

Strategic Assessment based on 7S McKinsey Model for a Business by Using Analytic Network Process (ANP)

İsmail Gökdeniz

Kırıkkale University, Faculty of Economics and Administrative Sciences, Department of Business Administration, 71450, Kırıkkale, Turkey, Email: isgokdeniz@yahoo.com

Cihat Kartal

Kırıkkale University, Faculty of Economics and Administrative Sciences, Department of Business Administration, 71450, Kırıkkale, Turkey, Email: dr_cihat_kartal@yahoo.com

Kıvanç Kömürcü

Corresponding Author

Kırıkkale University, Faculty of Economics and Administrative Sciences, Department of Business Administration, 71450, Kırıkkale, Turkey, Email: kivkmrc@hotmail.com

DOI: 10.6007/IJARBSS/v7-i6/2967 URL: <http://dx.doi.org/10.6007/IJARBSS/v7-i6/2967>

Abstract

In this study, the strategic assessment of a business organization was conducted within the context of 7S McKinsey model. The proposed model in the study includes the factors of strategy, structure, style, systems and procedures, skills, shared values, and staffs. The interaction between the factors of the 7S model, which is grounded in the business assessment, was taken into consideration in the study. Therefore, the Analytic Network Process (ANP) technique, which enables to analyze the model's this interactional and relational situation, was used. It has been understood that the assessment of a business organization in the frame of the 7S model could be done with the model which was proposed in the conclusion of the study. Along with this, the current performance level of each sub-factor in the 7S model could be answered in consequence of analysis. These results of the study give an idea about to what extent a business organization has access to their goals, in the context of the 7S model.

Keywords: 7S Model, Strategic assessment, Analytic Network Process

Introduction

Businesses' productive use of their resources and abilities is a primary need to continue their existences. The researches refer to the businesses' insurance of these criterions has been subject to various theories and approaches with scientific management approach until today. One of these approaches is the strategic management approach. Strategic approach mentions about the business' goal of maintaining its existence in terms of business' activities in long term. In the strategic management approach, activities of the business are only assessed particularly within the scope of internal dynamics of business. Meanwhile, it has been an

analysis subject based on near and far environment (Eren, 2002; Dinçer, 2004). It has been understood that strategic assessment is done by different approaches and techniques in the literature review. The main reason of this is the variety of factors and qualities that are affecting business' strategic success (Kömürcü, 2016).

One of the approaches used in the businesses' strategic assessment process is the 7S McKinsey model. The model is the product of excellence approach that Peters and Waterman explained in their book, "In search of excellence". Peter and Waterman claimed that there exist seven organizational factors which are separating excellent businesses from others. These are classified as strategy, structure, style, systems and procedures, skills, shared values and staffs (Eren, 2002:179). The main argument of the 7S McKinsey model is that the success of a business depends on interrelated seven factors. The other distinctive argument of the 7S model is that the process of strategic management is not only made up of creating strategies but also considering the other factors expressed in the model. Thus, it is claimed that business will succeed with the coherent cooperation of the strategy factor and other factors (Ülgen and Mirze, 2007:342).

When the 7S McKinsey model has been examined analytically, it is seen that the development and success of the business depend on the factors in the model. For this reason, it has been expressed that interrelation and interaction of the factors with each other need to be evaluated in a holistic system (Ülgen and Mirze, 2007:342). However, Dinçer (2004:306-308) signed that business' relation alignment between the internal and external environment in the 7S McKinsey model is the function of strategic assessment.

The relationship, which is qualified as strategic alignment, is assessed in two forms. While the first one is the alignment between the near and far environment, the other one is categorized as the alignment between the various units and components. The 7S model enables systems, which determined strategy's facilitation of effective appliance, to be created (Dinçer, 2004). In addition to the functions and features of this model mentioned above, it is also used as an approach in business assessment. Each variable in the model is compared with the branch of industry's required report that business is engaged in and the report of business. Their strong and weak sides are detected. Another comparison method is the comparison of the report of business with the factors in the model according to the firms which are known as excellent and leader in the industrial sector that the business is engaged in (Eren, 2002).

