Book Reviews

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These reviews remind us that although they are aimed at helping you reach a purchase decision on the book, perhaps more importantly, they are intended to enlighten you in emerging areas of product and service development. New books are perfect for learning about new trends or extensions of the knowledge base, and they allow you to delve into allied areas that are likely to affect your career in product innovation.

Thus, Ruediger Klein reviews our first non-English book, which will expose non-German readers to a German view of software management and product management. Carla Kuesten gives us an in-depth view of a single industry—the food industry—with lessons that readers can probably translate to their field. For future issues, we have a lawyer reviewing books on intellectual property protection, and another review will cover current topics in China regarding product development.

Please let us know of other tangents we should be covering.

Books reviewed in this issue:

- *The PDMA ToolBook 2 for New Product Development*
- *Democratizing Innovation*
- *The Business of Software*
- *Software-Produkt-Management*
- *New Food Product Development: From Concept to Marketplace*

The PDMA ToolBook 2 for New Product Development

Paul Belliveau, Abbie Griffin, and Stephen M. Somermeyer, eds. Hoboken, NJ: John Wiley & Sons, Inc., 2004. 546 + xxii pages. US$75.00.

The PDMA ToolBook 2 for New Product Development, like *ToolBook 1* (Griffin, 2002), is an authoritative, methodological examination of selected new product development (NPD) tools. Those who liked *ToolBook 1* will also enjoy *ToolBook 2*. Both books were written by experts and provide relevant and clear direction on how to use NPD tools. *ToolBook 2* has 35 contributing authors; five of them also appeared in *ToolBook 1*. The editors of *ToolBook 2* are the same three individuals, and they skillfully blend contributions so that there is a consistent style across the 33 chapters of the two books. Both books have good indexes, which is particularly important in an anthology.

ToolBook 2 has 17 chapters grouped into four parts. Most of the chapters describe the tool in a step-by-step fashion and provide examples to assist the reader with application. Some are common, basic product development tools that people ought to know, and some are emerging methods. This review highlights an exemplary chapter for each of the book's four parts. Selection criteria used were the tool's relevance, potential power across a broad cross-section of professionals, and the author's apparent front-line experience with contemporary product development issues.

Part 1, "Organizational Tools," provides an enterprise perspective to NPD. The strongest chapter seemed to be chapter 2, "Bringing Radical and Other Major Innovations Successfully to Market: Bridging the Transition from R&D to Operations." This chapter describes a transition function for facilitating the transition activities of research and development (R&D) project teams, business unit interfaces, and senior management. The results are a decrease in project uncertainty and an increase in the likelihood of business unit adoption. The chapter provides self-scoring assessments to help the reader understand key dimensions of transition readiness.

The other chapters in part 1 extend the enterprise perspective. These chapters include the daunting

challenge of "Achieving Growth through an Innovative Culture," "Turning Technical Advantage into Product Advantage," "Enhancing Knowledge Creation for Breakthrough Innovations," "Virtual NPD Teams," and "Codevelopment Partnerships."

The editors of *ToolBook 2* recommend that all six chapters of part 1 should be read in their entirety. We agree with their assertion that "Model behavior by leadership [presumably the top management] is an important factor to any organization's performance" (p. 1). However, part 1 at times seems a bit superficial, probably borne of ambition to address fundamental, strategic issues in a limited amount of space.

The four chapters of part 2, "Tools for Improving the Fuzzy Front End," provide, overall, the strongest of *ToolBook 2*'s four parts. We particularly liked the chapter titled "The Birth of Novelty: Ensuring New Ideas Get a Fighting Chance," which describes the approach SWIFT: strengths, weaknesses, individuality, fixes, and transformation. This chapter can help developers identify and focus product development efforts. NPD teams can use SWIFT to evaluate, develop, and strengthen highly novel concepts generated in the fuzzy front end of the NPD process.

The other chapters in this part are compelling as well. The chapter on "The Voice of the Customer" is one of the most complete, yet compact, tutorials to be found on the topic. The chapter on "Ethnographic Needs Discovery" provides a useful way to connect to the customer. The chapter on "Shifting Your Customers into Wish Mode" is a useful tool for discovering opportunities.

