Innovation portfolio management: enhancing new product performance

Despite the fact that innovation portfolio management is an important driver of innovation excellence, it has been relatively overlooked by many companies. Yet, by employing it, firms may realize shorter and leaner innovation processes, thereby strengthening their competitive position. This article explains the key steps that managers can take to implement or enhance their organizations’ innovation portfolio management.
Many firms increasingly rely on innovation in order to gain superior performance and, especially, to sustain that superior performance over time. This growing focus on product innovation can be observed in manufacturing companies across a range of industries, such as automotive, chemicals, electronics, machinery and semiconductors. In particular, firms in Western countries concentrate on innovation as a core strategic means to cope with the growing price-based competition from emerging countries. The strong managerial attention to innovation draws on the insight that the novelty of product innovation activities, by definition, involves uncertainty and risk. Nonetheless, managers can enhance their firm’s new product performance based on establishing proficient innovation management processes.

In this respect, many manufacturing companies have concentrated on implementing systematic new product development processes in order to manage product innovation from idea to launch. As a consequence of most firms’ focus on managing this idea-to-launch process for individual new product development projects, another important element for enhancing new product performance has received surprisingly little attention from many firms: innovation portfolio management. The activities associated with innovation portfolio management focus on a firm’s entire portfolio of ongoing new product development projects, thus exceeding the single project focus of the idea-to-launch process. As such, innovation portfolio management is an important complement to the typical systematic new product development process associated with firms’ attempts to achieve product innovation excellence.

Firms first need to align their innovation portfolio management with their corporate strategy and innovation strategy.

Specifically, innovation portfolio management is directed at the optimization of a firm’s innovation portfolio. Thus, it goes beyond the selection of individual new product projects; rather, it describes a dynamic decision process that is continuously updating the list of ongoing projects and the allocation of resources to them. Hence, the innovation portfolio management process involves the assessment and prioritization of new projects as well as the acceleration and termination of active projects. Accordingly, it includes essential project decisions, especially in the early stages of the innovation process. Consequently, innovation portfolio management aims at “managing the right new product development projects,” whereas a systematic idea-to-launch process aims at “managing new product development projects right.”

What objectives do firms pursue?
The specific characteristics of product innovation make innovation portfolio management a major challenge. In particular, companies need to take risky and future-directed project selection and resource allocation decisions in a dynamic environment with high degrees of uncertainty and scarce resources. At the same time, the design of new product portfolios is an essential means for implementing a firm’s corporate strategy, which underscores the importance of innovation portfolio management. Firms typically pursue four major objectives in innovation portfolio management. These four objectives cannot usually be pursued in isolation. Instead, there are multiple interdependencies among the objectives, each with positive and negative synergies. Thus, companies often need to find a
balance between emphasizing some of the following four objectives while de-emphasizing others (Figure 1):

1. **Value maximization**: firms typically attempt to optimize the value of their new product portfolios; in this regard, firms try to focus on profitable projects with potentially high returns.

2. **Portfolio balance**: innovation portfolio management is further directed at balancing the mix of different types of projects, such as long-term and short-term projects or incremental and radical ideas.

3. **Strategy alignment**: companies need to align their innovation portfolios with their corporate strategies to achieve strategic fit concerning investment decisions and strategic priorities.

4. **Project number**: innovation portfolio management includes continuous decisions about portfolio size, i.e., the right number of active projects relative to the available resources.

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**Figure 1. Innovation portfolio management objectives**

Companies with proficient innovation portfolio management processes typically use multiple tools simultaneously.

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What activities need to be considered?

Similar to a systematic idea-to-launch process, firms typically distinguish multiple phases with different activities of the innovation portfolio management process. Basically, the activities need to be tailored to the particular company characteristics, but there are some general activities that can be distinguished. In general, the specific number of phases of the innovation portfolio management process (e.g., five, four or three phases, potentially with sub-phases) is not critical. What is critical is the establishment of a systematic innovation portfolio management process. Further, this process needs to be aligned with the firm’s remaining organizational processes, especially with new product development, and it needs to be clearly communicated throughout the organization. Hence, embedding the innovation portfolio management process in the firm is an important driver of proficiently managing the innovation portfolio. A typical systematization of the process includes the following groups of activities in five phases that illustrate the nature of innovation portfolio management as a dynamic decision process (Figure 2):

1. Strategic direction: firms first need to align their innovation portfolio management with their corporate strategy and innovation strategy. These activities are essential to ensure sufficient strategic fit and direction of the innovation portfolio management decisions regarding the initiation and termination of new product projects.

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2. **Information generation:**
The second group of activities primarily focuses on the collection and generation of relevant information for innovation portfolio management. The relevant information comprises data about individual new product projects as well as firm-level information, such as data about available resources.

3. **Information evaluation:**
The third set of activities is directed at the evaluation of the pieces of information that have been collected. In particular, this step involves the accumulation, aggregation and analysis of information. In this stage, the particular tools for innovation portfolio management, which are discussed in the next section, play a prominent role.