In the literature, it has been seen that the 7S McKinsey model has been used in different contexts and goals. Grant (2008) used the McKinsey 7S model to constitute a productive ward round. In the study, the items which are prepared about the components of the 7S model and the views of the physician in the South East of England were assigned. Each view of the doctors about the components was given in percentages as an analysis. However, Hanafizadeh and Ravasan (2011) examined the implementation of enterprise resource planning system in their study. In the study, a new assessment framework was suggested, within the context of 7S model, in the goal of evaluating the assessing readiness of organization. Confirmatory factor analysis was used in the study. The proposed framework was applied to two Iranian banks. Singh (2013) examined the importance of transformational leadership's role on the solutions about the communication problems that exist in the businesses which operate in the private

sector. The data of study are acquired from the scale which consists of open-ended questions about the communication flow and communication process. According to these answers, every component of the 7S model was debated. Chen and Liu (2010) made the operational risk management for commercial banks a study topic on the basis of the 7S model. In another study (Ravanfar, 2015), organizational framework of a free zone in an island was researched in the context of the 7S model. The data of the study were acquired with a scale. The proposed hypotheses were tested in the study. Guenzi and Storbacka (2015) used the 7S model to assign organizational issues in the implementation of key account management with details in their study. Yeandle et al. (2015), researched the service setting towards the people, who suffer from the personality disorder, with the 7S model in terms of organizational effectiveness. Palatkova (2011) used the 7S model by analyzing the soft and hard factors' role in the marketing strategy implementation. Alshaher (2013) administered the e-learning system assessment by using the 7S model in his study. Yet enough explanations couldn't be found in the study, it has been seen that classification of the scale was done by definite numbers. However, the meaning of the fuzzy logic assessment could not have been expressed after the data collection with definite numbers. Shiri et al. (2014), in his study, carried out the assessment of ERP implementing readiness factors by using the fuzzy AHP and TOPSIS techniques with the 7S model.

Despite the interesting quality of the 7S McKinsey model's solutions for the strategic problems, it has been understood that it does not have an accumulation of knowledge for its functionality in the context of business assessment. The first question must be answered in the process of using the 7S McKinsey model on a business as an excellence approach is the problem of measurement of the structure, strategy, style, systems and procedures, skills, shared values, and staffs which are included in the model. A second problem is an assessment problem resulted from that each factor in the model may not consist of one factor, they have a structure which consists of more than one sub-factor. One of the problems in the process of implementing the model is the difficulty of measurement due to qualitative variables in the model. Another problem is the need of a measurement approach that allows assessing the 7S factors as a whole. Because the meaningfulness of the model can only be expressed by assessing seven factors together that the model involves. For this reason, the assessment approach needs to be integrated that can assess all factors the model covers. Another problem what must be paid attention as stated in the literature is the considering of interaction between the seven factors with each other and especially with the shared values. Along with the importance of each factor's role and level, the possibility of change in the factors as a consequence of their interaction has been expressed in the theoretical framework of the model. Based upon the information given above, the main goal of this study is to analyze the 7S McKinsey model's implementation constraints on a business assessment.

The rest of the sections of the study are designed as the following: The method was described in the second section. The third section includes the results of proposed model's implementation. In the fourth section, the conclusions and propositions were given about the model which was proposed in the study.