Part 3 is titled "Tools for Managing the NPD Process," and the chapter on "IT-Enabling the Product Development Process" is the chapter that best fits the stated focus. The chapter describes both a maturity model for information technology's use in NPD and a project management approach for accomplishing it.

The remaining three chapters of part 3 are interesting additions for product innovators. "Establishing Quantitative Economic Value" tackles a challenge for developers, especially as organizations adopt more agile development methods. "Integrating a Requirements Process into New Product Development" provides a process to facilitating cross-functional ownership and monitoring of requirements throughout product development. "Toolkits for User Innovation" promotes the benefits of shifting need-related design activities to users. Interestingly, these chapters cover voice-of-the-consumer (VOC) subject matter,

and one could easily argue that they would fit equally well in part 2. We return to this point about conceptual organization at the end of the review.

Three chapters make up part 4, "Tools for Managing the NPD Portfolio and Pipeline." Managing an NPD portfolio is all about making choices: which projects are in, which are out; the level of resources from project to project; and how all projects fit together in light of an organization's capability and strategy.

The process described in "Product and Technology Mapping Tools for Planning and Portfolio Decision Making" will help anyone interested in understanding the usefulness of mapping as a planning tool. Maps utilized in an automobile producer example were both high level and strategic, as well as tactical—involving logic that is more complex and detailed. Implementation can begin at a very modest level and continue to build on existing maps as the organization builds competence in the use of their application.

Part 4 is rounded out by the chapter on "Decision Support Tools for Effective Technology Commercialization," which describes six attributes that characterize an effort as a technology development project or a product development project. The authors say that differences have managerial implications for time-to-transfer technology and its relationship to product launch timing. A chapter on "Implementation of NPD Portfolio and Pipeline Management" describes five levels of organizational maturity in the use of portfolio and pipeline management. A team charged with improving organizational performance would first diagnose the current maturity level, then articulate a value proposition for improvement, and finally create and execute an improvement plan.

Overall, the chapters that comprise *ToolBook 2* offer sound contributions to product development professionals. All chapters offer useful methods and concepts for individuals, teams, and organizations to advance NPD abilities, and the tools apply to most organizations most of the time. Even if your organization embraces only a few of the book's tools, the exposure to the many possibilities is time well spent.

This second PDMA toolbook is a worthy continuation of the series. The metaphor of a book as a toolbox is attractive. The total set of product development tools numbers in the thousands and could easily overwhelm an individual or organization. Presumably, there will be a continuation of the *ToolBook* series, and the editors should address some conceptual weaknesses in organizing the tools. From the

emphasis on VOC, it seems that VOC tools are the most important of all NPD tools. One reason for this impression is that part 2 of *ToolBook 2* is titled "Tools for Improving the Fuzzy Front End (FFE)," but the chapters only focus on VOC tools. Many novices mistakenly assume that the FFE includes only the customer-market dimension instead of also including the technical development dimension. As was previously noted regarding part 3 its tools also cover VOC-related ideas, thus reinforcing this impression.

Both *ToolBook 2* and *ToolBook 1* provide an NPD glossary. Though valuable as reference, the glossary does not clarify the role or use of NPD tools and seems out of place. Omission of a general NPD glossary from future ToolBooks is recommended.

Professionals generally agree that NPD has several major themes—including the notion that NPD is a process—and integration of efforts is one key to achieving good results. Perhaps these notions should become foundations for structuring future Tool-Books. Alternatively, as was done in *ToolBook 1*, the editors could follow the approach of organizing by who uses the tool: senior managers—who may look at portfolio and process elements—functional managers, project leaders, and subject matter experts, as they did in *ToolBook 1*.

Reference

Belliveau, P., Griffin, A. and Somermeyer, S.M. (2002). *The PDMA ToolBook for New Product Development 1*. New York: John Wiley & Sons, Inc.

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Democratizing Innovation
Eric von Hippel, Cambridge, MA: MIT Press, 2005. 204 + x pages, US$29.95.

Reinertsen (1983) originated the phrase *fuzzy front end* to describe the early stages of the new product development cycle when the product concept is fuzzy. Von Hippel (1986) invented the *lead-user* market research tool for creating clearly focused new product concepts.

