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Evaluating the Effective Factors on Porter's Five Forces Model by ANP Technique

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ABSTRACT

Porter's five forces framework of strategic management is one of the most influential. Due to the increasing need for organizations to define, evaluate the strategies before deciding, in this study we decided to go to these forces. The purpose of this study using the analytic network process for applying Porter's five forces model. Overcome the limitations of the model through improvements to the analysis of the conditions and requirements for Effective prioritization of the five forces and forces them to create a competitive situation with regard to the dependence of industrial or competitive conditions in the industry It may be better to use force and effect and the degree and severity of dependence are associated with the identified sub-force And to create an overall competitive position of the industry (SICI) adopted strategic decisions with greater confidence. The objective of this study will be needed on how to obtain the data, descriptive (non-beta) and its correlation. The study population includes managers and experts Pegah products which may ultimately total of 85 people. Given the above, the results of analytic network process (ANP) and SICI in question show that, in industry and studied the bargaining power of suppliers of utmost importance and organizations to deal with this threat to the integration strategy return them.

Introduction

Porter (porter,1979)'s five forces model has been one of the most influential frameworks for strategic management (Hax,2001). It has been considered a standard tool for analyzing industry attractiveness, building upon the assumption that the state of competition in an industry is determined by the five competitive forces. In contrast to its importance as a centerpiece of textbooks on business strategy and strategic management, however, the five forces model has attracted less attention from both academic researchers and practicing managers (Grundy,2006). Although several attempts have been made to augment, refine, and reinterpret the model (Hax,2001-Rugman,2000-Teece et al,1997), it seems to have failed to spawn a considerable literature and retain wide currency in practice, compared with other frameworks such as balanced scorecard (BSC) and SWOT analysis.

This may be due to its innate weakness that has often been pointed out by many researchers. Among others, the intrinsic limitation of the five forces model is its difficulty in operationalization; that is, its analytical power is limited in that the overall competitive condition as well as the degree of each force cannot be quantified. The simple three-level scoring (unfavorable/ neutral/favorable) on the five forces has been prevalent, but it has the following problems. Firstly, it is not easy to draw the bottom line of analysis. The degree of each force can be easily captured in the three-level scoring; then, how is the overall condition of a given industry obtained? Simple average does not make sense since the relative importance differs across the forces. The forces do need to be prioritized for aggregation. An important thing that should be considered is the fact that the forces are themselves highly interdependent with each other; thus, the interrelationships among the forces should be captured in their prioritization (Grundy,2006). Secondly, the degree of a force is also determined by its sub-forces solely as the overall attractiveness of an industry is determined by the forces. To be more systematic and objective, sub-forces should be measured individually, and then aggregated with their relative importance to gauge the degree of a force, rather than simple overall ratings on the forces. In sum, the vital requisites for operationalizing the five forces model are to deal with it as a complex system composed of interrelated forces and their sub-forces, and to prioritize them with consideration of their interdependencies.

The tenet of this study is the requisites can be achieved through the analytic network process (ANP). The ANP proposed by Saaty(saaty,1996) is a generalization of the analytic hierarchy process (AHP), which is one of the most widely used multiple criteria decision making method (MCDM) (Farahani et al,2010). It produces priorities or relative importance of elements in a complex network model with consideration of interdependency among elements. Although the ANP was originally developed for selection and prioritization of alternatives as a MCDM method, it has widely been employed and proved to be effective for quantification of existing frameworks by prioritizing elements that are interrelated with each other(Lee et al,2009). Recent years have seen an increase in applying the ANP to various strategic management frameworks since there is a growing need of employing sophisticated mathematical modeling for strategic management (Lee et al,2009). The examples include the strategic service vision framework(Partovi,2001),the balanced scorecard (BSC) system(Leung et al,2006-Chen et al,2011), the strategic management concept (SMC) framework (Asan et al,2009), and strengths, weaknesses, opportunities and threats (SWOT) analysis(yuksel et al,2007). This study also proposes an ANP approach to operationalization of the five forces model.

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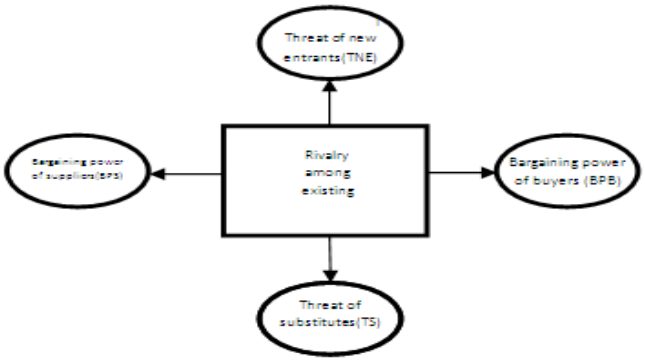

Fig 1. Five force model

Hypothesis

Ho: Each dimension of the internal forces in Operation Porter's five forces are equal importance and weight

H1: Each dimension of the internal forces in Porter's five forces operating off the weight is not equal

The ANP is a generalization of the AHP (Saaty,1996). The AHP, also developed by Saaty (Saaty,1980), is one of the most widely used MCDM methods. The AHP decomposes a problem into several levels making up a hierarchy in which each decision element is considered to be independent. The ANP extends the AHP to problems with dependence and feedback (Saaty,2009). ANP provides a general framework to deal with decisions without making assumptions about the independence of higher-level elements from lower level elements and about the independence of the elements within a level (Gencer et al,2007). Whereas AHP denotes a framework with a unidirectional hierarchical relationship, ANP permits more complex interrelationships among decision elements by replacing the hierarchy in the AHP with a network.

