requires the individual to receive the education during which he will acquire the knowledge and skills that particular future occupation necessitates. Job choice stands for the optimum type of entity that the individual will opt for in order to practise his profession. Job choice is one of the most crucial decisions that affect a person's life (Göktolga and Gökalp, 2012).

Decision making process is a phenomenon that is faced in numerous areas. Vital decisions influence the existence, productivity, and

success of individuals, entities or systems. The proceeding of choosing one of the alternatives is defined as a decision making problem. Use of one's judgements in decision making models has remarkably increased recently (Önüt et al., 2007).

Decision making is a process towards finding the best option among suitable alternatives. There may be more than one criteria in decision making problems in order to compare the alternatives. Multi-criteria decision making (MCDM) methods have an extensive area of usage when alternatives are ranked in terms of more than one criteria (Tilehnoei and Aref, 2013). The methods developed to solve MCDM problems are used in cases there are a vast number of criteria which usually conflict with each other during the decision making process (Santos and Camargo, 2010).

MCDM methods examine the existing alternatives according to the criteria values and reach the best conciliator solution. Thanks

to the MCDM methods, the decision maker can list, categorise, and make a choice among the existing alternatives. The decision makers in MCDM problems make their choices according to the decision variable and alternatives. The options that are going to be listed or categorised or made decision among are named as alternatives for decision makers. The qualities that these alternatives will be evaluated are called decision variable or criteria. The alternatives that decision makers will list, categorise or make a choice among have more than one and conflicting criteria values (Genç and Masca, 2013).

The technique for order preference by similarity to ideal solutions (TOPSIS) method; one of the MCDM methods, focuses on the benefit that the choosen criteria will provide with the result that will be obtained or the cost specifications rather than the relation of criteria with each other. Accordingly the method analyses the obtained results in terms of closeness towards positive ideal solutions or negative ideal solutions. By using these two closeness measures the results of closeness coefficient (CC_i) obtained for alternatives are sequenced highest to the lowest. With this sequencing the best alternative is determined (Idayu and Lazim, 2012; Mahdavi et al., 2008).

In cases the relations between the alternatives and criteria cannot be signified with precise values in MCDM methods, fuzzy values can be used rather than precise values in the resolution of the method. In this study the anlysis has been carried out with fuzzy TOPSIS method in which academic fuzzy values related to the fuzzy TOPSIS method.

According to the literature review, some of the studies that have used fuzzy TOPSIS can be examplified as; the choice of location (Ashrafzadeh et al., 2012; Yong, 2006), the evaluation of service quality (Lee et al., 2012; Kabir and Hasin, 2012; Benitez et al., 2007; Tsaur et al., 2002), the evaluation of suppliers (Tabar and Charkhgard, 2012; Liao and Kao, 2011; Önüt et al., 2009; Küçük and Ecer, 2007), risk evaluation (Yazdani et al., 2012; Madi and Tap, 2011), project selection (Amiri, 2010; Salehi and Tavakkoli-Moghaddam, 2008), evaluation of the advantages of shopping sites (Sun and Lin, 2009), scholarship selection (Wimatsari et al., 2013; Uyun and Riadi, 2011), performance evaluation (Sun, 2010), software selection problem (Goli, 2013; Başlıgil, 2005), plant layout design (Ataei, 2013) and SWOT analysis (Ghorbani et al., 2011; Hatami-Marbini and Saati, 2009).

Job choice studies seek to identify sets of factors that explain one career choice over another and determine respondents' job preferences, reasons for choosing one's current position, and factors that attract employees who are good matches for different work environments (McGraw et al., 2012).

Within this study, the problem of which type of entity the individual who determined his occupation with the choice of profession will practice his occupation (job choice) has been discussed. The process of job choice is considered as a decision making problem since it is defined as a series of choices a candidate makes about the type of entity he wishes to work at (Baş et al., 2011). For the job choice decision making problem four alternatives and seven criteria have been determined. The determined alternatives (types of entities) are public corporation, special purpose entity, foreign capital enterprises, one's own business. The determined criteria are wage level, job security, location of the business, vested benefits, respectability in the society, the difficulty level of the business, flexible working time opportunity.