Product innovation managers employ the lead-user tool to identify emerging customer needs and to build a sharp product concept for a targeted market. Lead users experience new product needs that lie in the future for most prospective customers in the market. These users have put together a well-defined product concept that satisfies their unmet needs and is often a prototype for other users to come.

Disciplined homework characterizes effective use of the lead-user tool. It shares this characteristic with other powerful tools for fuzzy-front-end market research such as voice-of-the-customer interviews. These tools start with an ambiguous product concept and unearth must-have features future customers want and for which they will pay. However, benchmarking studies of the front end find "pitifully small amounts of time and money are devoted to these critical (homework) steps" (Cooper, 2005, p. 9).

The first six of the twelve chapters of *Democratizing Innovation* deal mainly with post-1986 extensions and applications of the lead-user tool. This updating covers practitioner applications in consumer and industrial products and services, both high and low tech. For practitioners who are relative novices in dealing with fuzzy-front-end issues, the chapters serve as a reliable guide for effective use of the tool. For seasoned practitioners, these six chapters provide insight from von Hippel and his colleagues on how to improve their use of the tool.

The final six chapters outline an emerging product innovation philosophy von Hippel labels democratized innovation, which moves beyond an older view of technological innovation as an insider's game needing massive investment in resources. It moves to a view of a lowered cost of admission, through advances in information technology, bringing more people into the game. These chapters will be discussed after reviewing the first six.

After von Hippel (1986) invented his approach to understanding customer needs, new product professionals, and the business press quickly added the term *lead user* to their rhetoric on product innovation management. It is easy to grasp the idea that concepts created by lead users could be more innovative than the incremental improvements created by other end user groups. By definition, lead users are out in front, working at the leading edge of a significant trend in their industry. They have superior knowledge of the problem they wish to solve with the concept they create. Finally, and most importantly, they expect to gain significantly if the product developed from the concept solves their problem.

However, going beyond rhetoric and employing the lead-user tool in product innovation management has

followed a much slower path of adoption. Product innovation managers soon realize that use of this tool needs a major commitment of people, time, and money for effective results. All too often managers balk at earmarking more resources for market research in the fuzzy front end than they or their business unit normally commit.

Democratizing Innovation begins with a chapter providing brief outlines of the chapters to follow. Chapter 2, "Development of Products by Lead Users" reviews the evidence that users often develop and adapt products for their own use. Included are the results of a study by von Hippel (2003) of 30 user–innovators in emerging markets showing that the stronger the lead-user characteristics possessed by a user–innovator, the greater the commercial attractiveness of innovations are developed.

Chapter 3 discusses "Why Many Users Want Custom Products." Chapter 4, "User's Innovate-or-Buy Decisions," introduces the transition costs that influence why users who want a custom product sometimes innovate for themselves rather than buy from a manufacturer of custom products.

Chapter 5, "Users' Low-Cost Innovation Niches," highlights the costs to transfer *sticky* information between user and developer. Stickiness is a measure of the incremental expenses needed to transfer a unit of information in a coherent form. Often the ability of a user or a developer to absorb new, outside technical information depends on related knowledge they already have. Sometimes users know relevant information and could easily provide it to the developers; however, the developers lack the skill for eliciting the information in a way that encourages users to volunteer it.

"Why Users Often Freely Reveal Their Innovations" is the topic of chapter 6. The evidence that free revealing often occurs was a major surprise to von Hippel and his colleagues. By freely revealing information about a product, the innovator gives up all intellectual property rights to the information. Von Hippel argues that some innovating users freely reveal because it is the best practical route for them to increase profit from their innovations by increasing the rate of diffusion of the innovation.

Novice practitioners who want to use the lead-user tool would do well to supplement *Democratizing Innovation* by buying *Breakthrough Products and Services with Lead User Research* (von Hippel, Churchill, and Sonnack, 1998). Written by von Hippel and members of his LUCI lead-user consulting prac-

tice, this handbook walks the reader through typical lead-user studies, pointing out useful levers and potential pitfalls.

In Chapter 7, "Innovation Communities," von Hippel moves into the heart of democratized innovation, which is the organized cooperation among user–innovators in development of innovations and other matters. Open-source software development communities are prime examples of innovation communities. Such communities use the Internet to exchange software code and other information widely, easily, and cheaply. Von Hippel cites figures for Sourceforge.net, an open-source software innovation community. In 2004 Sourceforge.net hosted 83,000 projects and had more than 870,000 users.