Literature Review

So far on the importance and relative weight of forces in Porter's five forces model implementation process using network analysis has been done in the industry. However, some research has been done in the network based on the analysis we refer.james, in a study calledThe effects of uncertainty and disagreement between the decision makers and the interdependence and feedback that creates the standards and different options. In this research technique for ANP, researchers both inside and outside the main criteria are considered as the main criteria. The 5 criteria marketing, product, computer systems, equipment and logistics are considered as criteria (james et al ,2011). Babylev in a study multiple criteria decision making) ANP related to construction technology assessment for the same performance technology and economy requires consideration of a number of environmental criteria to reflect. The study Babylev, opportunities, benefits, costs and risks are considered as the main criteria ANP (Babylev,2011). Kabak in a study called prioritize renewable energy sources by using a hybrid model based on MCDM BOCR (-Frst are - Costs benefits - and risks) and ANP to determine the prioritization of alternative sources of energy and providing. The study sought to identify criteria for the assessment of renewable energy sources are given BOCR model (Kabak et alk,2014). Doory in a study called integrated approach to risk analysis using failure analysis and its effects (FMEA) and the ANP did that states ANP as a form of modern and powerful decision-making with the aim of modifying and strengthening of (ANP-FMEA) which Interoperability risk factors to be considered valid, presenting the viewpoint of modern architecture and offers flexible in the realm of risk management (Doory et al,1389). Sadeghi in a study called Locate health centers through the integration process grid analysis and comparison test at GIS data to locate the center of the index of multiple criteria decision making ANP review and desired places were determined to examine the issue of GIS and GIS ANP is used. In this paper, the goal was to locate health centers - of Birjand, by using Multi Criteria Decision Making Study ANP and favorable locations for future plans specified (Sadeghi et al,1397).

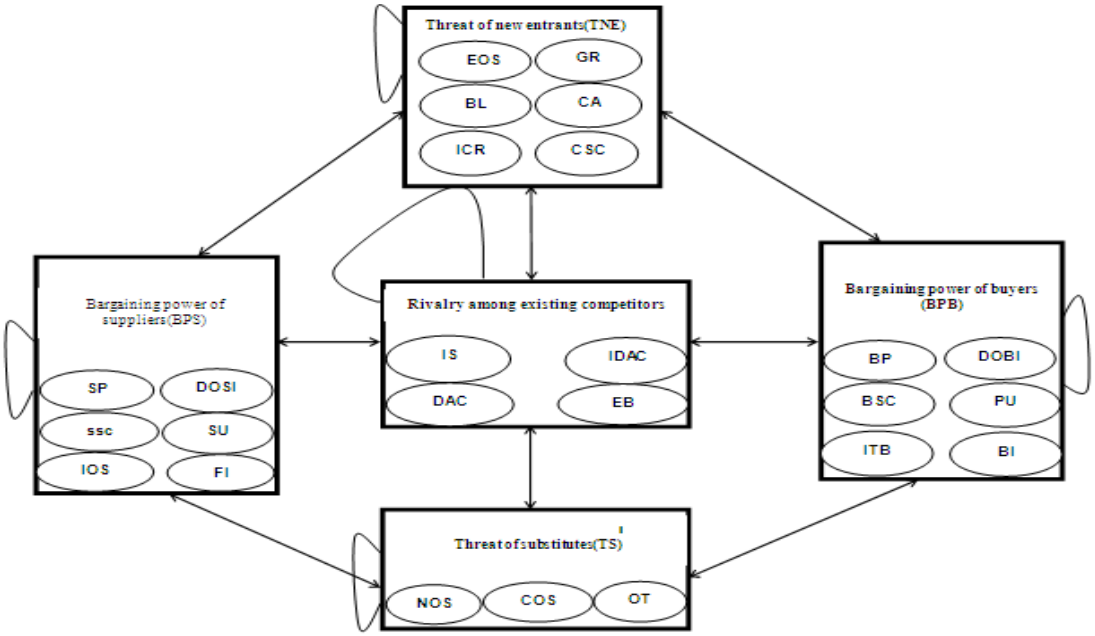

Fig 2. The ANP network of the five force model

Threat of new entrants (TNE)
Economies of scale (EOS): The degree of the relative cost advantages of established companies associated with large volumes of scale economies.
Government regulation (GR): The degree to which government prohibits new entrants from entering the market.
Brand loyalty (BL): The degree to which customers have preference to products/services of any established company.
Cost advantages (CA): The degree of absolute cost advantages coming from the learning and experience curves. Initial capital **requirement (ICR):** The amount of capital investment in fixed facilities, inventories, and absorbing start-up losses. Customer **switching costs (CSC):** The amount of time, energy, and money for customers to switch from products/services offered by one established company in an industry to those offered by a new entrant.
Bargaining power of suppliers (BPS)
Supplier portfolio (SP): The degree to which suppliers are concentrated or their orders are large.
Dependence on supplier industry (DOSI): The degree to which an industry depends on suppliers for a large percentage of its total purchases.
Supplier switching costs (SSC): The amount of time, energy, and money for companies in the industry to switch from products/services offered by a supplier to those offered by another supplier.
Supplier uniqueness (SU): The degree to which products/services offered by suppliers are differentiated so that companies in an industry cannot find alternative suppliers.
Importance of suppliers (IOS): The degree to which products/services offered by suppliers are important to the quality of industry's products/services.
Forward integration (FI) :The degree of a threat that suppliers integrate forward to make industry's products/services.
Bargaining power of buyers (BPB)
Buyer portfolio (BP) :The degree to which buyers are concentrated or their purchases are large.
Dependence on buyer industry(DOBI): The degree to which an industry depends on the buyers for a large percentage of its total sales.
Buyer switching costs (BSC) :The amount of time, energy, and money for buyers to switch from products/services offered by a company in an industry to products/services offered by another company.
Product uniqueness (PU): The degree to which products/services of an industry are differentiated so that buyers cannot find alternative suppliers.
Importance to buyers (ITB): The degree to which products/services of an industry are important to the quality of the buyers' products/services.
Backward integration (BI): The degree of a threat that buyers integrate backward to make industry's products/services.
Threat of substitutes (TS)
Number of substitutes (NOS): The number of existing substitute products/services.
Closeness of substitutes (COS): The degree to which existing substitute products/services are close.
Other technologies (OT): The existence of other ways to provide the same value Rivalry among existing.
Competitors (REC)
Industry structure (IS): The number of companies in an industry.
Industry demand and capacity(IDAC): The difference between capacity and demand.
Differentiation amongcompanies (DAC): The degree of differentiation in products/services offered by companies in an industry.
Exit barriers (EB): The degree of economic, strategic, and emotional factors preventing companies from leaving an industry
Methodology of research