2. Method

In the solutions of the problems expressed in this study's intro, the Analytic Network Process (ANP) technique, which is one of the multi-criteria decision-making techniques that is coherent with the multidimensional pattern of the 7S model, was used. The ANP technique is an approach that was developed from the Analytic Hierarchy Process (AHP) (Saaty, 1980), which considers the interaction between distinct factors. The primary characteristic of AHP is paying attention to qualitative and quantitative elements together. There exists a range of attributes related to the AHP technique's mathematical process (Saaty, 1986; Saaty, 1991). The first characteristic of these is reciprocity. If an A matrix's criterion's (i) size of comparison to another criterion (j) is x ($a_{ij}=x$), it expresses $a_{ji}=\frac{1}{x}$. In this method, if the pairwise comparison value of criterion i and criterion j is a_{ij} ; the comparison value of criterion j and criterion i is a_{ji} . In AHP, the a_{ji} value is obtained from the equivalence $a_{ji}=1/a_{ij}$. Another feature of AHP is that similar elements are comparable. In AHP, the judges of the decision maker are transformed into matrixes with pairwise comparisons. The size of the a_{ij} values is limited to the scale values developed by Saaty (1980) (Table 1). Another important feature of the AHP is the uncorrelatedness between criterions.

Table 1. Importance Scale Value and Definitions

a_{ij}	Definition	Explanation
1	Equally important	The two options are equally important.
3	Barely important	Experience and judgment make a criterion overcome another criterion a little.
5	Strongly important	Experience and judgment make a criterion overcome another criterion quite.
7	Very strongly important	A criterion is assumed to overcome another criterion.
9	Definitely important	The proof which shows the superiority of a criterion to another has a great reliability.
2,4,6,8	Intermediate values	The values between two sequential numbers to be used when an agreement is needed.

The Analytic Network Process method, on the other hand, was developed by Saaty (1996) as an extension of the Analytic Hierarchy Process. The AHP doesn't consider the relation between the elements of the decision-making problems (Saaty, 1980). The ANP, on the other hand, has a structure which considers the bilateral interrelation and the interaction between the components that create a decision problem. In the literature, it has been seen that the ANP technique has been explained in different ways. In one of these approaches, it was expressed that ANP includes four main steps (Chung et al., 2005; Yüksel and Dağdeviren, 2007): In the first step, the structure of the model is being created. Within the second step, the pairwise comparison matrixes are determined. In the pairwise comparison, the determiners do the comparison by using Saaty's 1-9 scale like in AHP. The components' local priority is calculated

with the solution of the $A \times w = \lambda_{max} \times w$ equation. A stands for the pairwise comparison matrix, w for the eigenvector and λ_{max} for the eigenvalue. Another step in the ANP is the creation of supermatrix. In the last step, the best alternative within the hierarchy is chosen. In the literature, it has been seen that the ANP is used at different fields in several studies. Therefore, the frame and the main argument of the ANP was explained in this study. Along with this, the methodology of the multi-criteria studies (Yüksel and Dağdeviren, 2007; Yüksel, 2012; Yüksel, 2015) were followed in this study within the literature.

3. Results

The implementation related to the 7S Model which was considered at the introduction of this study is provided in this section. The study's analysis unit is a business organization that operates in the transportation sector. The study's data has been identified towards the opinions of an expertise group which consists of the business' determiners and the study's writers. The implementation of the study consists of the steps given below:

Step 1. In this study, the 7S model's sub-factors are determined towards the expertise group's opinions. These sub-factors are as the following:

- Strategy (SY)
 - Human resource strategy (SY1)
 - Competition strategy (SY2)
 - Transportation strategy (SY3)
- Structure (SE)
 - Functional department (SE1)
 - Communication (SE2)
 - Control (SE3)
- Style (SL)
 - Leadership (SL1)
 - Administration (SL2)
- Systems (SS)
 - Internal system (SS1)
 - External system (SS2)
 - Information system (SS3)
- Skills (SK)
 - Qualified human resource (SK1)
 - Core competence (SK2)
- Shared values (SV)
 - Mission (SV1)
 - Vision (SV2)
 - Values (SV3)
- Staffs (SF)
 - Human resource planning (SF1)
 - Motivation (SF2)
 - Performance assessment (SF3)

Training and development (SF4)

In the introduction, it has been expressed that the interaction between the factors of the 7S Model has to be considered. The pattern of the inner dependence that has been established between the factors according to the views of the expertise group is given in Figure 1. In this pattern, it is understood that the shared values affect all factors in the 7S model. Along with this, it has been assumed that the staff, style, skills and strategy factors affect the shared values factor.