Innovation community behavior is also emerging for physical products such as sports equipment. For example, chapter 7 describes how kite surfing enthusiasts have used the site www.zeroprestige.com since 2001 to exchange computer-aided design files and design tips to spread innovations in their sports equipment quickly around the world.

In "Adapting Policy to User Innovation," chapter 8, the author explores how innovation by users affects social welfare. In a recent paper he and Henkel (Henkel and von Hippel, 2005) found that, compared with a world in which only manufacturers innovate, social welfare is increased by the presence of innovations freely revealed by users.

He weakens his argument by a common error, stating "that most new products developed and introduced to the market by manufacturers are commercial failures" (p. 127) and citing studies showing success rates of only 27%. However, a rigorous examination by Crawford (1987) of 34 failure studies from 1945 to 1979 and seven failure studies from 1979 to 1986 showed the commercial success rate over the 1945–1986 period was 62 to 72%. Later studies by the Product Development Management Association (PDMA) in 1990, 1995, and 2004 of more than 1,000 business units show the commercial success rate over this period remains between 56 and 57% (Adams-Bigelow, 2005).

Chapter 9 crystallizes von Hippel's mental picture of democratizing innovation. "[T]he traditional pattern of concentrating innovation-support resources on a few pre-selected potential innovators is hugely inefficient. High-cost resources for innovation support cannot efficiently be allocated to 'the right people' because one does not know who they are until they develop an important innovation" (p. 123). He

states that the cost of high-quality resources for design and prototyping are plummeting and that the result will be democratization of the opportunity to create.

Chapter 10, "Application: Searching for Lead User Innovations," continues the thrust of the previous chapter. The author declares that most manufacturers still think product development's job is always to find a need and fill it. One outcome of democratizing innovation, in his view, is for manufacturers to change the way they currently do product innovation by systematically searching for and further developing innovations created by lead users. A way to do this is for the manufacturer to sell kits to ease users' innovation-related tasks. This is the subject of chapter 11, "Application: Toolkits for User Innovation and Custom Design." However, some lead-user advocates find that business units are reluctant to ship toolkits to prospective lead users. These units believe that giving users a way to customize products is tantamount to shipping an incomplete product (Osofsky, 2005).

The final chapter, "Linking User Innovation to Other Phenomena and Fields," first points out that user innovation communities are a subset of information communities. User-centric innovation is linked with economics of knowledge literature and with the competitive advantage of nations. In closing the chapter von Hippel considers the question of how the topic of this book could complement the way product development is currently taught to product developers.

In keeping with the principles of democratizing innovation, a free copy of the book can be downloaded from http://web.mit.edu/evhippel/www/democ.htm. Von Hippel is head of the technological innovation and entrepreneurship group at the MIT Sloan School of Management. In this short book he says much that is thought provoking and valuable for new product professionals.

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The Business of Software
Michael A. Cusumano. New York: Free Press, 2004. 334 + xv pages. US$28.00.

Software-Produkt-Management
Hans-Bernd Kittlaus, Christopher Rau, and Jürgen Schulz. Berlin: Springer-Verlag, 2004. 171 + viii pages. €44.95.

The Business of Software is an overview of the enterprise software business, strategies for software companies, the history of the software business, best practices in software development, entrepreneurship, and case studies. Its target audience is mainly executives, entrepreneurs, investors, and analysts, though anyone involved in the software business will gain valuable insights as well.

The book is unique because it describes an industry that, due to its products representing codified knowledge versus physical products, is still not well understood. The author's previous books, long-time research, and board-level involvement in a number of companies grant him instant credibility. In particular, the case studies separate this book from most others, which are either written from the vantage point of knowing a few select companies as an employee or of knowing many companies through surveys and interviews. This author has been involved with his case studies—from some of the best-known start-ups to the obscure—as a board member, investor, or consultant.

In the chapter on best practices in software development, the author's background as a researcher of not only American but also Asian and European companies clearly shows in such statements as "[American companies] tend to emphasize shorter or

more innovative programs and spend much more time thinking about what they are writing and optimizing code—which reduces lines-of-code productivity in a gross sense" (p. 184). It is this in-depth familiarity with software development practices, the commercial aspects of the business in the historical context, and international differences that truly establish this book as a milestone in understanding the software business.