For data collection, there are often many ways to learn in a study of more than one method is used. In this study, data was collected through field. In the field of the questionnaire is one of the most common methods of data collection. In the preparation of the questionnaire aims to design a number of questions, respondents receive information from. In this research was to evaluate the reliability of the questionnaire, the Cronbach's alpha was used. 85 item questionnaire designed to distribute among managers and experts Pegah products have been restored to 51. The collected questionnaires were attempting to test its reliability. This means that if the Cronbach alpha reliability was greater than 0.7 is approved This means that the questionnaire used for similar studies of other eras and is cited. Otherwise, with the help of SPSS software functionality and some techniques to eliminate some of the questions raised in the application of Cronbach's alpha.

The point that should be noted that in the process of network analysis can be further divided into two stages

Or that the proposed algorithm based on matrix operations are going to need to create a large matrix and normalizing it and selection strategy is based on. Given the above network model design and deployment phases of the general principles of ANP network analysis, Porter's analysis is presented as follows.

First Step. In the first step, a questionnaire consisting of 25 questions were prepared for each matrix, the direct effect of each of the 4 main factors other factors, were evaluated. be assessed....

The second step. Data for the opinions of experts and consultants with experience of 51 was used. Figure 4-3 and 4-4 show the characteristics of the respondents.

Initial direct correlation matrix. Experts about the impact of each factor on the basis of language options in the table below were identified by others:

Matrix A matrix is a direct relationship and $Z_{ij}^{k} = \left(l_{ij}^{k}, m_{ij}^{k}, u_{ij}^{k}\right)$ One element of the matrix representing a fuzzy triangular fuzzy evaluation of k Amin expert on the impact factor I On the j. The result of this step, the preparation of several matrix direct relationships between factors. Step Four. Data for analysis and consensus expert opinions, the proposed method Buckley (1985) was

used. Triangular fuzzy number can be $\tilde{U}_{ij} = (1, m, u)$ provided. The construction of fuzzy numbers $\tilde{U}_{ij}$ in relationships (1) to (4) is shown.

Where B_{ijk} the relative importance of criteria C_i and C_j the expert opinion of my k is given. In Table 1 are triangular fuzzy numbers linguistic scale scale Saaty (1986) is given. Was considered as a parameter.

The fifth step. Tuesday matrix L, M and U is a unit matrix with the same number of rows and columns are low. Next Tuesday the resulting matrix is reversed, then the original matrix to be multiplied by itself. 1 shows the fifth step mathematical operations:

$$L_{ij} = \tilde{X}_l \times \left(I - \tilde{X}_l\right)^{-1}$$

$$\tilde{U}_{ij} = \left(l_{ij}, m_{ij}, u_{ij}\right): l_{ij} \le m_{ij} \ \pi \ u_{ij}; l_{ij}, m_{ij}, u_{ij} \in [1/9, 9] \quad (1)$$

$$l_{ij} = \min(B_{ijk}) \quad (2)$$

$$m_{ij} = \sqrt[n]{\prod_{1}^{n} B_{ijk}} \quad (3)$$

$$u_{ij} = \max(B_{ijk}) \quad (4)$$

$$M_{ij} = \tilde{X}_m \times \left(I - \tilde{X}_m\right)^{-1}$$

$$U_{ij} = \tilde{X}_u \times \left(I - \tilde{X}_u\right)^{-1}$$

Sixth step. Following the method of analytic hierarchy process and fuzzy Chang views expressed. In 1983 the Dutch scholar named Larhvrn and Pdryk propose a method for analytic hierarchy process based on the logarithmic least squares method was established. The complexity of this method makes this method is not used. In 1996, another method under development by a Chinese scholar named Chang method was presented. Note that the product of two triangular fuzzy numbers, or the inverse of a triangular fuzzy number, the other is a triangular fuzzy number. This relationship is only an approximation of the real product of two triangular fuzzy numbers and the inverse of a triangular fuzzy number to express. The analytical method development, for each row of the matrix of paired comparisons, the amount, which is a triangular number, the equation (4) is calculated as:

$$S_K = \sum_{j=1}^{n} M_{kj} * \left[\sum_{i=1}^{m}\sum_{j=1}^{n} M_{ij}\right] \quad (4)$$

Where k represents the number of rows and i and j, respectively, indicate the options and index.