2. METHODOLOGY

2.1. Fuzzy Set Theory

The term fuzzy set was introduced by Zadeh in 1965. Until the concept of fuzzy sets came into view, binary logic (True-False, Yes-No) had been used while solving problems. According to the binary logic, the variables in between two values remain unvalued since they do not have a precise value. However, in fuzzy sets there are different membership degrees varying between 0 and 1 (Şen, 2011). In other words, fuzzy sets do not have exact margins and there is a gradual transition between being a member and non-member (Küçük and Ecer, 2007).

Within the concept of conventional set an element is either a member of a set or not. On the other hand, according to the fuzzy set logic, the degree of set membership is defined with (μ) and may vary from 0 to 1. The value 0 represents indisputably not belonging to the set while 1 represents precisely belonging to the set (membership). Membership degree indicates how suitable the said element is with the concept represented by the fuzzy set or to what extent it carries the features of the represented set. The membership degree for a continuous variable is signified with a membership function (Küçük and Ecer, 2007; Başlıgil, 2005).

$$\mu_{\tilde{A}}(x): x \rightarrow [0,1] \ or \ 0 \le \mu_{\tilde{A}}(x) \le 1 \tag{1}$$

$\mu_{\tilde{A}}(x) = 0$ shows that x is not a member of $\tilde{A}$ and $\mu_{\tilde{A}}(x) = 1$ indicates that x is a full member of $\tilde{A}$.

Linguistic variables are variables whose values are sentences in spoken language or variables that use words and word groups as numbers. Linguistic variables are used in order to express situations that are complex or ill-defined quantitatively. The main instrument of fuzzy sets is fuzzy numbers (Goli, 2013; Küçük and Ecer, 2007). There are various fuzzy numbers (triangle, trapezoid, bell shaped curve etc.).

In this study trapezoidal fuzzy numbers were used. A fuzzy number can be signified as $n = (n_1, n_2, n_3, n_4)$ and shown as in Figure 1 (Chen et al., 2006).

Membership function is defined as follows:

$$\mu_{\tilde{n}}(x) = \begin{cases} 0, & \\ \dfrac{x - n_1}{n_2 - n_1}, & x < n_1 \\ & n_1 \le x \le n_2 \\ 1, & n_2 \le x \le n_3 \\ \dfrac{x - n_4}{n_3 - n_4} & n_3 \le x \le n_4 \\ & x > n_4 \\ 0 & \end{cases} \tag{2}$$

Figure 1: Trapezoidal fuzzy number (Chen et al., 2006)
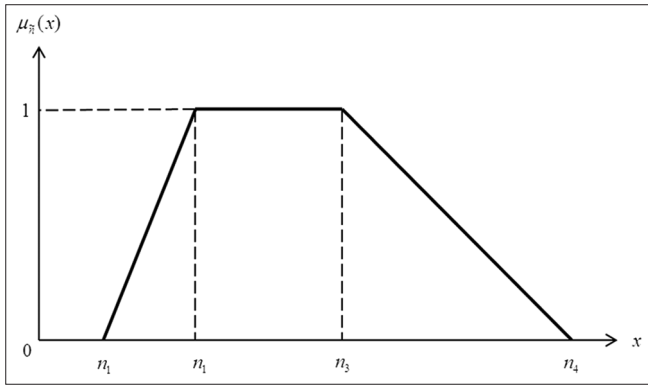
2.2. Fuzzy TOPSIS

TOPSIS; one of the MCDM methods, was suggested by Hwang and Yoon (1981). The most important difference of TOPSIS method; one of the linear weighted techniques, from other linear weighted techniques is that in this method the most appropriate solution that is closest to the positive ideal solution and furthest to the negative ideal solution is determined. TOPSIS method can be used as an alternative method for job choice which is a decision making problem. In real life numeric values might be inadequate while making an evaluation because an individual's thoughts and judgements include choices and often uncertainties. For this reason, TOPSIS method has been developed allowing the use of fuzzy values. The use of fuzzy values in TOPSIS method started with the study carried out by Chen and Hwang in 1992.