In a descriptive book, one would not expect the author to make strong arguments, but he grapples with the question of which business model—products, services, or hybrid—is the best and under what circumstances. This debate becomes a central theme throughout the book and is supported by numerous examples and case studies. In the end, the author does not provide a definite answer but comes close by offering a set of questions to ask oneself and by stating that "hybrid solutions sold to enterprises—the business model that combines products and services—are a realistic goal for a software company that does not have a hit product or a dominant platform to sell" (p. 280).

For investors or simply anyone considering becoming involved in a software start-up, Cusumano offers an eight-point framework to evaluate the viability and growth potential of software startups (pp. 202–12):

(1) strong management team
(2) an attractive market
(3) compelling new product, service, or hybrid solution
(4) strong evidence of customer interest
(5) a plan to overcome the "credibility gap"
(6) a business model showing early growth and profit potential
(7) flexibility in strategy and product offerings
(8) potential for large payoff to investors

Incidentally, these criteria could serve just as well in evaluating nonsoftware startups, such as electronic, telecommunications, or biotech companies.

Software-Produkt-Management is written in German by three experienced practitioners of IBM Germany and BEA (Bill Coleman, Ed Scott, and Alfred Chuang) Systems. Given the book's shortness, its objective to be "the first encompassing treatment of software product management in both English and German literature" (p. 160, reviewer's translation) is ambitious. The book's strength then lies in the ability of the authors to distill the essence of a very wide range of topics. Helpful in this regard is omitting any stories, examples, or case studies, as is typical for a German nonfiction book. The claim of being first is also surprising given the books by Dver (2003) and Condon (2002). In particular, Dver's book is similar in scope and organization.

The authors caution that the book is not meant as a textbook and that its main audience is professionals involved in software product management on both the vendor's as well as the customer's side. The book therefore does not dwell much on complex subjects, and the treatment of some topics seems a bit shallow.

The book's seven chapters are as follows:

(1) "Introduction"
(2) "Views of Product Management in the Literature"
(3) "Software Products: Terminology and Attributes"
(4) "Software as Business"
(5) "Core Elements of Software Product Management"
(6) "Software Product Management as Part of the Corporate Structure"
(7) "Conclusion and Vision"

Although the authors' background clearly is in large enterprise software development, the book's scope includes both business and consumer software. Chapter 4 on the business of software describes the classic characteristics of software, such as unit cost close to zero, low market-entry barriers, stickiness of software with the user, the law of increasing returns, market leadership being essential for success, and partnerships being important for success.

Market leadership is used in this book as both first-mover advantage and market-share leadership. The fact that the software business is less stable due to pricing pressures on products (due to near-zero unit cost) compels companies to always look for the next market, while leaving markets that cannot be served profitably anymore. Consequently, software—compared to other products in the information technology area—has by far the highest cost of sales compared to revenue. Large price flexibility also makes price leadership a product strategy, which is difficult to implement.

Regarding the product versus service debate, the authors quote an article by Cusumano (2003) and apparently agree with the statement that companies must choose between products and services for their primary business. However, they caution against migrating from a custom software business to a standard software business, as this often leads to failure.

The authors view requirements management (sec. 11, ch. 5) as the most important process within the responsibility of software product managers. Accordingly, the topic consumes 36 of the book's 171 pages. This is unlike other books on software product management (e.g., Condon, 2002; Dver, 2003) that balance the traditional four Ps—product, price, promotion, and place—a little more. The authors follow the requirements methodology described in Schienmann (2002) by separating customer, product, and project requirements, where product releases address a subset of customer requirements implemented through projects.

Interesting for non-German readers may be the separation of a document called *Lastenheft*, which represents the product manager's view of the requirements, and a document called *Pflichtenheft*, which is a sort of contract between the development organization and the product manager. Examples of the former can be found in Balzert (2000), and examples of the latter can be found in *IEEE Recommended Practice for Software Requirements* (IEEE, 1999).

The authors include a table for evaluating the usefulness of a variety of sources for requirements for new products, revisions, single customers, business-to-business products, and consumer products (p. 107). Categorization of requirements is a key step toward prioritization and selection. Three major sources for categories are the source of the requirements, the size of their implementation effort, and urgency and importance.