The seventh step. The analytical method development, after calculation S_K, you need a large degree they are to be achieved. In general M_2, M_1, if two triangular fuzzy numbers, a large degree M_1 M_2 on the triangular fuzzy, a great degree, $V(M_1 \ge M_2)$ which is shown in equation (5) is defined as:

$$\begin{cases} V(M_1 \ge M_2) = 1 & if \ \ m_1 \ge m_2 \\ V(M_1 \ge M_2) = hgt(M_1 \cap M_2) & otherwise \end{cases} \quad (5)$$

$$hgt(M_1 \cap M_2) = \frac{u_1 - l_2}{(u_1 - l_2) + (m_2 - m_1)}$$

Also, we have: A large amount of a triangular fuzzy number k triangular fuzzy numbers also from equation (6) can be obtained:

$$V(M_1 \ge M_2, ...M_K) = V(M_1 \ge M_2), ..., V(M_1 \ge M_K) \quad (6)$$

The eighth step. To calculate the weights of the paired comparison matrix in equation (7) is done:

$$W\ (x_i) = Min\{V(S_I \ge S_K)\}, \ \ K = 1,2,....,n \quad K \ne i \quad (7)$$

Thus, the vector of weights in equation (8) will be:

$$W'(x_i) = [W'(c_1), W'(c_2), ..., W'(c_n)] \quad (8)$$

That the coefficients of the non-normal vector of fuzzy analytic hierarchy process.

Using equation (9) results in a non-normal process of hierarchical fuzzy.

Using equation (9) non-normalized results obtained from equation (8) is normal. Normalized results obtained from equation (9), W is called.

$$W_i = \frac{W_1'}{\sum W_i'} = \quad (9)$$

The effects of the interdependence between the criteria specified. Members of the impact of all measures on the measure again through paired comparisons. To help simplify the process, a series of questions such as "Which is the more standard measure of influence on either? And how much?" Are answered. Matricesfor each criterion consists of paired comparisons.

The matrix of paired comparisons to determine the relative influence of Dependence measures are necessary. The normalized eigenvectors for the matrix elements of the matrix column B of the dependence of the weights calculated and displayed. The eigenvectors of the matrix of zeros to the weights of criteria are considered the relationship of dependency with another. Now we can measure the relative affinity with the help of (10), or in other words, by combining the results of two previous steps to obtain. Here applied to the modulation matrix coefficients of interdependence (B) the results of fuzzy analytic hierarchy process (W) is. Fuzzy network analysis is the process of combining the two.

$$\omega_c = B.W \tag{10}$$

Evaluation based on the Friedman test

Friedman test is a nonparametric test for comparing three or more groups that are least dependent on the ratings are measured, can be used. This test can be continuous data (distance or relative) to be used, but also when calculating the ranking data is considered. Equivalent non-parametric Friedman test, repeated measures analysis of variance F test is dependent on. Thus, repeated measures analysis of variance if one or all of these basic assumptions are rejected, the Friedman test was used. Where N = number of subjects, k is the number of categories, or distribution of the rating of the place and T_g raise my rank is group g. The SS_{br} also be obtained from the following equation:

$$SS_{br} = \frac{\sum(T_g)^{\intercal}}{N} - \frac{(T_{all})^{\intercal}}{N_a}$$

The relationship between all groups and T_all N_a Total Ratings Total Ratings are allocated to participants. The value of the test statistic with the critical value from the table chi-square distribution with k-1 degrees of freedom and the desired confidence level, which is usually 95%, to be compared.

Model development

The proposed ANP approach to operationalization of the five forces model starts with developing its network model. The conceptual framework of the five forces model is transformed into a network model of the ANP in a way by which clusters in the network model corresponds to the five forces, and elements in a cluster are equivalent to subforces in a force. The interrelationships between forces are represented by arcs with directions. Since the interdependencies among forces are implicitly only given in Porter's original work and other textbooks, they have been defined based on the previous studies explicitly specifying them. Fig. 2 shows the constructed ANP network of the five forces model. The detailed descriptions of the sub-forces are summarized in Table 1 with their abbreviations and types. Some of the sub-forces give a rise to the intensity of competition when the degree is high while the others do when they are low.

Proposed approach consists of three phases.. Figure 3 shows the overall process of the proposed approach. Initially, the ANP to establish the priority weights and forces applied to the first stage. Their relationship is a function based on the comparison between the forces and troops. Built with superior vector-matrix form of this comparison is generated. Secondly, the rank and degree Pegah Dairy Company specializes in force and the measures verbal account. Third, the industry and the competitive position indicator (SICI) measures. As the total weight weighty global forces between sub-classification is calculated as:

$$SICI = \sum_{K=1}^{5}\sum_{J=1}^{hk} w_{kj}^{g}\, r_{kj} \tag{1-4}$$

Where N_k is the number of components group k. W_{kj}^{g} World-weight components group k and J K group have been classified as one component. SICI competitive industry shows. The higher the amount of SICI, the greater the intensity of industrial competition and the industry is less attractive. SICI any force using local weights have been obtained by any of the normal form is defined as follows:...

$$SICI_k = \sum_{J=1}^{hk} w'_{kj}\, r_{kj} \tag{2-4}$$

Local weight component j- k- group where I've been. The pattern of changes in the competitive industry with a similar analysis can be seen several times. To implement the proposed method and evaluate the results of the survey questionnaire was developed and distributed among experts' opinions were collected Pegah Dairy Company . The project involves the issue of criteria and sub-criteria are Porter's 5 forces that belong to each of the forces is . In this issue, objective rating Porter's forces. First steps In the first step of the implementation process of ANP, a questionnaire consisting of 25 questions were formed and the impact of each of the 4 main elements of the assessment was another factor. The second step To complete the questionnaire, the opinions of experts and consultants with experience of 51 was used Step Three In this step, the initial direct relationship matrix is formed. That expert opinions collected by linguistic variables, based on Table 3-1 we. The matrix Z is a matrix of relationships and $Z_{ij}^{k} = (l_{ij}^{k}, m_{ij}^{k}, u_{ij}^{k})$ is a triangular fuzzy element of the matrix representing the K-th fuzzy expert evaluation of the effectiveness of agent i to agent is the j th. The result of this step, the preparation of several matrix direct relationships between factors. Step Four In this step, according to the above, the matrix made up of experts should be integrated with the use of the geometric mean. The results are divided into three matrix with fuzzy numbers, except that the numbers low (L), the mean values of the matrix (M) and the number of matrices (U) is, Fifth step

Tuesday matrix L, M and U is a unit matrix with the same number of rows and columns are low. Next Tuesday the resulting matrix is reversed, then the initial matrix corresponding to multiplied. Sixth step Binary Comparisons criteria Comparisons to a conclusion on the basis of questionnaires were collected. The linguistic data, and comparisons were made were converted to fuzzy numbers.