In this this part of the study, the algorithm of fuzzy TOPSIS model developed by Chen et al. (2006) will be examined. The decision makers that consist of experts in their fields evaluate the criteria and current alternatives according to the criteria. Within the study, the evaluations have been made via the surveys carried out by individuals who have made their job choice. These evaluations made with linguistic variables have been turned into trapezoidal fuzzy numbers with the help of values given in Tables 1 and 2.

The evaluations made concerning weighted of alternatives and criteria on the basis of decision criteria of the decision maker (the individual who has made a job choice) are respectively $i = 1,2,\ldots,m$ and $j = 1,2,\ldots,n$ while $\tilde{x}_{ijk} = (a_{ijk}, b_{ijk}, c_{ijk}, d_{ijk})$ and $\tilde{w}_{ij} = (w_{jk1}, w_{jk2}, w_{jk3}, w_{jk4})$ are noted and the fuzzy criteria values obtained as a result of decision makers evaluation of alternatives concerning the criteria are indicated as $\tilde{x}_{ij} = (a_{ij}, b_{ij}, c_{ij}, d_{ij})$ and the importance value of decision criteria is shown as $\tilde{w}_j = (w_{j1}, w_{j2}, w_{j3}, w_{j4})$. At this stage, the values are calculated,

$$
\left.
\begin{aligned}
a_{ij} &= \min_{k}\{a_{ijk}\} \\
b_{ij} &= \frac{1}{K}\sum_{k=1}^{K} b_{ijk} \\
c_{ij} &= \frac{1}{K}\sum_{k=1}^{K} c_{ijk} \\
d_{ij} &= \max_{k}\{d_{ijk}\}
\end{aligned}
\right\}
\tag{3}
$$

Table 1: Linguistic variables for decision criteria and trapeziodal fuzzy numeric expressions

Linguistic varibles	Trapeziodal fuzzy numeric expressions
Very high (VH)	(0.8, 0.9, 0.9, 1.0)
High (H)	(0.7, 0.8, 0.8, 0.9)
Medium high (MH)	(0.5, 0.6, 0.7, 0.8)
Medium (M)	(0.4, 0.5, 0.5, 0.6)
Medium low (ML)	(0.2, 0.3, 0.4, 0.5)
Low (L)	(0.1, 0.2, 0.2, 0.3)
Very low (L)	(0.0, 0.1, 0.1, 0.2)

Source: Chen et al. (2006)

Table 2: Linguistic variables for alternatives and trapeziodal fuzzy numeric expressions

Linguistic variables	Trapeziodal fuzzy numeric expressions
Very good (VG)	(8, 9, 9, 10)
Good (G)	(7, 8, 8, 9)
Medium good (MG)	(5, 6, 7, 8)
Fair (F)	(4, 5, 5, 6)
Medium poor (MP)	(2, 3, 4, 5)
Poor (P)	(1, 2, 2, 3)
Very poor (VP)	(0, 1, 1, 2)

Source: Chen et al. (2006)

$$
\left.
\begin{aligned}
w_{j1} &= \min_{k}\{w_{jk1}\} \\
w_{j2} &= \frac{1}{K}\sum_{k=1}^{K} w_{jk2} \\
w_{j3} &= \frac{1}{K}\sum_{k=1}^{K} w_{jk3} \\
w_{j4} &= \max_{k}\{w_{jk4}\}
\end{aligned}
\right\}
\tag{4}
$$

By using the equations above.

