

Using the analytic network process (ANP) in a SWOT analysis – A case study for a textile firm

İhsan Yüksel ^a, Metin Dağdeviren ^{b,*}

^a *Department of Business Management, Kirikkale University, 71450 Kirikkale, Turkey*

^b *Department of Industrial Engineering, Gazi University, Maltepe, 06570, Ankara, Turkey*

Received 10 August 2005; received in revised form 29 December 2006; accepted 3 January 2007

Abstract

Strengths, Weaknesses, Opportunities and Threats (SWOT) analysis does not provide an analytical means to determine the importance of the identified factors or the ability to assess decision alternatives according to these factors. Although the analysis successfully pinpoints the factors, individual factors are usually described briefly and very generally. For this reason, SWOT analysis possesses deficiencies in the measurement and evaluation steps. Although the analytic hierarchy process (AHP) technique removes these deficiencies, it does not allow for measurement of the possible dependencies among the factors. The AHP method assumes that the factors presented in the hierarchical structure are independent; however, this assumption may be inappropriate in light of certain internal and external environmental effects. Therefore, it is necessary to employ a form of SWOT analysis that measures and takes into account the possible dependency among the factors. This paper demonstrates a process for quantitative SWOT analysis that can be performed even when there is dependence among strategic factors. The proposed algorithm uses the analytic network process (ANP), which allows measurement of the dependency among the strategic factors, as well as AHP, which is based on the independence between the factors. Dependency among the SWOT factors is observed to effect the strategic and sub-factor weights, as well as to change the strategy priorities.

© 2007 Elsevier Inc. All rights reserved.

Keywords: Strategic planning; SWOT analysis; Multi-criteria decision analysis; AHP; ANP

1. Introduction

Strategic management can be understood as 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 [8]. Many approaches and techniques can be used to analyze strategic cases in the strategic management process [2]. Among them, Strengths, Weaknesses, Opportunities and Threats (SWOT) analysis, which evaluates the opportunities, threats, strengths and weaknesses of an organization, is the most common [7].

* Corresponding author. Tel.: +903122317400; fax: +903122308434.

E-mail addresses: yuksel@kku.edu.tr (İ. Yüksel), metindag@gazi.edu.tr (M. Dağdeviren).

SWOT analysis is an important support tool for decision-making, and is commonly used as a means to systematically analyze an organization's internal and external environments [11,13,15,36,40]. By identifying its strengths, weaknesses, opportunities, and threats, the organization can build strategies upon its strengths, eliminate its weaknesses, and exploit its opportunities or use them to counter the threats. The strengths and weaknesses are identified by an internal environment appraisal while the opportunities and threats are identified by an external environment appraisal [3]. SWOT analysis summarizes the most important internal and external factors that may affect the organization's future, which are referred to as strategic factors [11]. The external and internal environments consist of variables which are outside and inside the organization, respectively. The organization's management has no short-term effect on either type of variable [8].

Comprehensive environmental analysis is important in recognition of the variety of internal and external forces with which an organization is confronted. On the one hand these forces may comprise potential stimulants, and on the other hand, they may consist of potential limitations regarding the performance of the organization or the objectives that the organization wishes to achieve [8]. The obtained information can be systematically represented in a matrix [38]; different combinations of the four factors from the matrix [2,8] can aid in determination of strategies for long-term progress.

When used properly, SWOT can provide a good basis for strategy formulation [10]. However, SWOT analysis is not without weaknesses in the measurement and evaluation steps [7,20]. In conventional SWOT analysis, the magnitude of the factors is not quantified to determine the effect of each factor on the proposed plan or strategy [19]. In other words, SWOT analysis does not provide an analytical means to determine the relative importance of the factors, or the ability to assess the appropriateness of decision alternatives based on these factors [10]. While it does pinpoint the factors in the analysis, individual factors are usually described briefly and very generally [7]. More specifically, SWOT allows analysts to categorize factors as being internal (Strengths, Weaknesses) or external (Opportunities, Threats) in relation to a given decision, and thus enables them to compare opportunities and threats with strengths and weaknesses [35]. However, the result of SWOT analysis is often merely a listing or an incomplete qualitative examination of the internal and external factors [11]. For this reason, SWOT analysis cannot comprehensively appraise the strategic decision-making process [7].

1.1. AHP in SWOT

Kurttila et al. [15] developed a hybrid method to eliminate the weaknesses in the measurement and evaluation steps of the SWOT analysis [7,20]. This technique of utilizing the analytic hierarchy process (AHP) in the SWOT analysis has been referred to as A²WOT in subsequent studies [10,18]. The hybrid method proposed by Kurttila et al. [15] was tested in connection with a Finnish case study on forest certification. Examples in literature of studies that follow the method of Kurttila et al. [15] include those by Stewart et al. [36], Kajanus et al. [10], Shrestha et al. [35], Leskinen et al. [18] and Masozera et al. [19]. Similar to the work of Kurttila et al. [15], these studies only deal with prioritization of the SWOT factors and sub-factors, and neither strategies nor alternatives are included in the hierarchical structures based on the strategic factors.

1.2. Why ANP?

Although the AHP technique removes the deficiencies inherent in the measurement and evaluation steps of SWOT analysis, it does not measure the possible dependencies among factors. The AHP method assumes that the factors presented in the hierarchical structure are independent; however, this is not always a reasonable presumption. The possible dependency among factors can only be determined as a result of internal and external environmental analyses.

An organization can make good use of its opportunities if it possesses assets and capabilities in which it can demonstrate superiority, otherwise opportunities are either lost before any benefit can be gained or are used by rivals [38]. A similar relationship exists between threats and strengths. The ability to overcome or resist the effects of threats depends on one's strengths; a strong organization can use its strengths to either eliminate or minimize the effects of these threats. The relationship between the weaknesses and strengths of an organization are such that an organization with more strengths would probably have fewer weaknesses, and therefore would be able to face situations arising from these weaknesses.

متن کامل مقاله

دریافت فوری ←

ISIArticles

مرجع مقالات تخصصی ایران

- ✓ امکان دانلود نسخه تمام متن مقالات انگلیسی
- ✓ امکان دانلود نسخه ترجمه شده مقالات
- ✓ پذیرش سفارش ترجمه تخصصی
- ✓ امکان جستجو در آرشیو جامعی از صدها موضوع و هزاران مقاله
- ✓ امکان دانلود رایگان ۲ صفحه اول هر مقاله
- ✓ امکان پرداخت اینترنتی با کلیه کارت های عضو شتاب
- ✓ دانلود فوری مقاله پس از پرداخت آنلاین
- ✓ پشتیبانی کامل خرید با بهره مندی از سیستم هوشمند رهگیری سفارشات