4. **Information communication:**
After evaluating the information, the results have to be communicated to all relevant players in the organization. In addition, this fourth phase involves the support of the portfolio management decisions, for instance, resource allocation decisions that may lead to the prioritization or termination of new product projects.

5. **Regular adaptation:**
The fifth and final phase of the innovation portfolio management process is directed at a continuous update and adaptation of the portfolio management activities. This includes a regular monitoring of ongoing projects as well as reconsidering prior decisions that may be necessary in response to emerging trends.

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**Figure 2. Innovation portfolio management process**

[Diagram showing the process flow with gears labeled: Strategic direction, Information generation, Information evaluation, Regular adaptation, Information communication.]
What tools can managers use?

Managers can use a variety of tools to support their firms’ innovation portfolio management. In particular, these tools are helpful in the information evaluation phase because they allow for aggregating and visualizing information as well as comparing data from multiple new product projects. Hence, the use of suitable tools is an important step in firms’ pursuit of the four major objectives of innovation portfolio management. Firms with proficient innovation portfolio management processes typically use multiple tools simultaneously. Each tool has particular strengths and weaknesses, and is especially useful for achieving one or several (but not all) of the four major goals. Accordingly, there usually is no one overall best tool for innovation portfolio management. Instead, a combination of multiple tools helps managers to take into account the different aspects of innovation portfolio management. To arrive at a systematic overview, the tools for innovation portfolio management may be classified into five groups. This list of groups is not comprehensive, but the following five groups include the most popular tools for innovation portfolio management (Figure 3):

1. **Plot diagrams**: this group of tools comprises bubble diagrams and priority-risk diagrams. Many bubble diagrams can be traced back to the traditional Boston Consulting Group matrix, and they often involve two axes with dimensions referring to risk and reward. The size of bubbles typically indicates the number of projects in a given group. Priority-risk diagrams extend bubble diagrams with risk mitigation logic to estimate the portfolio risk and to consider the effects of adding new projects to the current innovation portfolio.

2. **Decision systems**: this set of tools includes decision trees and artificial neural network systems. Decision tree analyses often use financial value and risk data to generate future scenarios. In particular, decision tree models allow for considering multiple possible outcomes and for taking into account several sequential decisions. Artificial neural network systems constitute decision support systems that predict financial and technical success for new product projects to arrive at clear portfolio decisions concerning the initiation or termination of specific projects.

3. **Scoring approaches**: this collection of tools comprises scoring models and analytical hierarchy processes. Scoring models refer to ranking projects on various dimensions, e.g., risk, competencies, strategic fit and competition, which are weighted and aggregated to arrive at an overall score for each new product project. Scoring models enable managers to rely on a detailed list of criteria in a systematic way. Analytical hierarchy processes combine a scoring approach with constrained optimization logic to support complex decision-making.

4. **Program illustrations**: this group of tools includes strategic road maps and product innovation charters. Road maps refer to graphical illustrations of information to support long-term technology and market planning. Road mapping may further enhance communication and organizational...
learning because it helps to integrate the perspectives of multiple organizational departments, such as R&D and marketing. In addition, product innovation charters indicate target business areas as well as specific objectives and development programs to ensure active innovation strategies.

5. Expenditure analyses: this set of tools involves strategic buckets and sensitivity analyses. Strategic buckets describe top-down strategies for innovation expenditures to ensure simultaneous and balanced investments in different project types, e.g., radical and incremental ideas, in line with corporate strategy. Sensitivity analyses help to compare the maximum and minimum values of new product projects relative to a base value. Thus, these analyses help managers to deepen their understanding of project and portfolio outcomes under different internal and external conditions.

How to start implementation
Innovation portfolio management is an important driver of innovation excellence, but it has been relatively neglected by many firms. This article allows managers to immediately take important steps to implement or to enhance their firms’ innovation portfolio management. Based on the four major objectives, firms can establish a particular direction and focus for their innovation portfolio management. The process segmentation has further underscored the more important activities of systematic innovation portfolio management. In addition, the brief overview of tools provides a starting point for establishing specific means to support innovation portfolio decisions. As such, a suitable use of several tools helps managers to achieve the variety of benefits associated with proficient innovation portfolio management. These benefits comprise a more effective and efficient use of scarce resources in firms’ innovation portfolios. Consequently, firms may realize shorter and leaner innovation processes, and they may strengthen their competitive position concerning new technologies, patents and markets.

In conclusion, managers may want to consider putting sufficient emphasis on innovation portfolio management and, by doing so, achieve a clear leverage that enhances their firms’ product innovation outcomes. In particular, it often provides many new opportunities that substantially exceed the opportunities from systematic idea-to-launch processes in new product development. Accordingly, analyzing the current innovation portfolio in light of a firm’s corporate strategy and the four major objectives of innovation portfolio management is a good starting point for systematizing innovation portfolio management and advancing toward product innovation excellence.

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