The decision problem is shown in the matrix form as follows:

$$
\tilde{D} =
\begin{bmatrix}
\tilde{x}_{11} & \tilde{x}_{12} & \ldots & \tilde{x}_{1n} \\
\tilde{x}_{21} & \tilde{x}_{22} & \ldots & \tilde{x}_{2n} \\
\ldots & \ldots & \ldots & \ldots \\
\tilde{x}_{m1} & \tilde{x}_{m2} & \ldots & \tilde{x}_{mn}
\end{bmatrix},
\quad
\tilde{W} = \begin{bmatrix} \tilde{w}_1 & \tilde{w}_2 & \tilde{w}_3 & \tilde{w}_4 \end{bmatrix}
\tag{5}
$$

Here $\tilde{x}_{ij}$ and $\tilde{w}_j$ are the trapezoid fuzzy numbers, while $\tilde{D}$ represents fuzzy decision matrix, and $\tilde{W}$ indicates fuzzy weighted vector. The fuzzy decision matrix is normalised with the Equation (7) in case of utility maximisation and with the Equation (8) in case of cost minimisation. The normalised fuzzy decision matrix ($\tilde{R}$);

$$
\tilde{R} = \left[\tilde{r}_{ij}\right]_{m \times n}
\tag{6}
$$

Here B indicates utility criteria, while C indicates cost criteria,

$$
\tilde{r}_{ij} = \left(\frac{a_{ij}}{d_j^*}, \frac{b_{ij}}{d_j^*}, \frac{c_{ij}}{d_j^*}, \frac{d_{ij}}{d_j^*}\right), \quad d_j^* = \max_{i} d_{ij}, \quad j \in B
\tag{7}
$$

$$
\tilde{r}_{ij} = \left(\frac{a_j^-}{d_{ij}}, \frac{a_j^-}{c_{ij}}, \frac{a_j^-}{b_{ij}}, \frac{a_j^-}{a_{ij}}\right), \quad a_j^- = \min_{i} a_{ij}, \quad j \in C
\tag{8}
$$

And calculations are made accordingly. Since each decision criteria can have different importance measures, weighted normalised fuzzy decision matrix $(\tilde{V})$ should be calculated. Fuzzy decision matrix is indicated as;

$$\tilde{V} = \left[v_{ij}\right]_{m \times n} \quad i = 1, 2, ..., m; \quad j = 1, 2, ..., n \tag{9}$$

Here it is calculated with the equation, $\tilde{v}_{ij} = \tilde{r}_{ij} \times \tilde{w}_j$.

After the weighted normalised fuzzy decision matrix is calculated fuzzy positive ideal solution (A^*) and fuzzy negative ideal solution (A^-) are determined as follows:

$$A^* = \left(\tilde{v}_1^*, \tilde{v}_2^*, ..., \tilde{v}_n^*\right) \tag{10}$$

$$A^- = \left(\tilde{v}_1^-, \tilde{v}_2^-, ..., \tilde{v}_n^-\right) \tag{11}$$

Here $i = 1, 2, ..., m$ and $j = 1, 2, ..., n$ while $\tilde{v}_j^* = \max\{v_{ij4}\}$ and $\tilde{v}_j^- = \min\{v_{ij1}\}$.

The distance of each alternative from (A^*) and (A^-) can be calculated as follows:

$$d_i^* = \sum_{j=1}^{n} d_v\left(\tilde{v}_{ij}, \tilde{v}_j^*\right), \quad i = 1, 2, ..., m \tag{12}$$

$$d_i^- = \sum_{j=1}^{n} d_v\left(\tilde{v}_{ij}, \tilde{v}_j^-\right), \quad i = 1, 2, ..., m \tag{13}$$

Here $i = 1, 2, ..., m$ and $j = 1, 2, ..., n$ indicate the distance between two trapezoid fuzzy number such as $d_v(.,.)$ $m = (m_1, m_2, m_3, m_4)$ ve $n = (n_1, n_2, n_3, n_4)$ and this can be calculated with the Equation (14).

$$d_v(\tilde{m}, \tilde{n}) = \sqrt{\frac{1}{4}\left[\left(m_1 - n_1\right)^2 + \left(m_2 - n_2\right)^2 + \left(m_3 - n_3\right)^2 + \left(m_4 - n_4\right)^2\right]} \tag{14}$$

After the distances are calculated, CC_i is figured up in order to determine the sequence of alternatives. CC_i is calculated with the following Equation (15),

$$CC_i = \frac{d_i^-}{d_i^* + d_i^-}, \quad i = 1, 2, ..., m \tag{15}$$

and the alternatives are sequenced from the highest to the lowest according to the CC_i (Ataei, 2013; Liao and Kao, 2011; Santos and Camargo, 2010; Tsaur et al., 2002).

