The PDMA ToolBook for New Product Development

Edited by

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John Wiley & Sons, Inc.
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Introduction

Welcome to *The PDMA ToolBook for New Product Development*. This *ToolBook* is written by new product development (NPD) experts. It provides in-depth information on a collection of 16 leading-edge product development tools and techniques. What really distinguishes this book is that its tools can be used immediately by applying the information provided here. Each chapter explains a tool, lists the steps to implement it, provides examples of its use, and provides both keys to success as well as pitfalls to avoid. Most chapters include diagnostic guides and sample templates. Each tool has been used successfully by a number of organizations to improve new product development.

Since different sets of tools are apt to be more useful to you depending on your organization level and NPD experience, this book is organized into four parts for your convenience. While all four parts will be of at least general interest to anyone involved in NPD, we suggest that you look first to the part that most closely fits your current responsibility in the organization.

**Project Leaders**—If you are leading a product development team, you will find the first half of the *ToolBook*, Parts 1 and 2, most useful. These tools help those leading projects manage their project more effectively or efficiently.

Part 1 presents four tools a project leader can use in the Fuzzy Front End of the project—tools to help you do a good job on the up-front homework of a project. These tools help with tasks that can be done before true development starts. Each of these tools provides a different method for improving the project’s odds for success by increasing understanding and knowledge. Fuzzy Front End project leaders will benefit from applying one or more of these tools before they start each new project.

The tools in Part 2 are useful across the entire life of a project. Although projects likely would benefit most from using these tools earlier rather than later, project leaders can apply any of these at any time. You will probably benefit from applying each of these tools a number of times during the project.

Parts 3 and 4 contain cross-project tools—specifically, tools to be utilized by process owners (Part 3) and program managers (Part 4). Process owners are those executive managers responsible for developing and maintaining the firm’s NPD process. They also may be responsible for deploying and facilitating process use across the organization. A program manager is the person assigned responsibility for overseeing development progress for all of the projects associated with all the various product lines within a business unit or organization.

**Process Owners**—those who are responsible for developing, maintaining,
and deploying the product development process in the business unit or firm—will benefit the most from the tools in Part 3. Each tool in this part represents a method to improve a particular aspect of the product development process. These are tools that your firm may consider incorporating into its standard NPD procedures.

**Program Managers**—anyone who is responsible for managing a program of multiple NPD projects within a business unit or organization—will find the tools in Part 4 most useful. These tools provide four different ways for measuring and improving the overall portfolio of projects that the firm undertakes over time.

**HOW TO USE THIS BOOK**

This is a book that you will use chapter by chapter, not all at once. We recommend that you start by reading the introductions to each part. The introductions provide more information about situations that may be aided by each of the tool chapters. You also may want to skim several of the chapters just to become familiar with some of the specific tools. Then, as you consider a weakness in your NPD process or a problem situation that you’d like to fix, you can go to the particular chapters that apply to that situation and try putting one or more of these tools to immediate use.

Alternatively, you may just be looking to improve some aspect of your NPD on a proactive basis. In this case, we recommend that you look at the chapter(s) that most closely fit the NPD area you are looking to improve. The chapters are full of best-practice tools that can improve the effectiveness of any NPD organization.

The CD-ROM that accompanies this book contains several important items. Most chapters have templates, diagnostics tools, photos, examples, and additional information on the CD.

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The tools of Part 1 will be most useful to project leaders prior to the actual start of an NPD project. At this point in the NPD process, the product or service has not been specified, the business plan has not yet been approved, and only a few of the team members may have been identified and are working actively. These tools help NPD teams do a good job completing the up-front homework of a project, which has been shown to strongly correlate with project success.

Each tool of Part 1 provides a different method for improving the probability of project success by increasing understanding and knowledge about competitors, technologies, markets, and customers. The tools are organized from more general, broader types of tools in Chapter 1 to those that are more focused and narrowly targeted at solving one particular problem in the later chapters of this part.