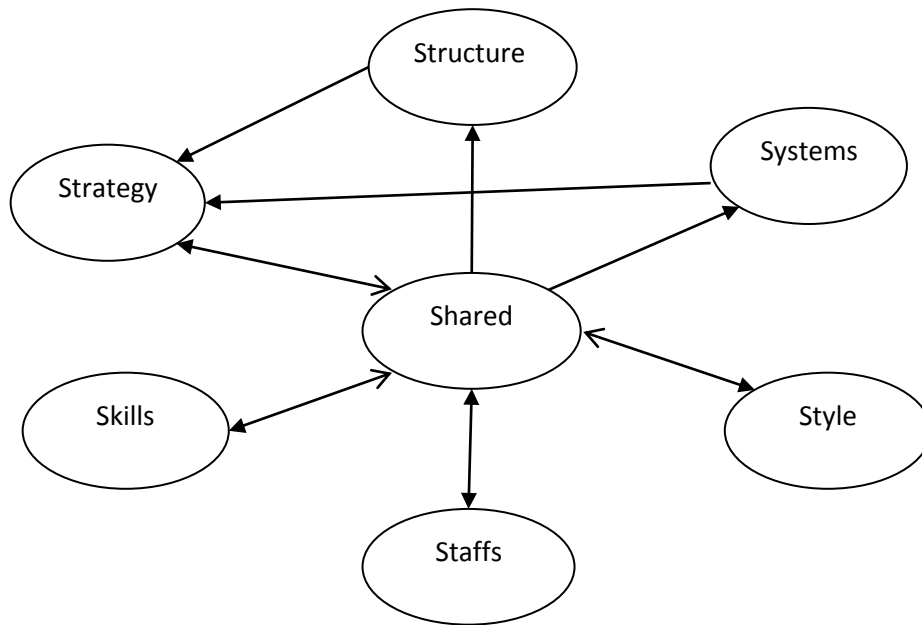


Figure 1. The inner dependence for 7S factors

Step 2. In the study, the weights have been calculated on the basis of the uncorrelatedness between the factors in the 7S Model. In this study, the pairwise comparison matrix's weights and the consistency ratio has been calculated with the Expert Choice program. For this reason, the 7S model's factors have been assessed in terms of the 1-9 scale (Table 1) within the scope of the expertise group, and the weights have been calculated with AHP (Table 2) according to these assessments. The matrix's consistency ratio (CR) 0.07 has been found acceptable according to the assumptions of the AHP.

Table 2. Pairwise comparison matrix according to independent of 7S factors

	SY	SE	SL	SS	SK	SV	SF	Weights
Strategy (SY)	1	2	2	3	1	1	1	0.198
Structure (SE)		1	1	2	2	1	2	0.164
Style (SL)			1	3	1	2	1	0.160
Systems (SS)				1	1	1	1	0.090
Skills (SK)					1	2	2	0.152
Shared values (SV)						1	3	0.137
Staffs (SF)							1	0.099

Step 3. The inner dependence matrix was created by taking account of the relation between the 7S Model factors (Figure 1). In this step, the weights of the 7S factors which includes the inner dependence have been calculated. In Table 3 and 4, the factors’ inner dependence matrixes’ pairwise comparisons, weights and consistency coefficients are given.

Table 3. The inner dependence matrix of the factors according to strategy

7S Factors	SE	SS	SV	Weights
Structure (SE)	1	1	3	0.443
Systems (SS)		1	2	0.387
Shared values (SV)			1	0.169
CR=0.02				

Table 4. The inner dependence matrix of the factors according to shared values

7S Factors	SY	SL	SF	SK	Weights
Strategy (SY)	1	2	1	2	0.346
Style (SL)		1	2	2	0.286
Staffs (SF)			1	1	0.205
Skills (SK)				1	0.163
CR=0.07					

Under the light of the calculated weights above, the 7S factors’ inner dependence matrix (IM) has been determined as the following (Table 5):