3. APPLICATION

3.1. The Goal and Scope of the Study
In this study, job choice problem is considered as a MCDM problem since it involves alternatives and depends on more

than one criteria and it is analysed with fuzzy TOPSIS method which is one of the MCDM methods. The literature review has been scanned concerning the type of entity worked in and job choice decision criteria and the determinations were made after consulting the academicians who are experts in this particular area. Four different types of entity (Table 3) alternatives and seven different decision criteria (Table 4) have been determined in order these alternatives to be evaluated. After the alternatives and criteria were determined, a survey form has been prepared to help determine the importance measures of the criteria according to the alternatives. The survey was conducted on decision makers (workers) and the proper 275 survey forms were included to the analysis. The survey form consists of two parts. In the first part, demographic information such as type of entity the person works for, work experience, sex were asked and in the second part the individual was asked to evaluate the criteria that are determined for the job choice according to the their preference of entity.

The decision makers have evaluated the alternatives and decision criteria by using the linguistic variables given in Tables 1 and 2.

3.2. Results
3.2.1. General Results
The importance measures of the criteria calculated according to the answers given by all of the respondents of the survey is shown in Table 5. The decision makers (the individuals who participated in the survey) have evaluated the alternatively determined types of entities according to the decision criteria by using the linguistic variables in Table 2. Following the evaluation the linguistic variables have been converted to trapezoidal fuzzy numbers.

When Table 5 is examined, it can be inferred that the decision makers believe that the most important decision criteria is wage and job security. The criteria; the location of the workplace, vested benefits and respectaility in the society follow them and are almost equal to each other. These criteria are followed by flexible working time and finally the level of difficulty of the job.

In the next stage, the fuzzy decision matrix, normalised fuzzy decision matrix and weighted normalised decision matrix have been acquired. After acquiring the matrixes the values of fuzzy

Table 3: Alternatives

Alternatives		Description
A1	Public enterprises	Enterprises whose capital wholly or partially belongs to statutory bodies and/or is operated by statutory bodies
A2	Special purpose entity	Entities whose capital wholly or partially belongs to private persons
A3	Foreign capital enterprises	Foreign capital enterprises are enterprises that real persons and statutory bodies in Turkey can establish only with foreign capital or domestic partners
A4	One's own business (enterpreneur)	An entrepreneur is a person who sets up a business by investing capital in fields like trade and industry and takes the risk over for profit

Table 4: Decision criteria

Criteria	Description
Wage level	Wage is defined as the amount employee receives in return of the mental and physical efforts or both, in order to perform a duty
Job security	It is generally expressed as the protection of the right to work. The basic foundation of the emergence of job security is to prevent others from taking the right of the worker to work who earns his and his family's keep laboriously and to protect the worker against unjust acts that might be done by the employer
The location of the business	It includes the evaluation of the effects of the arrival time of the worker to his preferred workplace and whether the conditions of the environment around the workplace is suitable or not
Vested benefits	The vested benefits and payments are made under the names of travel expenses, representation allowance, overtime pay, monthly family allowance, risk allowance, and they cover the financial burdens that are undertaken by the employees which are monthly paid and the ones who work under different conditions
Respectability in the society	This expresses the importance of the perception of the job he does in the society from the point of the employee
The level of difficulty of the job	This represents how hard or difficult it is to do the given duty to the employee. In other words, whether the level of effort spent is too high or not
Flexible working time possibility	This points out that there should be an open and independent system which provides the employees and employers with different arrangements in accordance with the needs in terms of working hours and conditions by using legal instruments such as union aggrement or contract of service rather than making the employee work within the rules whose commencement and termination dates are pre-set within the law

positive ideal solution (A*) and fuzzy negative ideal solution (A⁻) were determined.

In order to calculate the distances from A* and A⁻ (d_i^* and d_i^- values) the Equations (12) and (13) were used respectively.