Finding and Results

Table 2. Interrelationship between the forces of the TNE

TNE	BPS	REC	BPB	W	The relative weight
BPS	(1,1,1)	(1/8,1/7,1/6)	(1,1,1)	**0.502619**	0.250653
REC	(6,7,8)	(1,1,1)	(6,7,8)	**1**	0.498694
BPB	(1,1,1)	(1/8,1/7,1/6)	(1,1,1)	0.502619	0.250653

Here, as in the sixth step is explained because the TS does not consider the influence of TNE.

Similarly, the rest of the criteria weights are calculated and the results are shown below to continue.

Table 2.1 interrelationships between the forces of the BPS

BPS	TNE	TS	REC	The relative weight
TNE	(1,1,1)	(1/9,1/9,1/8)	(1/7,1/6/1/5)	0.489378
TS	(8,9,9)	(1,1,1)	(2,3,4)	1
REC	(5,6,7)	(1/4,1/3,1/2)	(1,1,1)	0.487933

Here, as in the sixth step is explained because BPB does not consider the influence of the BPS.

Table 2.2 The mutual relations between the forces of the TS

TS	BPS	REC	BPB	The relative weight
BPS	(1,1,1)	(1/9,1/9,1/8)	(1,1,1)	0.496697
REC	(8,9,9)	(1,1,1)	(8,9,9)	1
BPB	(1,1,1)	(1/9,1/9,1/8)	(1,1,1)	0.496697

Here, as in the sixth step is explained because TNE does not consider the influence of TS.

Table 2.3 interrelationships between the forces of the REC

REC	TNE	BPS	TS	BPB	The relative weight
TNE	(1,1,1)	(1,1,1)	(1/9,1/9,1/8)	(1,1,1)	0.49684
BPS	(1,1,1)	(1,1,1)	(1/9,1/9,1/8)	(1,1,1)	0.49684
TS	(8,9,9)	(8,9,9)	(1,1,1)	(8,9,9)	1
BPB	(1,1,1)	(1,1,1)	(1/9,1/9,1/8)	(1,1,1)	0.49684

Table 2.4 interrelationships between the forces of the BPB

BPB	TNE	TS	REC	The relative weight
TNE	(1,1,1)	(1/9,1/9,1/8)	(1/7,1/6/1/5)	0.489378
TS	(8,9,9)	(1,1,1)	(2,3,4)	1
REC	(5,6,7)	(1/4,1/3,1/2)	(1,1,1)	0.487933

Here, as in the sixth step is explained because the BPS does not consider the influence of the BPB.

W_i=

	TNE	BPS	TS	REC	BPB
TNE		0.489378		0.49684	0.489378
BPS	0.250653		0.496697	0.49684	
TS		1		1	1
REC	0.498694	0.487933	1		0.489378
BPB	0.250653		0.496697	0.49684	

All steps were performed at this stage for the following criteria are criteria. As mentioned in the sixth step, at this stage, assuming the existence of a correlation between the paired comparisons between the criteria to consider

Binary comparisons the following criteria:

Table 2.5 The interrelationships among the TNE

	EOS	GR	BL	CA	ICR	CSC	Therelative weight
EOS	(1,1,1)	(8,9,9)	(1,1,1)	(3,4,5)	(1,2,3)	(8,9,9)	0.339618
GR	(1/9,1/9,1/8)	(1,1,1)	(1/9,1/9,1/8)	(1/7,1/6,1/5)	(1/9,1/8,1/7)	(1,1,1)	0.163736
BL	(1,1,1)	(8,9,9)	(1,1,1)	(3,4,5)	(1,2,3)	(7,8,9)	0.093684
CA	(1/5,1/4,1/3)	(5,6,7)	(1/5,1/4,1/3)	(1,1,1)	(1/4,1/3,1/2)	(4,5,6)	0.163412
ICR	(1/3,1/2,1)	(7,8,9)	(1/3,1/2,1)	(2,3,4)	(1,1,1)	(6,7,8)	0.169334
CSC	(1/9,1/9,1/8)	(1,1,1)	(1/9,1/8,1/7)	(1/6,1/5,1/4)	(1/8,1/7,1/6)	(1,1,1)	0.163849

Table 2-6. The interrelationships among the BPS

	SP	DOSI	SSC	SU	IOS	FI	The relative weight
SP	(1,1,1)	(8,9,9)	(8,9,9)	(8,9,9)	(4,5,6)	(6,7,8)	0.294987
DOSI	(1/9,1/9,1/8)	(1,1,1)	(1,1,1)	(1,1,1)	(1/5,1/4,1/3)	(1/3,1/2,1)	0.139923
SSC	(1/9,1/9,1/8)	(1,1,1)	(1,1,1)	(1,1,1)	(1/6,1/5,1/4)	(1/3,1/2,1)	0.139911
SU	(1/9,1/9,1/8)	(1,1,1)	(1,1,1)	(1,1,1)	(1/6,1/5,1/4)	(1/4,1/3,1/2)	0.139797
IOS	(1/6,1/5,1/4)	(3,4,5)	(4,5,6)	(4,5,6)	(1,1,1)	(2,3,4)	0.140216
FI	(1/8,1/7,1/6)	(1,2,3)	(1,2,3)	(2,3,4)	(1/4,1/3,1/2)	(1,1,1)	0.145165

