Chapter 4
A SWOT–FAHP Application for a Textile Firm in Turkey

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ABSTRACT

Good performance within a company is the result of correct interaction of business management with its internal and external environment. The recognition of internal strengths and weaknesses, as well as external opportunities and threats, takes place on the basis of a SWOT analysis. Many companies are conducting a Strengths, Weaknesses, Opportunities, and Threats (SWOT) analysis as part of the strategic planning process to identify the organizations' four factor groups before proceeding to the formulation of a corporate strategy. SWOT analysis is only the determination of the factors to evaluate for the future strategic decisions depending on the current situation of a company. Although the factors of each factor group are determined with this analysis, the importance of the factors is not taken into account. Therefore, the authors use a fuzzy Multi Criteria Decision Making (MCDM) method, Fuzzy Analytic Hierarch Process (FAHP), to determine both the importance of the SWOT main-factors and sub-factors of each main-factor in a fuzzy environment. The aim of the MCDM is to obtain the optimum choice that has the highest degree of satisfaction for all of the relevant attributes. FAHP is the fuzzy version of the classical AHP methodology. The main difference of the FAHP from its own classical method is to use the fuzzy linguistic variables in comparison evaluations. On the contrary, FAHP uses the linguistic variables that are fuzzy numbers in the comparison evaluations because human beings' subjective judgments are often vague or imprecise. For this purpose, in this study FAHP is used with the SWOT analysis to expose the existing state in transportation department of a textile firm in Kayseri, Turkey. According to the results of the analysis, the most appropriate strategy to be selected for the numerical data has been obtained.

1. INTRODUCTION

Strategic management is the collection of decisions and actions taken by business management, in consultation with all levels within the organization, to determine the long-term activities of the organization (Houben, Lenie & Vanhoof, 1999). Many approaches and techniques can be used to analyse strategic cases in the strategic management process. Among them, SWOT analysis, which evaluates the opportunities, threats, strengths and weaknesses of an organization, is the most common (Hill & Westbrook, 1997). SWOT analysis is an important tool for decision support systems and is commonly used as a means to systematically analyse an organization's internal and external environments (Yüksel & Dağdeviren, 2007; Kangas et al., 2003; Kurtilla et al., 2000).

The main aim of the SWOT analysis is to determine the sub-factors of its each main-factor to evaluate for the future strategic decisions depending on the current situation of an organization. Although this method has a powerful strategic planning process with respect to determining the factors influence the strategic decisions of an organization, it can't be able to analyse the factors with their importance as a systematically. And also, the importance of each factor in decision-making cannot be measured quantitatively, and it is difficult to assess which factor has the greatest influence on the strategic decision, is the main limitations of this approach (Pesonen et al., 2001a). So, SWOT analysis should be combined with a quantitative method that has a capability to give the importance of the factors as weighted. One of these methods is AHP that provides a systematic process for determining the relative importance of a set of elements in a MCDM problem.

AHP enables decision makers to assign a relative priority to each factor through pairwise comparison (Arslan & Er, 2008). The AHP approach provides a systematic process for determining the relative importance of a set of elements in a multi-criteria decision problem. In AHP, a decision problem is decomposed into a hierarchical

structure model that includes several decision components. After that, the relative importance of each decision component can be determined from the users and is then assigned a score calculated by using a pair-wise comparison method (Kurttila, et al., 2000).

SWOT approach can provide a quantitative measure of the importance of each factor in decision-making when used in combination with an AHP (Kurtilla et al., 2000). The hybrid method improves the quantitative information basis of strategic planning processes. The use of AHP with SWOT yields analytically-determined priorities for the factors included in SWOT analysis and makes them commensurable. In addition, decision alternatives can be evaluated with respect to each SWOT factor (Pesonen et al., 2001b). Thus, SWOT provides a basic frame within which to perform an analysis of the decision situation, and the AHP assists in carrying out SWOT more analytically and thoroughly so that alternative strategic decisions can be prioritised (Kajanus, Kangas & Kurttila, 2004). In the literature, these two analyses are used together in the different fields. Kurttila et al. (2000) developed a hybrid method to eliminate the weaknesses in the measurement and evaluation steps of the SWOT analysis. This technique of utilizing AHP in the SWOT analysis has been referred to as A'WOT in subsequent studies (Kajanus et al., 2004, Leskinen et al. 2006). In the A'WOT method, SWOT analysis is made more analytical by giving numerical rates to the SWOT factors as well as to the four SWOT groups (Kurttila et al., 2000; Pesonen et al, 2001a; Pesonen et al., 2001b; Kajanus et al., 2004; Yüksel & Dağdeviren, 2007). Lee and Walsh (2011) used a SWOT and AHP combined model to examine sport marketing outsourcing decision-making factors. Ram et al. (2004) used this combined method to assess the effect of environmental, economic, and social factors relating to silvopasture adoption decisions.

The conventional AHP method has been widely used for modelling and solving MCDM problems (Dağdeviren & Yüksel, 2007). However, sometimes the AHP criteria are difficult to clearly

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