The CC_i which have values that will be used in evaluating the alternatives is calculated with Equation (15) and the obtained CC_i and the sequence of alternatives can be seen on Table 6.

When Table 7 is examined, it can be observed that the decision makers (the individuals who participated in the survey) opted for foreign capital enterprises or their own business. It can further be monitored that foreign capital enterprises and one's own business alternatives are close to public enterprises and special purpose entity alternatives. If we make a general sequence, the alternatives are ranked as follows,

Foreign Capital Enterprises >> One's Own Business >> Public Enterprises >> Special Purpose Entity

Working in a special purpose entity ranking as the last in the preferance sequence is quite outstanding.

When the weights that survey respondents gave to the criteria and alternatives are evaluated all together the weighted effects of criteria on job choice are calculated as in Table 8.

As is known each job has a value and status in the society. The respectability of a job in the society is the need for that particular job in that society, the level of life standards it provides and the prestige of that job. The term social status defines the position and the place of a person in a society. Since the survey respondents have attached more importance to the respectability in the society rather than the personal rights such as the vested benefits, job security and the location of the business, it is obvious that they think how they are perceived by the society is more important than the gainings of their work.

Table 5: The importance measures of the criteria

Criteria	Fuzzy importance measure
Wage level	(0.00, 0.77, 0.78, 1.00)
Job security	(0.00, 0.76, 0.77, 1.00)
The location of the business	(0.00, 0.67, 0.70, 1.00)
Vested benefits	(0.00, 0.66, 0.69, 1.00)
Respectability in the society	(0.00, 0.67, 0.70, 1.00)
The level of difficulty of the job	(0.00, 0.49, 0.53, 1.00)
Flexible working time possibility	(0.00, 0.57, 0.61, 1.00)

Table 6: The CC_i of the alternatives and their sequence rank

Alternative	CC_i	Sequence rank
Public enterprises	0.5014	3
Special purpose entity	0.5005	4
Foreign capital enterprises	0.5219	1
One's own business	0.5198	2

CC_i: Closeness coefficient

Table 7: Distances from A* and A−

Alternative	d_i^*	d_i^-
Public enterprises	4.2250	4.2486
Special purpose entity	4.2440	4.2526
Foreign capital enterprises	4.1002	4.4762
One's own business	4.1101	4.4488

Table 8: General weights of the criteria

Name of the criteria	Weight	Sequence rank
Wage level	0.5270	2
Job security	0.4404	7
The location of the business	0.4510	6
Vested benefits	0.4623	4
Respectability in the society	0.5563	1
The difficulty level of the job	0.4540	5
Flexible working time possibility	0.4890	3

3.2.2. According to the Types of Entity

In the further phase of the study, a seperate analysis according to the type of entity in which the respondents of the survey work has

been carried out. Among the survey respondents 75 of them work in a public enterprise while 86 work in special purpose entity, 68 in foreign capital enterprise and 46 in their own business.

CC_i which has values that will be used for the evaluation of the seperate alternatives for employees who work in each type of entity, has been calculated with the Equation (15) and the sequence of the obtained CC_i and alternatives is given in Table 9.

When Table 9 is examined, it can be seen that the workers who do not work in a public enterprise wish to work in a foreign capital enterprise most whereas the workers who work in a public enterprise wish to work in their own business most.

When Table 10 is analysed, it is observed that the top criteria that is considered important by the workers who work at public enterprises, special purpose entities and their own business is the level of respectability in public criteria. The top criteria that is considered important by the workers who work at foreign capital enterprises is flexible working opportunity criteria. Besides for the same group of workers the level of respectability in public criteria comes the second.

It is also perceived that for the workers who work in special purpose entities, foreign capital enterprises and their own business, the least important criteria is job security criteria. For the ones who work in public enterprises, the least important criteria is vested benefits criteria.

Considering these findings, it can be concluded that the most and lest important criteria according to types of entities show similarities. However, other criteria present differences according to different sectors.

Moreover, the ones who work in special purpose entities attach the most importance to the wage criteria while the ones ho work in public enterprises attach the same criteria the least importance. It can further be observed that the ones who attach job security the most importance are the ones who work in public enterprises.