Table 2-7. Interrelationships among the troops TS

	NOS	COS	OT	The relative weight
NOS	(1,1,1)	(1,1,1)	(8,9,9)	0.512843257
COS	(1,1,1)	(1,1,1)	(1,1,1)	0.253044175
OT	(1/9,1/9,1/8)	(1,1,1)	(1,1,1)	0.234112568

Table 2-8. Interrelationships among the troops REC

	IS	IDAC	DAC	EB	The relative weight
IS	(1,1,1)	(8,9,9)	(8,9,9)	(8,9,9)	0.203421
IDAC	(1/9,1/9,1/8)	(1,1,1)	(1,1,1)	(1,1,1)	0.411148
DAC	(1/9,1/9,1/8)	(1,1,1)	(1,1,1)	(1,1,1)	0.202236
EB	(1/9,1/9,1/8)	(1,1,1)	(1,1,1)	(1,1,1)	0.183196

Table 2-9. The interrelationships among the BPB

	BP	DOBI	BSC	PU	ITB	BI	The relative weight
BP	(1,1,1)	(1,1,1)	(1,2,3)	(2,3,4)	(4,5,6)	(8,9,9)	0.411911624
DOBI	(1,1,1)	(1,1,1)	(1,1,1)	(2,3,4)	(4,5,6)	(8,9,9)	0.004576338
BSC	(1/3,1/2,1)	(1,1,1)	(1,1,1)	(1,2,3)	(3,4,5)	(7,8,9)	0.173511673
PU	(1/4,1/3,1/2)	(1/4,1/3,1/2)	(1/3,1/2,1)	(1,1,1)	(2,3,4)	(6,7,8)	0.191698928
ITB	(1/6,1/5,1/4)	(1/6,1/5,1/4)	(1/5,1/4,1/3)	(1/4,1/3,1/2)	(1,1,1)	(2,3,4)	0.020847153
BI	(1/9,1/9,1/8)	(1/9,1/9,1/8)	(1/9,1/8,1/7)	(1/8,1/7,1/6)	(1/4,1/3,1/2)	(1,1,1)	0.197454284

In this step, given the lack of association between variables using fuzzy numbers and the experts of the study, paired comparisons between factors, the relative weight of each of the screen coordinates

Table 2-10. interrelationships among the forces assuming independence

	TNE	BPS	TS	REC	BPB	The relative weight
TNE	(1,1,1)	(1/4,1/3,1/2)	(1/9,1/9,1/8)	(1/5,1/4,1/3)	(1/4,1/3,1/2)	0.0438598
BPS	(2,3,4)	(1,1,1)	(1/7,1/6,1/5)	(1,1,1)	(1,1,1)	0.1173698
TS	(8,9,9)	(5,6,7)	(1,1,1)	(4,5,6)	(5,6,7)	0.5899766
REC	(3,4,5)	(1,1,1)	(1/6,1/5,1/4)	(1,1,1)	(1,1,1)	0.1314238
BPB	(2,3,4)	(1,1,1)	(1/7,1/6,1/5)	(1,1,1)	(1,1,1)	0.1173698

W2 = 

In this step, the weight matrix multiplication factors obtained in step VI and VIII of the weight factors are calculated....

$$W_1 = \begin{array}{c} \\ \text{TNE} \\ \text{BPS} \\ \text{TS} \\ \text{REC} \\ \text{BPB} \end{array} \begin{array}{c} \begin{array}{ccccc} \text{TNE} & \text{BPS} & \text{TS} & \text{REC} & \text{BPB} \end{array} \\ \begin{bmatrix} & 0.489378 & & 0.49684 & 0.489378 \\ 0.250653 & & 0.496697 & 0.49684 & \\ & 1 & & 1 & 1 \\ 0.498694 & 0.487933 & 1 & & 0.489378 \\ 0.250653 & & 0.496697 & 0.49684 & \end{bmatrix} \end{array}$$

$$W_2 = \begin{bmatrix} 0.04386 \\ 0.11737 \\ 0.589977 \\ 0.131424 \\ 0.11737 \end{bmatrix}$$

$$W_n = \text{Final Weight} = W_1 * W_2 = \begin{bmatrix} 0.016995 \\ 0.04737 \\ 0.166888 \\ 0.387869 \\ 0.04737 \end{bmatrix}$$

The final step is to gain weight matrix sub-factors The following factors seventh step in the weight matrix multiplication factors in the ninth step and the final weight gain factors....

Table2-11. The final weight gain factors

Factor	Weight Factors (Wn)	The Final Weight of Factors	The Weight Factors (Ws1)	The following factors
TNE	0.016995	0.057718079	0.339618	EOS
		0.027826933	0.163736	GR
		0.093684	0.093684	BL
		0.027771869	0.163412	CA
		0.028778313	0.169334	ICR
		0.027846138	0.163849	CSC
BPS	0.04737	0.128909319	0.294987	SP
		0.061146351	0.139923	DOSI
		0.061141107	0.139911	SSC
		0.061091289	0.139797	SU
		0.061274392	0.140216	IOS
		0.063437105	0.145165	FI
TS	0.166888	0.085587385	0.512843257	NOS
		0.042230036	0.253044175	COS
		0.039070578	0.234112568	OT
REC	0.387869	0.0789007	0.203421	IS
		0.159471564	0.411148	IDAC
		0.078441075	0.202236	DAC
		0.071056049	0.183196	EB
BPB	0.04737	0.195122536	0.411911624	BP
		0.002167811	0.004576338	DOBI
		0.08219248	0.173511673	BSC
		0.090807782	0.191698928	PU
		0.009875296	0.020847153	ITB
		0.093534094	0.197454284	BI

The rank of each of the following factors in your group to get. Detailed information is given in Table 3.

