Robust Strategic Planning Employing Scenario Planning and Fuzzy Inference System

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ABSTRACT

Time and uncertainty play crucial roles in the strategic planning process. Organizations are faced with unpredictable changes in new technologies, products and marketplaces but it is noteworthy that they can prepare themselves to face such changes and this readiness results in competitive advantages. This article aims at introducing a method that enables organizations to draw up robust strategies in uncertain situations and leads to formulation of strategies to immunize them against environmental changes. The proposed method has combined ‘scenario planning method’ and ‘fuzzy inference system’ with traditional strategic planning by adopting a new and creative approach. Using the values of uncertain factors in the external environment, this method designs some probable forthcoming scenarios of the organization and then based on fuzzy information described by experts for fuzzy inference systems, defines a robust strategy to deal with the designed scenarios and assists managers in their evaluations of future environment. [Article copies are available for purchase from InfoSci-on-Demand.com]

Keywords: Fuzzy Inference System; Scenario Planning; Strategic Planning; Uncertainty

INTRODUCTION

The similarity between the future and the present time is an incorrect assumption. Uncertainty is concealed within the future and addressing it properly is one of the most complicated concerns of managers. The efficiency of the devised strategies is affected by the uncertainty of the environment. Uncertainty in the real world has gradually turned into the focal point for strategic planning. The experts of this field consider the general methods in strategic planning
to be inefficient to confront perturbations in the situation.

In Baricelli et al.’s (1996) opinion, time and uncertainty play important roles in the process of strategic planning. They think uncertainty results from various levels of demand forecast and cost estimation. Traditional methods of strategic planning tend to develop strategies according to definite forecast of the future.

Forecasting and analyzing current conditions are utilized to lay out a road map for the future. The more confused the situation and quicker the changes, the less likely to materialize the forecasting will be. Thus, facing the uncertain factors and situation changes, the aforesaid methods in strategic planning lose their efficiency. This has led to devising tools to provide planners with the insight to confront changes of the situation.

Stochastic programming, scenario planning, decision analysis, and game theory are some of these tools. Scenario planning is one of the common methods to deal with uncertainty in the situation that has gained increasing popularity among planners due to its capabilities in picturing probable future.

This article, first deals with the history of scenario planning utilization and various definitions of the concept of scenario. Then, the writers’ methodology to use scenario planning features in the process of strategic planning is described.

This methodology has been designed in three stages. In the first stage, it identifies the situation in which the organization is working and determines the position of the organization by means of traditional tools of strategic planning. In this phase, a portfolio of possible strategies is devised for the organization.

In the second phase, using the results of the first stage, the most important factors of uncertainty in the situation are identified. Finally in the third phase, every available strategy is assessed by each scenario. In this stage, a knowledge base is chosen for each strategy using pundits’ opinions. The performance of each strategy is determined by measuring the improvement rate in the critical success factors of the organization. The scenario specifications are given to the strategy database and the performance resulted from the implementation of the strategies are examined using the Fuzzy Inference system. Based on the function of each strategy in different scenarios, a robust strategy is selected from the existing strategies in the portfolio.

A robust strategy is the one which maintains its efficiency and popularity facing various future conditions that are called future scenarios that are devised using changing driving factors. This strategy might not be the best in a certain scenario but regarding all future scenarios, it is the most suitable one.

Therefore, a robust strategy has two characteristics:

- It is acceptable and applicable to all future scenarios. In other words, the strategy which suits only a certain scenario can not be called a robust one.
- It will meet the highest expectations in a scenario.

It is noteworthy that, efficiency is one of those concepts that, considering all their potentials in dealing with uncertainty, have earned a lot of popularity in many sciences.

In the fields related to operational research, a method has been put forward to optimize solutions in uncertainty condi-
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