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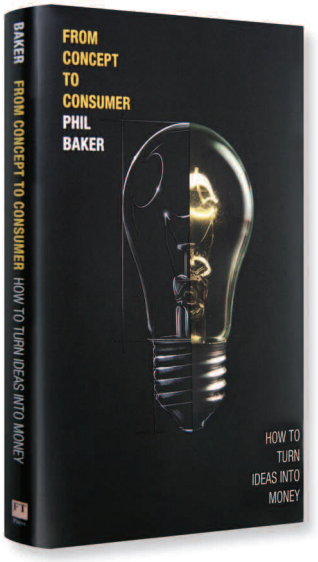
From Concept to Consumer

How to Turn Ideas Into Money



by Phil Baker

THE SUMMARY IN BRIEF

In *From Concept to Consumer*, renowned product developer Phil Baker explains how a great idea accounts for only 5 percent of all the factors of success and why the majority of the success is dependent upon a myriad of other factors, including the time it takes to get to market, price, marketing and distribution.

As he navigates the journey through the development process, Baker offers industry insight from his 30 years of experience about how to make critical decisions along the way that can ultimately result in getting the product onto retail shelves, in print, online and ultimately into the hands of consumers.

Baker also illustrates the sweeping changes that have overcome the development process in the past decade and is able to show how, in this new era of short development times and even shorter product life cycles, the use of OEMs, ODMs and Asian manufacturers creates an equal playing field that enable practically anyone to be able develop technologically complex products.

From Concept to Consumer not only shows readers how to take an idea and turn it into a successful product, but also prepares them for what happens after the product's introduction. It shows them how to stay one step ahead of competitors by being their own best competition.

IN THIS SUMMARY, YOU WILL LEARN:

- How to transform an idea into a successful product.
- The benefits of letting others do what they do best so you can do what you do best.
- Why a product doesn't need to be perfect before it goes to market.
- The competitive advantage of manufacturing in Asia and how to choose an Asian partner.
- Why you know your product best — but the customer knows it better.

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THE COMPLETE SUMMARY: **FROM CONCEPT TO CONSUMER**

by Phil Baker

The author: Phil Baker co-founded Think Outside and is a consultant for U.S. and Asian product, business and market development. Involved in all aspects of product development for his entire career, he has played key roles in developing flagship technologies and products for many companies, including Apple, Seiko, Polaroid and Atari. Baker also writes the technology column for the *San Diego Daily Transcript*.

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New World, New Rules

Coming up with the right idea, turning it into a product and having it succeed in the marketplace are critical to a company's growth and survival. The invention itself accounts for just 5 percent of all the factors for success. To be successful a product must also get to market at the right time, sell for the right price and still produce a profit. There must also be customers who are willing to buy and effective marketing and distribution to get the product into the right location. Most important, you need timing and just plain luck. If any of these links in the chain are broken, it can spell disaster.

Over the last decade, product development, manufacturing and marketing have undergone sweeping changes, creating new rules. Product life cycles have gone from years to months, manufacturing resources have moved from around the corner to around the world, and distribution has moved to the Internet and a handful of big-box stores. No longer can companies afford the time to follow a sequential process, passing the product from engineering to manufacturing to marketing to sales. It is now done concurrently, with all disciplines working together at the outset and contributing throughout the project.

In addition, companies no longer need to do everything themselves but instead use resources that didn't exist just a few years ago. More companies focus on doing what they do best and let other companies do for them what they do best. Worldwide resources give us huge new capabilities, whether a large or small company or even an individual. Today, competition is much more intense and products are revised and improved more frequently. Why? Because if you don't do it, your competitors will, and it's often the only way to maintain visibility in the crowded market.

For all these reasons, we're forced to work at a more frantic pace. There's little time to conduct extensive market research, go back and start over. More profits come from entering the market sooner, even with the costs of accelerated development, and outsourcing to Asia can provide a huge advantage for speeding time to market.

Just Do It

While innovation is typically confined to the product, it is beneficial to bring the same level of creativity to the development process. Finding ways to speed up time to market, reduce development costs and avoid the common bureaucratic delays that occur in large companies can provide a big competitive edge in establishing a brand and maximizing profit.

Organizing for Rapid Development

Small focused teams are much more effective than large organizations because they communicate better, there's less bureaucracy and decisions are made more quickly. An ideal team has five to 10 people who represent each of the key functional disciplines: engineering, industrial design, marketing, finance and manufacturing. That's few enough to work well and communicate together while still providing the diversity of resources needed to address almost any issue.