The authors have an interesting viewpoint that product management should be established with a view toward improving the long-term performance of the company and its assets in the form of software products rather than supporting short-term urgencies. This is in contrast to the common practice of using the product manager as the go-to person for all product-related issues, especially when no other function has apparent ownership.

The authors also apparently see the product manager more as general manager with organizational clout than described in other books. For example, the product manager is supposed to discuss the sales organization's structure for the product with representatives from the sales organization. The product manager also appears to be responsible for making sure the support organizations have the appropriate staff and resources to support the product. Finally, the product manager, as the customer of the development organization, is directly responsible for the financing, the development content, and acceptance of intermediate as well as final deliverables.

The two books both provide solid, insightful overviews: one over the general business of software and the other over the work of software product managers within it—although neither uncovers revolutionary concepts. Whereas the German book can only be useful for a subset of *JPIM* readers, alternatives to it do exist in English (e.g., Dver, 2003). Cusumano's book, on the other hand, should be considered for every software product manager's short list, if anything to remind us of the basic considerations for setting a software business's strategy.

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New Food Product Development: From Concept to Marketplace, 2d. ed.
Gordon W. Fuller. Boca Raton: CRC Press, 2005. 388 + xviii pages. US$99.95.

Gordon Fuller guides the reader through the technical and marketplace complexity of new food product development. Obviously seasoned as a food industry consultant, he offers the reader a clear and thorough understanding of how the industry as a whole competes, succeeds, and in some instances fails to bring new products to the marketplace. The book serves as a valuable reference book—rich in details, historical perspective, forward-looking advice, and references.

Scientists, especially those new to the food product development process, will gain a broad perspective and understanding of the industry. Though the book's framework is focused specifically on the development

of food products, its comprehensive content, along with Fuller's broad experience, helps the reader gain valuable perspectives beyond the classroom that would otherwise take years to acquire in practice.

Mature practitioners, including market researchers and marketers, will appreciate and gain valuable insights from Fuller's perspective into the inner workings of the industry. This book delivers helpful information in a concise, organized style—bringing together diverse elements of the food industry that are all important for a new product introduction into the marketplace. Fuller closes his first chapter by defining new product development: "The purpose of the development process is to move a desirable product to market with the least amount of uncertainty respecting its probability of success in the segment of the marketplace where it is to compete" (p. 31).

Some sections are dry, bibliographic, literature reviews. In other cases, fields such as sensory research are blatantly lacking in state-of-the-art practices. The reader will have to look elsewhere for specific subject-matter depth, recognizing that this book is an overview. For example, one could turn to publications, conferences, and online resources of the Institute for Food Technology.

The book begins by defining new products—with distinctions among line extensions, repositioned or reformulated products, innovative products, creative products, and products with added value. Fuller distinguishes innovative products as changes to existing products in contrast to creative products that have not been seen before and brought into existence; added value describes the degree of innovation or change that makes a product more desirable to either customers or consumers. Fuller clarifies the difference between customers and consumers early in the book: A consumer is the end user, and customers are those in the distribution chain, such as grocery stores, restaurants, and food wholesalers.

A three-dimensional block diagram serves to illustrate the conceptual market with the dimensions of consumer elusivity, technical product complexity, and marketplace complexity—aptly illustrated on the book cover to capture the essence of what is inside. The author includes product life cycles and profit and advises companies to research the market constantly for new product ideas and to maintain portfolios of new product ideas. A control chart illustrates the rise and decline of new food product introductions from before 1965 to 2000, showing percent change compared to the previous two-year period (p. 17). The

book offers reasons for the decline in new product introductions since 1982. Fuller encourages the reader to consider five "whys" for undertaking new food development: (1) product life-cycle changes; (2) growth for business goals; (3) creation of new markets; (4) advancement of new knowledge and technologies; and (5) legislation and policy changes.

The influence of various players involved in new product development (e.g., strategists, tacticians, attorneys, quality professionals) offers the reader an insightful perspective from many angles. Senior management, the head of finance, and the head of marketing develop strategy contribute to policy and have final decision-making responsibility. The tacticians—research and development, engineering, and manufacturing—carry out the strategy. Legal and quality control protect the safety of the company and the consumer.