Table 5. Inner dependence matrix

	SY	SE	SL	SS	SK	SV	SF
7S=	SY	0.000	0.000	0.000	0.000	0.346	0.000
	SE	0.443	0.000	0.000	0.000	0.000	0.000
	SL	0.000	0.000	0.000	0.000	0.286	0.000
	SS	0.387	0.000	0.000	0.000	0.000	0.000
	SK	0.000	0.000	0.000	0.000	0.163	0.000
	SV	0.169	1.000	1.000	1.000	1.000	1.000
	SF	0.000	0.000	0.000	0.000	0.205	0.000

Step 4. It is the calculation of the 7S factors' interdependent weights. It has been acquired by the weights' multiplication (Table 6) which has been determined on the basis of the uncorrelatedness (Table 2) of the inner dependence matrix (Table 5).

Table 6. Interdependent Weights Measurement

IM=	SY	0.000	0.000	0.000	0.000	0.000	0.346	0.000	0.198	0.0474
	SE	0.443	0.000	0.000	0.000	0.000	0.000	0.000	0.164	0.0877
	SL	0.000	0.000	0.000	0.000	0.000	0.286	0.000	0.160	0.0392
	SS	0.387	0.000	0.000	0.000	0.000	0.000	0.000	0.090	0.0766
	SK	0.000	0.000	0.000	0.000	0.000	0.163	0.000	0.152	0.0223
	SV	0.169	1.000	1.000	1.000	1.000	0.000	1.000	0.137	0.6985
	SF	0.000	0.000	0.000	0.000	0.000	0.205	0.000	0.099	0.0281

Step 5. It is the calculation of the local weights of the 7S factors. In this step of the study, the pairwise comparisons of the sub-factors have been conducted. The local weights and consistency ratios that are calculated according to this are given in Table 7-13. It has been determined that the consistency coefficients of the matrixes are acceptable.

Table 7. Pairwise comparison for strategy

Sub-factors	SY1	SY2	SY3	Weights
SY1	1	1/2	1/3	0.169
SY2		1	1	0.387
SY3			1	0.443
CR=0.02				

Table 8. Pair wise comparison for structure

Sub-factors	SE1	SE2	SE3	Weights
SE1	1	2	3	0.550
SE2		1	1	0.240
SE3			1	0.210
CR=0.02				

Table 9. Pairwise comparison for style

Sub-factors	SL1	SL2	Weights
SL1	1	1/2	0.333
SL2		1	0.667
CR=0.00			

Table 10. Pairwise comparison for systems

Sub-factors	SS1	SS2	SS3	Weights
SS1	1	1	2	0.413
SS2		1	1	0.327
SS3			1	0.260
CR=0.05				

Table 11. Pairwise comparison for skills

Sub-factors	SK1	SK2	Weights
SK1	1	1/2	0.333
SK2		1	0.667
CR=0.0			

Table 12. Pairwise comparison of shared values

Sub-factors	SV1	SV2	SV3	Weights
SV1	1	1/2	2	0.311
SV2		1	2	0.493
SV3			1	0.196
CR=0.05				

Table 13. Pairwise comparison for staffs

Sub-factors	SF1	SF2	SF3	SF4	Weights
SF1	1	2	2	2	0.386
SF2		1	1	1/2	0.168
SF3			1	2	0.242
SF4				1	0.204
CR=0.07					

Step 6. It is the calculation of the global weights of the 7S model’s sub-factors and the strategic assessment of the business. For this assessment, the global weights are calculated by the multiplication of every main factor’s dependent weights (Table 6) in the 7S model and every subfactor’s local weights (Table 7-13). The global weights are given in the fifth column of Table 15. For the business to be assessed in terms of the 7S model, each subfactor’s current situation has been assessed with a scale, which has been used in the literature (Dağdeviren and Yüksel, 2008; Yüksel, 2015) (Table 14), within the scope of the expertise group’s views.