Leveraging Outside Resources

Leveraging is a powerful tool for accelerating product development. It means doing what you do best and letting others do what they do best. Using outside resources reduces the need for permanent ones, avoids adding fixed overhead costs, and makes it easier to expand and con-

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tract. This applies throughout the project, including everything from the way the product is designed to how the product is manufactured, delivered and sold.

Remembering That Less Is More

One of the challenges of designing a product is deciding what features to include. Most engineers want to produce a product that does as much as possible and more than the competition. Sometimes more is less and less is more. Putting unnecessary features in a product not only complicates its usage, but also lengthens the development time and adds to design and testing requirements, not to mention increasing cost and follow-up customer support.

Don't Get Hung Up with Perfection

A product doesn't need to be perfect to go to market. It only needs to be reliable, work as expected and have a high manufacturing quality. You learn the most about the product after it gets into the hands of customers, and it's best to design and manufacture the best product within time and budget constraints and then get it out to the public.

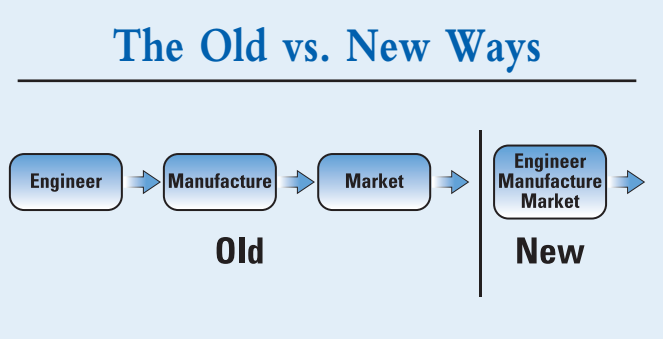
Consumers will let you know what refinements need to be made, either as revisions or follow-on products. Be sensitive to their needs by having a liberal return policy for early adopters. Offer discounts or trade-ins on future upgraded models, and give full refunds to unsatisfied customers. This way, despite any problems encountered with the product, the early adopters will be advocates and not detractors. ●

The Basics of Development

It can take as little as a few months or as long as several years to develop a product. The development process cannot be done in isolation; it needs to be done considering the market requirements, product specs, schedule and product costs. Conventional logic states that marketing and other non-engineering factors may seem to not belong to the development process, but today, it's a big mistake to develop a product without considering the who, what, when and how much of the product. There is little value in developing a product few want or can afford. No matter how well engineered, a product cannot be truly successful if it doesn't meet the needs of those willing to pay for it.

Development

The time it takes to develop a product depends on how well the product is defined at the start, the complexity of the product, the size of the development team, how many changes are made along the way and how well the product is managed. The typical development process starts with the design idea; follows it through physical development, detailed development, prototyping, and testing; and continues through the production phase. It can be rigorous and often involves reviews at the end of each phase by senior executives, and executive approval is often required before any changes can be made to the product.



Marketing

A clear and concise description of what the product is, whom it's for and what's needed to succeed in the market is critical to the development effort. Every product should have an MRD (market requirements document) that, in just a few pages, communicates the details of the product and establishes a baseline for development activity. The MRD also provides goals, sets priorities, and becomes a catalyst for discussion between marketing and development teams about what's important and what's not.

Estimating Sales

Developing an accurate sales forecast is often an educated guess and is dependent on such variables as cost, competition, and how and where a product is sold. Estimating the sales impacts how the product is designed and manufactured. High-volume products utilize more tooling and require more investments, while lower-volume products are designed to reduce the need for tooling but have more costly individual parts.

An accurate sales estimate enables planning for sufficient manufacturing capacity. The success of a new high-volume product can often create a demand that outstrips the manufacturer's or a component's capacity and plans need to be made in advance for bringing up additional assembly lines or finding additional suppliers.

Product Specs

A product specification describes details about the product from a technical perspective and communicates the product's technical requirements to the engineers and manufacturer. The specs contain information about

how the product works, the controls, physical attributes, the environmental and physical conditions it will be subjected to, quality requirements, and the regulatory agencies' requirements the product must meet. It becomes part of the manufacturing agreement and influences how the product is to be designed and built.

Schedule

When the product comes to market can make the difference between success and failure. The schedule is developed early in the process under certain assumptions of what needs to be done and how long it will take. Product introductions are often timed to important trade shows or events, as these events can result in press coverage, introductions to potential customers and marketing programs.