The "Going to Market" chapter covers the varieties of market tests typically applied during development activities: focus-group interviews, concept tests, blind-product tests, and market tests. Fuller offers goals, cost implications, considerations, advantages and disadvantages, and cautions, and he discusses when, where, and how to introduce the product into the marketplace. The directions are routine, standard thought processes most seasoned marketers would consider for product introductions. A summary of new food product introductions highlights elements in success or failure as cited in the literature and thus helps to steer future efforts; these are cited in table format (p. 234). Most reasons for success or failure have not changed over the years and include strategic direction, product promise not delivered, and positioning or no competitive point of difference. Fuller rephrases Silver's (2003) nontrivial seven deadly sins of product development to guide developers. Additional insights on top reasons for failures adds to understanding guidelines to apply moving forward—top mentions for failure include both internal and external reasons.

The "Going Outside" chapter considers outsourcing, joint ventures, partnerships, and hiring of consultants. Fuller cuts to the core by citing advantages and disadvantages for various approaches of working relationships with outside resources. The pitfalls and rewards of working with consultants (to assist, not to supplant) are summarized with caveats. These include extra cost to monitor the outsourced activity, exposure to sensitive business plans, loss of feel for the project, product and ingredient experience, and loss of technical expertise. Fuller highlights his offbeat style

in the section on communication where he spins several "speak" terms on the page to describe types of communication (or lack thereof), even quoting Lewis Carroll's "Jabberwocky" (Carroll, 1988) to emphasize the importance of language and communication.

A chapter focuses on food service—for example, restaurants, catering services, institutional and military feeding, and vending machines—with various sectors and service outlets characterized for the reader. Key characteristics of importance to the food service industry are clientele, food preparation, storage facilities, labor, nutrition, price, quality, consistency, and safety. Product development for the food-service market is similar to retail, but for success Fuller encourages developers to speak to food-service operators and to work closely with customers. Two distinct food-service customers exist: (1) the individual who orders from the menu; and (2) master chef, owner dietician, food purchasing agent, store owner, or businessperson who purchases a franchise for a fast food outlet. Also, Fuller observes that the skills combined in a chef–technologist are being sought out by the food service sector for a competitive edge and for insight into quality, pricing structure, and expected consumer reaction. As with new food products for the retail market, researchers conduct consumer testing for food service using questionnaires and cash-register data to evaluate new offerings. Consumer waste—food purchased by the consumer but discarded—is one sure indication of acceptance, or failure.

The chapter on product development for the food ingredient industry is of particular value for today's marketplace, as the ingredient supplier is now being called on not to just deliver ingredients but to add value in the deal as well. Fuller addresses the new ingredient challenge, covering fats, sugars, fiber ingredients, and proteins. He also tackles the opportunities provided by the so-called new nutrition with functional foods—which have ingredients that provide a health benefit or nutraceuticals—pre- and probiotics, and phytochemicals as well as the challenges of safety and ethics. Fuller mentions other ingredients: antioxidants, antimicrobial agents, and bacteriocins.

Of special value is the chapter titled "What I Have Learned So Far," where Fuller offers his cumulative wisdom of years to us for serious consideration. To summarize, we are encouraged to

(1) value earlier literature without prejudice
(2) know what customers, consumers, and retailers want and need
(3) be mindful of the influencers and drivers of the food microcosm.

The book closes with a discussion and review of the impact of food science and technology on the consumer. Then we are led through a digression of food habits and practices then and now, and last of all we learn of the confounding influences and factors shaping future new product development, which seems to be written with a hint of satire and cynicism. This particular section of the book was a refreshing read that reminds and enlightens the reader on the *lability*—ready capacity for change—versus the rigidity or *inertia*—tendency to resist change—of the food industry.

Fuller reminds us in closing that "new product development is still an art" (p. 352), that we must learn while dispassionately applying our soft and hard science skills, that we must be on the watch out for trends and fads, and that long-term patience and educating consumers on the value of products wins over short-term greed for profits.

This is a should-have reference book for anyone involved in developing new food products working in or with the food industry. The book finishes with a sense of completeness—a well-grounded, broad perspective in the fundamentals of the new food development process in industry today. The book is well cited and supported with technical knowledge and is sprinkled with fun with the food-speak used throughout the industry.

References

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