Table 14. Evaluation scale for 7S sub-factors

Levels of current situation of sub-factors	Value of level
Certainly acceptable (CE)	1.00
Acceptable (AE)	0.75
Partially acceptable (PA)	0.50
Partially unacceptable (PU)	0.25
Certainly unacceptable (Cu)	0.00

The assessment that has been conducted by using the scale in Table 14 within the scope of the expertise group's view is given in Table 15's sixth column, and the corresponding numeric values are given in Table 15's seventh column. In the last column of Table 15, each factor's strategic assessment degree has been determined by the multiplication of each subfactor's weight and the value in column seven. In the last line of Table 15, however, the assessment level of the business (%88) as a whole has been obtained by the sum of each subfactor's level. According to this result, it is seen that the business' current performance level in the context of the 7S model is %88.

Table 15. Weights and evaluating of 7S sub-factors

7S Main Factors	Dependent weights	7S Sub factors	Local weights	Global Weights (gw)	Linguistic Evaluations	Scale Value (sv)	Level of subfactors gw×sv
Strategy	0.0474	SY1	0.169	0.0080	CE	1.00	0.008
		SY2	0.387	0.0183	PA	0.50	0.009
		SY3	0.443	0.0210	PA	0.50	0.010
Structure	0.0877	SE1	0.550	0.0482	CE	1.00	0.048
		SE2	0.240	0.0211	AE	0.75	0.016
		SE3	0.210	0.0184	CE	1.00	0.018
Style	0.0392	SL1	0.333	0.0130	AE	0.75	0.010
		SL2	0.667	0.0261	AE	0.75	0.020
Systems	0.0766	SS1	0.413	0.0316	AE	0.75	0.024
		SS2	0.327	0.0251	PA	0.50	0.013
		SS3	0.260	0.0199	PA	0.50	0.010
Skills	0.0223	SK1	0.333	0.0074	PA	0.50	0.004
		SK2	0.667	0.0149	AE	0.75	0.011
Shared values	0.6985	SV1	0.311	0.2172	CE	1.00	0.217
		SV2	0.493	0.3443	CE	1.00	0.344
		SV3	0.196	0.1369	AE	0.75	0.103
Staff	0.0281	SF1	0.386	0.0108	AE	0.75	0.008
		SF2	0.168	0.0047	PA	0.50	0.002
		SF3	0.242	0.0068	PA	0.50	0.003
		SF4	0.204	0.0057	PU	0.25	0.001
Total performance degree							0.880

4. Conclusion

It is known that the answer to the question "to what extent does a company fulfill its goals, hence, how efficient has the business used its resources" is sought from different approaches. In this study, a business organization's performance assessment was evaluated in terms of the 7S McKinsey model. Furthermore, the AHP and ANP multi-criteria decision-making techniques, which makes the use of the 7S McKinsey model easier, has been used in the study. The business evaluation approach that was recommended and the following factors that the model includes and their sub-factors has been evaluated: Strategy, structure, style, systems and procedures, skills, shared values, and staffs. Another point is that it has been identified that each 7S factor and sub-factor of the model which has a qualitative structure can be assessed. Along with this, it has been seen that the seven variables' interactions can be assessed with the ANP technique. It has been clear that the business' performance can be assessed with an integrated approach according to the 7S model. In addition to this, every subfactor's performance level can be evaluated. The analytic interpretability of the results of the study has shown compatibility with the results of the studies which are referenced from a methodical angle (Dağdeviren and Yüksel, 2008; Yüksel, 2012; Yüksel, 2015). This result shows that the 7S model gets a more functional characteristic with the multi-criteria decision-making techniques. Some of the topics that are out of the scope of this study can be included in the future studies. One of these is that the relation between the 7S factors can be determined with the decision-making trial and evaluation laboratory (DEMATEL) technique. Another point in this study is that the values which correspond to the pairwise comparisons are expressed with definite numbers. In the future, a study might be conducted which includes indefinite numbers that ease assessments during uncertainty conditions.