The most common thing that impacts a schedule is an unexpected problem, such as a design that doesn't work and needs more time to fix, a component that's late, or more time needed to get the software and hardware to work together. A more accurate production timeline uses two schedules: an aggressive one for the project team and one that's communicated outside to others that allows for some delays.

Product Cost

The product cost has a big influence on the sales volume and the success of a product, yet it is one of the areas that is often not considered until late in development. Errors in cost come less from estimation and more from not carefully understanding the markups required to get the product from the factory to the marketplace. Every design decision impacts cost. Do note that the sale price of the product has no relation to its cost. The customer will pay a price based on how desirable the product is, its uniqueness, the competition and other available ways to solve the problem. ●

Industrial Design Matters

With so many products that have similar functionality, the industrial design (ID) often makes the difference between a product's success and failure. Industrial design encompasses the appearance, aesthetics and usability of a product and is so powerful that it can impact the emotional bond between a product and its user.

Discovering ID

Good design is built in, not added on as an afterthought, and industrial design can have a much bigger impact on the product if the designers work with the manufacturers at the beginning of the design phase. Good ID can provide a "wow" factor that sparks consumer interest. While customers may not be able to describe what they want, they buy and use well-designed products more frequently.

Conflicts between engineers and industrial designers are not uncommon. The engineers want to get the product finished, placing their emphasis on functionality rather than looks, and they don't always recognize the need for extra time and the added complexity that an industrial designer may ask for. Both groups must cooperate, and without each other's support there cannot be good ID.

The Industrial Design Process

The typical ID process:

- The client first briefs the designer on all aspects of the product and provides him with supporting information, such as the MRD, specs and competitive data.
- The designer then presents any initial design ideas and illustrates design language through a number of rough sketches.
- The client reviews the ideas and sketches and then gives the designer feedback. Refinements are made to the design.
- The designer then chooses a few ideas and builds nonworking models to simulate the product's appearance.
- When there is agreement on the final ID, it's developed into CAD drawings and electronic files that describe the materials, colors and other details.

A good industrial design will increase the chances of a product's success. So don't skip it! It adds another dimension to the product that says much about the kind of company that produced it and the company's appreciation for doing things out of the ordinary. Because so few companies even try, it's not difficult to stand apart from the crowd. ●

Why Outsource?

Making sophisticated electronic consumer products was once the privileged domain of a few. Now, with the rise of OEMs and ODMs, virtually anyone can build world-class products. The advantage is now to the swift and the creative rather than the big, but to get that advantage you'll have to go to Asia.

The Rise of the OEM and ODM Model

Companies that specialize in manufacturing and designing specific types of products for their customers, who, in turn, take them to market under their own brands, are called original equipment manufacturers (OEMs) and orig-

inal design manufacturers (ODMs). OEMs manufacture the product, while ODMs both design and manufacture them. Some OEMs and ODMs have grown so large and capable that it's even common for them to make products for customers who compete with one another.

Taiwan

Taiwan has grown rapidly in its ability to design sophisticated technology products and is home to some of the most technically proficient engineers who have expertise in designing and manufacturing complex consumer electronics products in high volume. Taiwanese companies produce 90 percent of the world's notebook computers. That, in turn, has propelled the growth of related industries, such as flat-panel displays, chips, modems and GPS technologies, as well as advanced materials used for notebook enclosures. In recent years, many Taiwanese companies have moved their factories to China for cost savings and access to more engineers; these factories are still run and staffed by Taiwanese.

Mainland China

The Pearl River Delta area of the southern China province of Guangdong has grown over the past 25 years to become the manufacturing center of the world. While much of China's growth was the result of Western companies looking for lower manufacturing costs, that's no longer the primary reason for going.

China has a huge infrastructure of manufacturers and suppliers concentrated around the city of Shenzhen at the mouth of the delta, just an hour train ride from Hong Kong. With suppliers all within an hour or two of one another, time to market has improved so much that it's faster to get a product built in Asia and delivered to a customer in the United States, Europe or elsewhere than to do it all in the United States or Europe — if, in fact, that were even possible.

Is Outsourcing for All?

