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## Product portfolio management in Brazilian technology-based companies: case studies in medium and large companies

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### Abstract

Product portfolio management (PPM) affects the trajectory of innovation and new product development because it guides not only the project of new products but also decisions to revise, update or discontinue products that are currently being produced and commercialized. Some studies emphasize that PPM allows companies to better evaluate, select and allocate resources across different product projects. The objective of this study was to analyze the PPM practices and methods in two Brazilian technology-based companies, one medium sized and one large. Portfolio management is more complex when a company has a reasonably sized portfolio with multiple projects in the pipeline. The main contribution of this paper is the study of product portfolio management in technology-based companies, which presents and analyzes the main practices that the companies have used for decision making in product portfolios. It was noted that the two companies used financial methods as the main mechanism for product portfolio decision making; not only does this corroborate with international researches on the subject, but it also demonstrates the companies' concern with the goal of maximizing value. Company A showed balance, including short- and long-term planning in its product portfolio as well as product designs with both incremental and radical innovations.

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## 1. Introduction

Product portfolio management (PPM) is an important topic within new product development (NPD). After all, to achieve a planned business strategy, it is also necessary for the company to have a set of products that serves its operating markets. This set of products is the sum of the current product line and the designs for new products and can be called the company's product portfolio [1]. PPM affects the trajectory of innovation and NPD because it guides not only the creation of new products but also decisions to revise, update or discontinue products that are currently being produced and commercialized. Some studies [1, 2] have emphasized that PPM allows companies to better evaluate, select and allocate resources across different product projects. In routine cases, PPM can, for example, determine how to allocate resources to the most promising project ideas, thus maintaining efficiency and defining priorities in environments where resources are scarce. Additionally, studies [3,4] have found that decision-making assessments of portfolios are essential to the success of new product development programs.

Despite the importance of the subject, very few studies in Brazil have discussed product portfolios in technology-based companies (TBCs). Accordingly, a gap is seen in the domestic literature in relation to the identification of the activities carried out by these organizations, the difficulties and challenges in conducting the process of managing the product portfolio and the dissemination of best practices considering the specificities of this type of company.

The general objective of this study was to assess how certain medium and large TBCs in the state of Sao Paulo practice product portfolio management. Portfolio management is more complex when a company has a reasonably sized portfolio with multiple projects in the pipeline [5,6]. Thus, only medium- to large-sized companies were of interest. The main practices adopted by such companies to manage their product portfolios were also analyzed. Two companies were selected for this purpose: the first is large and stands out in the Brazilian scene in terms of the number of patents, and it also has a broad product portfolio that is frequently updated. The second company is a medium-sized business that develops highly technological products. This paper also addresses a brief theoretical review of PPM. Then it addresses the research methods used and, subsequently, introduces and discusses the empirical results obtained. Lastly, the final considerations are presented.

## 2. Product portfolio management

Product portfolio decisions is responsible not only for determining the designs for new products but also revisions, updates and even decisions to discontinue products that are currently being produced and sold [1]. Furthermore, these resolutions also define which product design projects should be accelerated, aborted and deprioritized, as well as which resources should be allocated to each of these projects.

Several publications have shown a consensus that product portfolio management should fully comply with the following three basic performance objectives: 1) maximizing portfolio value, 2) aligning the product portfolio and business strategically and 3) balancing the portfolio [7,8,9]. Besides these three objectives already established in the literature, [10] presents a fourth goal for portfolio management: preparing for the future. This goal should reflect an organization's preparation and technological infrastructure for future needs. Table 1 summarizes the four performance objectives identified in the literature for product portfolio management and the respective authors that have presented them.

According to the needs of each company, product portfolio management can take place through the application of both quantitative and qualitative procedures. Among these are financial methods, scoring, ranking, graphs and charts [1, 7, 11], which are briefly presented below. [9] emphasized that there is no single project portfolio management process or method effective for all organizations. Those responsible for implementing the PPM process must know the needs of their organization and the management models for the portfolio of projects that have already been deeply developed and choose the most suitable steps and techniques.

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