



## Using the Analytical Network Process in Porter's Five Forces Analysis – Case Study in Philippines

Kuo-Jui Wu<sup>a</sup>, Ming-Lang Tseng<sup>b</sup>, Anthony S.F. Chiu<sup>c</sup>

<sup>a</sup>Department of Industrial Management, National Taiwan University of Science & Technology, Taipei, Taiwan

<sup>b</sup>Graduate School of Business & Management, Lughwa University of Science & Technology, Taoyuan, Taiwan

<sup>c</sup>Department of Industrial Engineering, De La Salle University, Manila, Philippines

### Abstract

This study investigates and demonstrates the quantitative indicator from combination of analytical network process (ANP) and Porter's five forces. The quantitative indicator can base on the weightage from supermatrix. It shows the priority for firm to face on the changing. The integration of ANP and five forces can set up a series of procedure to evaluate the current strategy by chosen the most important criteria. The evaluation framework is based on (i) multi-criteria decision making (MCDM) analysis which can determine the proper alternative from the series of criteria with regard to various conflicting forces, and (ii) analytic network process (ANP) method which can consider the effect of feedback and variance dependence. It supports the case firm in identifying the optimal strategy under global environment changing to gain a wide-ranging and actual execution.

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*Keyword:* Analytical Network Process (ANP), Porter, Five Forces, Strategy

### 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 [1]. The purpose of strategy is "essential to superior performance, which, after all, is the primary goal of any enterprise" [2]. Strategy is based on change, that is, if there is no change in the global environment, any strategy need not be reformulated. According to the Porter [3], strategy formulation has four factors, namely, company strengths and weakness; industry opportunities and threats; personal values of the key implementers and broader social expectations. However, other factors may be considered in strategy formulation and most cases emphasize personal experience. In cases where there is a lack of quantitative data or evidence, tools such as SWOT, Porter's five forces, balance scored card and the like are utilized.

Strategy formulation may encounter multidimensional difficulties as it involves numerous organizational functions and resources integration among various departments in addition to the burden of choosing the optimal supplier under multi-criteria aspects [4]. Criteria measurement is one of the newest variances facing organizations with external and internal linkages [5]. Porter proposed a framework for the evaluation of global changes to the industry with the following five forces: threat of new entrants, bargaining power of suppliers, threat of substitute products or services, bargaining power of buyers and rivalry among existing firms. Comprehensive environmental analysis is important in recognizing the variety of internal and external forces with which an organization is confronted [6].

Consequently, it may potentially drive the firm to achieve the goal given a limited resource. In this study, five aspects, having several criteria each, represent the main functional strategy of the case firm (Figure 1). The five functional areas are the alternatives for the case firm to implement a strategy. This study assumes the interdependency of variances since the strategy considers the interactive diverse resources having interdependent variances. Only when the information sources are non-interactive and their weighted effects are considered as additive that it is considered independent.

A quantitative method of evaluating variances that takes into account its feedback relationship has been developed by Saaty [7]. The analytical network process (ANP) can deliver the support for decision making and provides the advantage of having an assumption of interdependency of variances. Hence, the proposed network framework offers the wide-ranging applications in a variety of settings which can guide firms to evaluate their current strategy. Furthermore, this rigorous process can eliminate personal bias to the decision making process which will be beneficial to firms in evaluating the company.

## 2. Literature Review

### 2.1. Strategy

Corporate strategy is the long-term direction of an organization. In defining strategy, some writers stress its planning and integrating functions [8]. Some definitions of strategy relate to it as a plan that both directs and coordinates the activities of an organization, clearly demonstrating the rationale behind creating strategic plans. Table 1 describes the phases and elements of a strategy.

**Table 1.** Formulation and Implementation of Strategy

Stage of the strategy process	Description
<b>STRATEGY FORMULATION</b>	
Mission/vision statement Statement of aims Statement of values	A definition of the business that the organization is in or should be in, i.e., the organization's purpose
Environmental analysis	Monitoring and analyzing the forces at work in the organization's business environment
Objectives	A precise statement of what is to be achieved and when the results are to be accomplished. They represent a more detailed expression of aims.
Strategic choice	Deciding how objectives are going to be achieved based on a range of strategic options
<b>STRATEGY IMPLEMENTATION</b>	
Plans	The specific actions, in terms of operational activities and tasks, that follow from strategies
Monitoring and control	The process of monitoring the proposed plans as they proceed and adjusting where necessary. Strategies may well be modified as a result

After corporate strategy, functional strategy forms the second level of strategy. Depending on the firm's organization and operation, corporate strategy has to be translated to functional strategies corresponding to the various functional areas of an organization. There are five basic functional areas, namely, management, marketing, human resource management (HRM), research and development (R&D), and finance. The firm's functional strategy also needs to be scaled down to the basic level which is essential in operation and implementation.

### 2.2. Five forces

Porter's five forces is a framework for industry analysis and business strategy development formed by Michael E. Porter of Harvard Business School in 1979. Porter referred to these forces in the micro environment as these consist of those forces close to a company that affect its ability to serve its customers and make profit. Normally, a change in any of the forces requires a business unit to re-assess the marketplace owing to the change in industry information. It should be noted that the overall attractiveness of an industry does not imply that every firm in the industry will return the same profitability. By applying their core competencies, business model or network, firms are able to achieve

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