Chapter 1, “Fuzzy Front End: Effective Methods, Tools, and Techniques,” defines five tasks of New Concept Development that must be completed before a formal NPD process can be started: opportunity identification, opportunity analysis, idea generation and enrichment, idea selection, and concept definition. Completing these tasks is enabled by the leadership, culture, and business strategy “engine” of the corporation. Without this engine, concept develop-
ment is not supported effectively in the organization. In the FFE, teams iterate back and forth between these five tasks until they define a concept that is acceptable, strategically as well as in terms of feasibility and potential, for entering the development and commercialization process. This chapter overviews a number of methods, tools, and techniques that help teams successfully complete each of these tasks, and that help create an effective leadership, culture, and strategy engine for supporting ongoing concept development.

“Hunting for Hunting Grounds: Forecasting the Fuzzy Front End,” Chapter 2, is a tool for helping an organization move from current markets and products to new markets and products. It is especially useful for firms in mature product markets, where future new product opportunities are usually limited to incremental improvements to the current products and where there is little future additional growth opportunity for the organization. The chapter steps through the four stages in this method: preparing (building a charter and project plan), hunting (discovering a large number of potential opportunity areas), model building (winnowing the full set of opportunities down to three to five problems that make sense for your organization to solve), and path building (creating a series of high probability, new-revenue-stream business opportunities to move the firm into the new product-market area in a planned manner).

An in-depth, qualitative telephone interviewing tool that helps organizations discover how a new product concept’s critical attributes are seen by prospective customers is presented in Chapter 3, “Telephoning Your Way to Compelling Value Propositions.” While this technique can be used for increasing understanding for any concept, it will be most useful for firms who market to other businesses and have difficulty doing focus groups or other types of market research because their customers are geographically dispersed or not readily accessible in person. It is also useful for those trying to develop understanding in formulating a complex or technology-dependent concept. The chapter defines the characteristics of a compelling value proposition, presents the steps associated with the in-depth interviewing method, shows how to successfully use a telephone to do these types of interviews, and closes with information on how to recast the collected information and insights into a compelling value proposition.
Chapter 4, “Focusing NPD Research on Customer Perceived Value,” describes market research methods and tools that help a firm understand how customers evaluate all of the benefits and costs of an offering and compares them to the benefits and costs of other products or services that they perceive as being alternatives. Although this customer perceived value is the basis upon which customers decide which products and services to purchase, it is difficult to quantify because it is market perceived (not firm imposed), complicated, important only as it is relative to other alternatives, and dynamic because marketplaces are always changing. The chapter overviews techniques for understanding customer wants and needs, identifying value attributes, and understanding market factors, perceived importance, and perceived relative performance. The understanding gained from developing this information can then be applied to specific new product development issues. Firms entering new markets or participating in dynamic markets or business environments will find this tool especially useful in maintaining product success.
Fuzzy Front End: Effective Methods, Tools, and Techniques

Peter A. Koen, Greg M. Ajamian, Scott Boyce, Allen Clamen, Eden Fisher, Stavros Fountoulakis, Albert Johnson, Pushpinder Puri, and Rebecca Seibert

The innovation process may be divided into three areas: the fuzzy front end (FFE), the new product development (NPD) process, and commercialization, as indicated in Figure 1-1.1 The first part—the FFE—is generally regarded as one of the greatest opportunities for improvement of the overall innovation process.2 Many companies have dramatically improved cycle time and efficiency by implementing a formal Stage-Gate™ (Cooper 1993) or PACE® (McGrath and Akiyama 1996) approach for managing projects in the NPD portion of the innovation process. Attention is increasingly being focused on the front-end activities that precede this formal and structured process in order to increase the value, amount, and success probability of high-profit concepts entering product development and commercialization.

The purpose of this chapter is to provide the reader with the most effective methods, tools, and techniques for managing the FFE.3 The chapter begins with a brief discussion of the literature and the rationale for developing the new concept development (NCD) model. The next section describes the NCD model. The remaining sections provide a description of the most effective methods, tools, and techniques to be used in each part of the NCD model.

LITERATURE REVIEW AND RATIONALE FOR DEVELOPING THE NCD MODEL

Best practices are well known at the start (Khurana and Rosenthal 1998) and within the NPD portion (Brown and Eisenhardt 1995; Cooper and Klein-schmidt 1987; Griffin and Page 1996) of the innovation process. Similar research on best practices in the FFE is absent. Many of the practices that aid the NPD portion do not apply to the FFE. They fall short, as shown in Table