Table 3- Ratings

Factor	The following factors	Rank Group	The final weight of the factors
TNE	EOS	1	0.057718079
	GR	4	0.027826933
	BL	6	0.093684
	CA	5	0.027771869
	ICR	2	0.028778313
	CSC	3	0.027846138
BPS	SP	1	0.128909319
	DOSI	6	0.061146351
	SSC	5	0.061141107
	SU	2	0.061091289
	IOS	3	0.061274392
	FI	4	0.063437105
TS	NOS	1	0.085587385
	COS	2	0.042230036
	OT	3	0.039070578
REC	IS	2	0.0789007
	IDAC	1	0.159471564
	DAC	3	0.078441075
	EB	4	0.071056049
BPB	BP	1	0.195122536
	DOBI	6	0.002167811
	BSC	4	0.08219248
	PU	3	0.090807782
	ITB	5	0.009875296
	BI	2	0.093534094

Table 4. Position and industry competitiveness index

Factor	The following factors	Rank Group	The final weight of the factors
TNE	EOS	1	0.057718079
	GR	4	0.027826933
	BL	6	0.000009
	CA	5	0.027771869
	ICR	2	0.028778313
	CSC	3	0.027846138
	$SICI_1$ = 0.449034		
BPS	SP	1	0.128909319
	DOSI	6	0.061146351
	SSC	5	0.061141107
	SU	2	0.061091289
	IOS	3	0.061274392
	FI	4	0.063437105
	SICI2 = 1.361247		
TS	NOS	1	0.085587385
	COS	2	0.042230036
	OT	3	0.039070578
	$SICI_3$ = 0.287259		
REC	IS	2	0.0789007
	IDAC	1	0.159471564
	DAC	3	0.078441075
	EB	4	0.071056049
	$SICI_4$ = 0.83682		
BPB	BP	1	0.195122536
	DOBI	6	0.002167811
	BSC	4	0.08219248
	PU	3	0.090807782
	ITB	5	0.009875296
	BI	2	0.093534094
	$SICI_5$ = 1.045767		

As noted, the industry and the competitive position indicator (SICI) the strategy for competitive review. The industry and the competitive position indicator (SICI) for each of the forces and all the rest were calculated to evaluate the company's overall strategy. SICI the separation of powers, and the overall strategy is shown in Table 4-1. Table 4-1 to determine the rank and status of the industry and competition (SICI) we see.

Table 4-1- rank and position and industry competitiveness index (SICI)

factor	Rating factors	Location Index Industry and competition	IndexPosition and industry Competition
TNE	4	SICI	0.449034
BPS	1	SICI	1.361247
TS	5	SICI	0.287259
REC	3	SICI	0.83682
BPB	2	SICI	1.045767
Total	-----	SICI	3.9801

As we said, here SICIi represents the concentration of industry and firm specific to each of the forces. The amount SICIi is more indicative of the strength and focus more on the force is considered. Here, the results show that most of the industry where the focus is on the bargaining power of buyers is. The least competitive threat is replaced.

Study variables using the Friedman test.

At this stage of the investigation to the ranking position of the company in terms of the criteria and the criteria we used the Friedman test. As mentioned in Chapter III of this study to review the rating criteria and sub-criteria are compared with each other, we used the Friedman test. Suppose H1 does not mean that the criteria are identical. If significant amounts of the test is greater than 5.0 and less than 5.0 assuming H0 is the hypothesis H1 is true. In this case we see the following hypothesis.

$$\begin{cases} H_0: \ \mu_1 = \mu_2 = \ldots = \mu_k \\ H_1: \ \mu_1 \neq \mu_2 \neq \ldots \neq \mu_k \end{cases}$$

SPSS software was used for testing. The data from two separate application forms below and we'll check it out.

The first part of the questionnaire survey (criteria): In the first part of the questionnaire data and information collected, we used the Friedman test.

Ranks	Mean Rank
VAR1	3.79
VAR2	4.21
VAR3	1.16
VAR4	1.96
VAR5	3.88

Figure 4- average output display for the main causes of Friedman

Test Statistics[a]

N	51
Chi-Square	153.353
df	4
Asymp. Sig.	.000

a. Friedman Test

Figure 5- Fredman Test

The output shows the result of the test, the test P-Value is zero. P-Value is zero indicates that the test of the null hypothesis of equal means is rejected and the mean average of the following criteria are the same criteria. Also, as seen in Figure 4-9 Mean any of the criteria set out in Table 4-17 below rating criteria based on the average of their group to see....

