

Chapter 1

INTRODUCTION

Nowadays, the competitive situation of companies is characterized by a very strong orientation towards product individualization. The change from a seller to a buyer market has led to a saturation situation within the industrial goods' markets where the offer by far exceeds the demand. Companies have to struggle for gaining new customers. This major change has increased the customer's power, which has driven companies to differentiate their products from those of competitors by offering individualized problem solutions (Nilles 2002, p. 1). The customer's expectations with respect to services and physical products have also dramatically risen. Therefore, companies tend to increasingly fragment the markets, sometimes to an extreme level, to where each market is occupied by only one customer ("markets of one").

The individualization trend is mainly ascribed to social changes. The high growth of population was a key factor for the emergence of the mass production system, one century ago. But nowadays, especially in the industrial nations, the demographic development shows the population to be steadily decreasing. Simultaneously, wealth and the demand for luxury continuously increase. Psychologists know that in the postmodern era, the need for change and novelty is becoming as important as survival for human beings. The human behavior is essentially determined by the individual principles and is rarely oriented on the behavior of the others (self-determination). It is also well known that if more and more people possess the same object, then the possession of this object is no longer interesting and loses its attractiveness (Piller 1998, p. 22). All of these reasons have contributed to a need for individualization and the demand for products that exactly meet the individual expectations of customers.

Another important trend in the business world is the continuous decreasing of the product life cycles. Consequently, the timeframes for

product amortization are considerably reduced. At the same time, the costs of research and development steadily increase because of higher technological complexity of products (Nilles 2002, p. 2). In addition, the ability of fulfilling individual customer needs necessitates the capability of producing a large number of product variants, which induces high costs at both operations and manufacturing-related tasks. In effect, in contrast to the mass production system, in which the economies of scale can be fully utilized, the individualization of customer requirements usually involves a loss of efficiency. On the other hand, globalization and deregulation of markets as well as the rapid diffusion of e-commerce and e-business over the Internet has led to more intensive and aggressive competition. This has also forced companies to develop strategies in order to resist strong price pressures, especially from those companies that are producing in low-wage countries.

The challenge that manufacturing companies have to face is to provide individualized products and services by maintaining a high costs' efficiency. To be successful, companies have to address both of these perspectives, which are necessary for gaining a competitive advantage. The manufacturing of products according to individual customer needs is referred to as product customization. Whereas customization does not necessarily imply a focus on the costs' perspective, in this book we will concentrate on both product customization and costs' efficiency, namely mass customization, which is a new business paradigm that is very challenging for manufacturing companies.

Mass customization is a business strategy that aims at fulfilling individual customer needs with near mass production efficiency (Pine 1993). Whereas the literature includes many contributions that discuss the strategic benefits of mass customization, there are large deficits concerning its implementation in practice. Companies that want to pursue this strategy need a set of practical tools in order to make mass customization work efficiently. The main problem is about how to be able to produce a large number of customer oriented product variants by simultaneously providing prices that do not considerably differ from those of mass products.

Providing customers with individualized products at affordable prices is the main goal of mass customization. However, customers generally accept paying premium prices compared to standard products because they honor the additional benefits of customized products. Therefore, if mass customization fails in providing customers with an optimal or a better solution than any mass products, then the product resulting from the customization process will have, from the customer's perspective, no more additional value than any other standard product. As a result, an optimal understanding of customer needs is a necessary requirement for the success