Chapter 9

New Product Development Methodology

1. INTRODUCTION

New products play a vital role in the successful growth of an enterprise. They consist a significant factor concerning the increase of the profits. All over the world enterprises are forced to innovation and new product development due to a variety of reasons such as the continuous changes in the consumers’ preferences, the ongoing competition, the establishment of new companies therefore of new competitors, the rapid advancement of technology, the frequent changes in legislation, and the existence of different legal systems from country to country. In order to survive, companies have to develop new products. Furthermore, the life cycle of most products becomes continuously smaller because of the technological obsolescence and the rapid rate in which usually consumer’s preferences change. Consequently, the need for innovation and expansion of the production lines in order to extend the life cycle of the products becomes continuously imperative for every enterprise and organization. This extension of the life cycle may be accomplished by the substitution of the product or by some changing some of its features, or by introducing a completely new product in the market.

The introduction of new products in the market is an ill-structured decision making process and exhibits several risks for the enterprise. Studies on the launch of new products have shown that 33-66% of new products fail commercially. The factors that affect the success or the failure of a new product are continuously changing. Among them, the most important are the quality of the product, the satisfaction of the customers, the time of purchase, the structural integration through marketing R&D, and the
global formed strategies and alliances. According to Urban and Hauser (1993), the future trends refer to the overall generation of ideas, strategies and suitable tools in order to develop new products. The environment, in which new products are or will be developed and used, changes rapidly and thus the members of marketing departments within the companies should be trained and adopt new techniques and approaches in order to be able to respond to the rising challenges and to the newly presented opportunities. Companies that progress more quickly than their competitors in the technology level, lean on the invention of innovative ideas, and adapt more swiftly to the satisfaction of the persistently changing needs of the customers will obtain competitive advantages.

The new product development process is subdivided into various stages, according to several authors (Nylen, 1990; Urban and Hauser, 1993; Kotler, 1994). Basically, the differences among the suggested alternative processes are because of the employment of different approaches of the same process.

The new product development process, from the apprehension of a novel idea until the selection of the market penetration strategy, is a completely unstructured process and therefore it cannot be programmed in any way and requires at every turn the interference of the decision maker. On the other hand, the variety of the data used, their processing through various models as well as their interpretation is a procedure with several problems. The decision-maker has to choose among a volume of available forecasting, data analysis, brand choice, and multicriteria analysis models. The selection of the each time appropriate model lies on the decision-maker, which makes his choice based on his personal experience. Therefore, the lack of decision maker's specialized knowledge generates the imperative necessity for the presence of an expert during the new product development process.

The difficulties and problems detailed above render pivotal the presence of a tool that will be able to process the data and support the decision-maker in the selection of the suitable models. In addition, owing to the fact that experts play a vital role in the new product development process, an intelligent decision support system with built-in knowledge and inference mechanisms could be extremely beneficial in the decision making process (Ram and Ram, 1989).

Usually the launch of a new product fails due to the inadequate analysis of the market situation or due to the lack of support in the assessment of the new product. The development and use of an intelligent DSSs in new product design and development decisions has the following effects:

- Improve the quality of the decisions concerning the new products,
- especially in organizations that exhibit lack of specialized knowledge in the new product design and development process.