3.2.3. According to the area of activity of the entity
At later stages of this study, seperate analysis has been carried out according to the area of activity and fields of the entities in which

the survey respondents work in (information technologies [33], law [28], education [27], industry [41], media [19], finance [34], food [22], tourism [23], construction [23] and health [25]).

When Table 11 is analysed, it can be observed that the top choice of type of entity for the workers who work in information technologies, law, education, media, tourism and construction, is foreign capital enterprise. On the other hand, the top choice for the workers who work in industry, finance, and food fields, is their own business. It can further be examined that public enterprise being the top choice is only relevant for the workers of health field.

When Table 12 is examined, it can be observed that the most important criteria is the level of respectability in the society criteria for the workers who work in the fields; information technologies, law, education, finance and food. For the workers of industry field the top criteria is the wage level criteria while the level of importance attached to the respectability in the society criteria is close to the wage level criteria. The top criteria for media, tourism and constuction fields is the level of difficulty of the job. It has also been discovered that the workers who work in health field attach the most importance to flexible working time opportunity criteria.

On the other hand, the least important criteria for the workers of information technologies, law, industry, food and construction fields is the job security criteria. In addition to this, the least important criteria for the workers of education, media, finance, and tourism is the vested benefits criteria. The level of difficulty of the job is considered the least important for the workers who work in the health field.

4. CONCLUSION

When the results of the analysis carried out during the study are investigated, the findings are as follows:
- The most crucial two criteria that affects job choice are respectively; the respectability of the job in the society and wage level criteria. The criteria; flexible working time opportunity, vested benefits and the level of difficulty of the job, follow the aforesaid top two criteria. Finally the last two

Table 9: The closeess coefficient of the alternatives and sequence rank

The type of entity worked in	Public	Special	Foreign	Own	Sequence rank
Public enterprise	0.5287	0.5635	0.5788	0.5893	Own>Foreign>Special>Public
Special purposes Entity	0.5006	0.5001	0.5231	0.5197	Foreign>Own>Public>Special
Foreign capital enterprise	0.4726	0.4484	0.4889	0.4798	Foreign>Own>Public>Special
Own busines	0.4609	0.5479	0.5634	0.5363	Foreign>>Special>Own>Public
General	0.5014	0.5005	0.5219	0,5198	Foreign>Own>Public>Special

Table 10: General weights of the criteria

The type of entity worked in	Wage	Security	Location	Vested benefits	Respectability	Difficulty	Flexible working
Public enterprise	0.4624	0.4709	0.3821	0.3006	0.5213	0.4007	0.4565
Special purpose entity	0.5260	0.4349	0.4515	0.4538	0.5555	0.4633	0.4978
Foreign capital enterprise	0.4952	0.4183	0.5014	0.5212	0.5823	0.5476	0.5921
Own business	0.4952	0.4163	0.4424	0.4212	0.5679	0.4864	0.4351
General	0.5270	0.4404	0.4510	0.4623	0.5563	0.4540	0.4890

Table 11: The CC$_i$ of the alternatives and their sequence ranking

Field	Public	Special	Foreign	Enterpreneur	Sequence ranking
IT	0.4919	0.5078	0.5196	0.5084	Foreign>Own>Special>Public
Law	0.4968	0.6111	0.6613	0.5969	Foreign>Special>Own>Public
Education	0.4888	0.4584	0.4891	0.4922	Foreign>Own>Public>Special
Industry	0.4888	0.4799	0.5079	0.5135	Own>Foreign>Public>Special
Media	0.4565	0.5033	0.5176	0.4958	Foreign>Special>Own>Public
Finance	0.5785	0.6088	0.6414	0.6703	Own>Foreign>Special>Public
Food	0.6206	0.6193	0.6668	0.6821	Own>Foreign>Public>Special
Tourism	0.5583	0.5515	0.5819	0.4798	Foreign>Public>Special>Own
Construction	0.4590	0.4940	0.5442	0.5296	Foreign>Own>Special>Public
Health	0.6400	0.5506	0.6284	0.5227	Public>Foreign>Special>Own
General	0.5014	0.5005	0.5219	0,5198	Foreign>Own>Public>Special