Table 5. Show the average rating for each of the Friedman test.

factor	The following factors	Rank Group	The mean of the factors
TNE	EOS	3	13.82
	GR	6	7.96
	BL	1	15.17
	CA	4	12.84
	ICR	2	14.76
	CSC	5	8.70
BPS	SP	1	16.20
	DOSI	5	10.18
	SSC	4	10.62
	SU	6	8.68
	IOS	2	15.82
	FI	3	13.78
TS	NOS	2	16.16
	COS	1	16.75
	OT	3	13.86
REC	IS	1	18.53
	IDAC	4	9.41
	DAC	2	14.12
	EB	3	11.55
BPB	BP	5	12.72
	DOBI	4	10.42
	BSC	6	8.71
	PU	3	12.57
	ITB	1	16.14
	BI	2	15.54

Conclusion

As we said, Porter's Five Forces model is an important part of strategic management . This model is a standard tool for the analysis of industrial attraction is based on the assumption is made that the state of competition in an industry is determined by five competitive forces . In this study, we aimed to introduce a systematic approach to the evaluation of the factors listed in Porter's model . Using this approach, counting on the efforts that have been made in this area and noted the limitations of each pay . Until the approach of using the analytic hierarchy process (ANP) as an appropriate approach for this work came. The process for using the Friedman test was also conducted. Comparing the results we can see, with the most significant difference is not created, but there Tfadt in output shows that the approach produces more accurate results . The reason is that the weights of factors Porter's approach has been used in two different And this is because the ANP approach dependencies among the factors considered in Porter . In this case, it is shown that the dependencies among the factors that affect the choice of strategy and prioritize the strategies . As we have seen, Friedman test method is not suitable for the assessment of relationships between factors not considerand Its focus is only on check out. While an important part of the decision to come back here to examine relationships. Therefore reject the hypothesis HO and hypothesis H1 is accepted. Given the above, the results show that ANP and SICI, and industry reviewed the bargaining power of suppliers is of utmost importance And organization to maintain its strategic position, more attention should be paid to this area. It is proposed to deal with this threat more companies choose their supplier for their return or integration strategy. However, the importance of these forces seem to be changing over time. Thus, when comparing two binary should be considered for a specific time

point. One of the main tasks in the competitive dynamics analysis to predict future competitive position is such that industrial competitiveness is subject to change. The goal is to create a new rating scale lateral forces can be achieved in the future.

References

I. Yuksel, M. Dagˇdeviren(2007)., Using the analytic network process (ANP) in a SWOT analysis: a case study for a textile firm, Inform. Sci,21 (2009) 75–91.

A.M. Rugman, A. Verbeke,(2000). Six cases of corporate strategic responses to environmental regulation, Eur. Manage. J. 18 377–385.

Behroze dari,Hasheme moazezi,Hadi salami(1389). Integrated approach to risk analysis using the methods of analysis, failure analysis and its effects(FMEA) network analysis ,ANP Journal of Humanities, - Research in Management . , vol. 14(4), C.W.L. Hill, G.R. Jones,(2004). Strategic Management: An Integrated Approach, Houghton, Mifflin, Boston,.

D.J. Teece, G. Pisano,(1997). A. Shuen, Dynamic capabilities and strategic management, Strategic Manage. J. 18 509–533.

F.H. Chen, T.S. Hsu, G.H(2001). Tzeng, Balanced scorecard approach to establish a performance evaluation and relationship model for hot spring hotels based F.Y. Partovi, An analytic model to quantify strategic service vision, Int. J. Serv. Ind. Manag. 12 476–499.

Gencer, D. Gurpinara,(2007). Analytic network process in supplier selection: a case study in an electronic firm, Appl. Math. Model. 31 2475–2486.

H. Lee, H. Seol, N. Sung, Y.S. Hong, Y. Park, An analytic network process approach to measuring design change impacts in modular products, J. Eng. Des.

H. Lee, S. Lee, Y. Park,(2009) Selection of technology acquisition mode using the analytic network process, Math. Comput. Model. 49 1274–1282.

Hax, D. Wilde II(2001), The Delta model – discovering new sources of profitability in a networked economy, Eur. Manage. J. 19 379–391.

Hojatolah sadeghi,javade mikaniki,(1391). Locate health centers through the integration of networks analysis ANP, Paired comparison of the GIS, The preparation of a medium, , vol. 19,.

James J.H. Lioua, Gwo-Hshiung Tzengb, Chieh-Yuan Tsaid, Chao-Che Hsue, (2011)"A hybrid ANP model in fuzzy environments for strategic alliance partner selection in the airline industry," Applied Soft Computing, pp. 3515-3524,

L.C. Leung, K.C. Lam, D. Cao, Implementing the balanced scorecard using the analytic hierarchy process and the analytic network process, J. Oper. Res.

M.E. Porter(1980)., Competitive Strategy: Techniques for Analyzing Industries and Competitors, The Free Press (Macmillan), New York,.

M.E. Porter(1979)., How competitive forces shape strategy, Harvard Bus. Rev. 57 137–145.

Mehmet Kabak, Metin Dagˇdeviren.(2014), "Prioritization of renewable energy sources for Turkey by using a hybrid MCDM methodology," Energy Conversion and Management, vol. 79, pp. 25-33, N. Bobylev(2011), "Comparative analysis of environmental impacts of selected underground construction technologies using the analytic network process," Automation in Construction, vol. 20 , p. 1030–1040, on a hybrid MCDM model combining DEMATEL and ANP, Int. J. Hosp. Manag. 30 (2011) 908–932.

R.Z. Farahani, M. SteadieSeifi, N. Asgari, Multiple criteria facility location problems: a survey, Appl. Math. Model. 34 (2010) 1689–1709 Soc. 57 (2006) 682–691.

T. Grundy(2006), Rethinking and reinventing Michael Porter's five forces model, Strategic Change 15 213–229.

T.L. Saaty(1996), Decision Making with Dependence and Feedback: The Analytic Network Process, RWS Publications, Pittsburgh,.

T.L. Saaty(2009), Principia Mathematica Decernendi: Mathematical Principles of Decision Making, RWS Publications, Pittsburgh,.

T.L. Saaty(1980), The Analytic Hierarchy Process, McGraw-Hill, New York,.

U. Asan, A. Soyer(2009), Identifying strategic management concepts: an analytic network process approach, Comput. Ind. Eng. 56 600–615.