References

- Alshaher, A. A. F. (2013). The McKinsey 7S model framework for e-learning system readiness assessment. *International Journal of Advances in Engineering & Technology*, 6(5), 1948-1966.
- Chen, J. X., & Liu, W. (2010). Research on Operational Risk Management Framework for Commercial Banks in Internet World-Based on McKinsey 7S Model. In *Internet Technology and Applications, 2010 International Conference on* (pp. 1-6). IEEE.
- Chung, S. H., Lee, A. H., & Pearn, W. L. (2005). Analytic network process (ANP) approach for product mix planning in semiconductor fabricator. *International journal of production economics*, 96(1), 15-36.
- Dağdeviren, M., & Yüksel, İ. (2008). Developing a fuzzy analytic hierarchy process (AHP) model for behavior-based safety management. *Information Sciences*, 178(6), 1717-1733.
- Dinçer, Ö. (2004). *Stratejik Yönetim ve İşletme Politikası* (7. Baskı). İstanbul: Beta Yayınları.
- Eren, E. (2002). *Stratejik Yönetim ve İşletme Politikası* (6 Baskı). İstanbul: Beta Yayınları.
- Guenzi, P., & Storbacka, K. (2015). The organizational implications of implementing key account management: A case-based examination. *Industrial Marketing Management*, 45, 84-97.
- Grant, P. (2008). 'The productive ward round': a critical analysis of organisational change. *The International Journal of Clinical Leadership*, 16(4), 193-201.

- Hanafizadeh, P., & Ravasan, A. Z. (2011). A McKinsey 7S model-based framework for ERP readiness assessment. *International Journal of Enterprise Information Systems (IJEIS)*, 7(4), 23-63.
- Kömürcü, K. (2016). *A Proposed model for strategic Evaluation in Business*, Unpublished master's thesis, Kırıkkale University, Kırıkkale, Turkey.
- Palatková, M. (2011). The 7-S-McKinsey model: an implementation tool of a destination marketing strategy in the Czech Republic. *Global Management Journal*, 3(1/2), 44-54.
- Ravanfar, M. M. (2015). Analyzing Organizational Structure based on 7s model of McKinsey. *Global Journal of Management and Research: A Administration and Management*, 15(10), 6-12.
- Saaty, T.L., (1980). *The Analytic Hierarchy Process*, McGraw-Hill International Book Company, U.S.A.
- Saaty, T. L. (1986). Axiomatic foundation of the analytic hierarchy process. *Management science*, 32(7), 841-855.
- Saaty, T. L. (1991). Some mathematical concepts of the analytic hierarchy process. *Behaviormetrika*, 18(29), 1-9.
- Saaty, T. L. (1996). *Decision making with dependence and feedback: The analytic network process* (Vol. 4922). Pittsburgh: RWS publications.
- Shiri, S., Anvari, A., & Soltani, H. (2014). An Assessment of Readiness Factors for Implementing ERP Based on Agility (Extension of Mckinsey 7s Model). *International Journal of Management, Accounting and Economics*, 1(3), 229-246.
- Singh, A. (2013). A study of role of McKinsey's 7S framework in achieving organizational excellence. *Organization Development Journal: Chesterland*, 31(3), 39-50.
- Yeandle, J., Fawkes, L., Carter, C., Gordon, C., & Challis, E. (2015). Organisational effectiveness and personality disorder. *Mental Health Review Journal*, 20(2), 84-91.
- Ülgen, H., Mirze, S.K. (2007). *İşletmelerde Stratejik Yönetim* (4. Baskı). İstanbul: Arıkan Yayınları.
- Yüksel, İ., & Dagdeviren, M. (2007). Using the analytic network process (ANP) in a SWOT analysis—A case study for a textile firm. *Information Sciences*, 177(16), 3364-3382.
- Yüksel, İ. (2012). An integrated approach with group decision-making for strategy selection in SWOT Analysis. *International Journal of Academic Research in Business and Social Sciences*, 2(11), 134.
- Yüksel, M. (2015). An integrated approach for evaluating performance by multi-criteria. *Journal of the Faculty of Engineering and Architecture of Gazi University*, 30(3), 429-441.