CC$_i$: Closeness coefficient

Table 12: General weights of the criteria

Field	Wage	Security	Location	Vested benefits	Respectability	Difficulty	Flexible working
IT	0.5182	0.4193	0.4604	0.4707	0.5595	0.4895	0.4950
Law	0.3956	0.2906	0.3933	0.4202	0.5318	0.3616	0.3961
Education	0.5534	0.4891	0.4788	0.4702	0.5743	0.5084	0.5218
Industry	0.5557	0.4341	0.4789	0.4466	0.5533	0.4865	0.5259
Media	0.5882	0.4115	0.4560	0.3679	0.5465	0.6887	0.5312
Finance	0.3423	0.3480	0.2618	0.2505	0.5180	0.3354	0.4823
Food	0.3402	0.1911	0.3402	0.3023	0.4854	0.4027	0.3718
Tourism	0.5454	0.3862	0.4267	0.3409	0.5045	0.5481	0.4805
Construction	0.5595	0.3767	0.4251	0.4530	0.5153	0.5874	0.5494
Health	0.4729	0.3922	0.4067	0.3074	0.4839	0.3120	0.5018
General	0.5270	0.4404	0.4510	0.4623	0.5563	0.4540	0.4890

criteria are the location of the business and job security criteria and they ae almost of equal importance when compared with each other

- The sequence ranking for the type of entities opted for most by the survey respondents is as follows; foreign capital enterprises, their own business (enterpreneur), public enterprises and special purpose entities. It is also quite remarkable to observe that working in a special purpose entity takes the last place in the choice ranking
- The most favourable type of entity for all workers except for the ones who work in public enterprises is foreign capital enterprise and the workers who work in public enterprises opt for working in their own business
- It has further been examined that the workers who work in the fields law and information technologies both have the same sequence ranking for the entities they want to work at and the most and least important criteria are the same
- Another interesting finding is that special purpose entities are not considered as the most favourable entities that workers wish to work at, among none of the types of entities and none of the fields examined
- Foreign capital enterprises are still the first favourable entities by the employees working at foreign capital enterprises. However, the least favourable type of entities for workers who work at public enterprises and special purpose entities is their own business
- It has also been found out that the criteria that are considered most and least important in terms of type of entities are similar to each other while other criteria show divergencies
- The ones who consider the wage level most important are the workers who work at special purpose entities whereas

the workers at public enterprises attach the least importance to the same criteria

- It has also been observed that workers who work at public entities attach the most importance to job security
- The most important criteria for the employees who work in the fields media, tourism and construction is the level of difficulty of the job criteria
- The most favourable type of entity for the workers of the fields information technologies, law, education, media, tourism and construction is foreign capital enterprises
- It has also been seen that the employees who work in the fields industry, finance and food wish to run their own business
- Only the employees who work in the health field list public entities as their top choice in terms of the type of entity they wish to work at
- The study also shows that the criteria that is considered most important is the level of respectability of the job in the society according to the workers who work in the fields information technologies, law, education, finance and food
- The most favourable criteria for the employees who work in the industry field is the wage level criteria followed closely by the respectability of the job in the society when the importance measure is considered
- The top priority for the workers in the health field is flexible working time opportunities criteria
- The criteria that is considered least important according to the workers working in fields information technologies, law, industry, food and construction is job security criteria
- It has further been pointed out that the least important criteria for the workers in the fields education, media, finance and tourism is vested benefits criteria

- Also the least important criteria for health sector workers is the level of difficulty of the job.

Unhappiness of the worker in his job choice may also affect his job satisfaction, performance and social life. For this reason, it is a must for individuals to evaluate the alternatives carefully according to certain criteria while choosing a job. Job choice can be defined as a MCDM problem which provides the opportunity to sequence ranking in accordance with more than one criteria. In this study, a literature review has been carried out for job choice decision making problem and discussing with the academicians certain type of entity alternatives and choice criteria have been determined and examined.

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