Outsourcing to China is not for all companies and products. China is best-suited for producing technology products that contain electronic components, have production volumes in the thousands per month, have mature designs, and are of high value and relatively small dimensions so shipping costs are not a burden. Low-volume products, such as medical devices, are best done locally; the overhead costs, primarily the cost of travel and spending time in China, can be significant. Still, many low-volume products can benefit by building the tooling and parts in Taiwan or China, where costs can be one-third to one-half of those in the U.S. or Europe. ●

Selecting and Working With an Asian Partner

Selecting a company that already does or comes closest to doing what needs to be done provides a series of advantages: faster time to market, the knowledge and equipment to build and test a product, established relationships and support with suppliers of components that will be used in the product, skilled engineers, and lower manufacturing costs. When choosing a manufacturer:

- Ensure that a manufacturer has all the skills required for your specific product; even if a company builds similar products it might not be able to do everything you need it to.
- Don't expect something for nothing.
- Avoid using agents or middlemen, who often represent one or more companies and take a commission on the product.
- Do your homework. Study the company's products to check the quality of manufacturing and parts, ask for references and visit the location to see what the company's skills really are.

After engaging a manufacturer, it's important to closely manage the relationship, using one of your own employees or a consultant to work closely with them. This individual will drive the development activities, schedule, and provide frequent and clear communications among the team members and the Asian manufacturers.

Using a Chinese manufacturer is far from risk-free. It's not uncommon to find that well-intentioned companies miss schedules, produce poor quality products, change parts and processes on their own, and fail to communicate internally and with their suppliers. The fact is, in spite of potential problems, there are few other places to get the job done.

Manufacturing Costs

Once you engage a manufacturer, substantial investments need to be made as you move toward production. The costs of production can vary depending on the complexity of the product and the manufacturing agreement. Tooling, production design, assembly fixtures, test equipment, prototypes and long lead parts are some of the manufacturing costs you can expect.

Tooling: Building the machinery that automatically replicates a large number of plastic and other parts. This is one of the costliest expenses and has the biggest impact on the schedule

Production design: This involves taking the design and having the manufacturer complete it so that it can be more easily manufactured.

Assembly fixtures: These are used to assemble the product and are specific to the product. They vary from devices that position parts to special trays that hold parts.

Test equipment: This equipment is used to measure, adjust and test the product during and after assembly.

Prototypes: At several stages during development, these are produced to verify the engineering design, test the product using parts from the tooling and then perform preproduction testing of products made on the assembly line. Volume can vary from several dozen to several hundred.

Long lead parts: Many manufacturers ask for pay in advance for parts that need to be ordered several months in advance to have them on hand when production begins.

Manufacturing Quality and Durability

One of the greatest concerns with a product is that it works as expected and has few failures once it reaches the customer. That's a function of the design, the parts and the manufacturing. A good design is easy to assemble and less dependent on the individual doing the assembly. Parts that snap together precisely are better than parts that are glued together, since how they are positioned and the amount of glue used can vary among operators. The quality of components can also affect the product, and it is the manufacturer's responsibility to inspect the parts when they arrive at the factory.

After assembly, a product needs to pass several tests designed to ensure that it continues to function even after being exposed to the extreme conditions that may occur in normal use. The tests represent extremes of temperature, humidity and handling. While the requirements vary by product, typical tests subject the product to temperatures of 160°F, -20°F, and 120°F/90% humidity for hours at a time. In addition, thermal shock tests subject the product to alternately high and low temperatures. The product is also subjected to vibrations over a wide range of frequencies and a shock and drop test, both in its packaging and by itself. ●

The Marketing Component

The role of marketing is to make a product succeed in the marketplace and realize its sale potential by using a variety of activities. These include influencing the product's design, positioning the product and company to the outside, conducting market research, promoting the product using public relations and advertising, and understanding and communicating with customers.

During the development of a product, it's beneficial to get input from potential customers, particularly if the product is unique or if design trade-offs need to be made. While those closest to the product know best, sometimes they can be too close and too wedded to the design to see things objectively. There are number of ways to gather a fresh perspective, depending on the type of information desired.

Focus groups are best used to learn the likes and dislikes of competitive products and to make comparisons between product options like colors, features and packaging. For testing product assumptions early in development, industry experts, consultants, reviewers and technology columnists can offer valuable advice. They see and use more products than most any group, and you should accept their feedback as an opinion but carefully analyze the response.

Once a product is released, the earliest market feedback can often be found on the Internet. Many companies have user discussion boards where customers can post questions or comments. These boards contain both the good and bad customer experiences without censorship, and most comments are intelligent, with a lot of detail and useful information. This can also be a great way to learn about competition.

Product Positioning

When the product is introduced to the market, it needs to be described, or positioned, in a way that's accurate, clear and concise and makes one want to buy it. A product's positioning can make or break it, and first impressions are hard to change. Many companies make the mistake of providing a description with too much information. Start with a product-positioning statement for internal use that's a description of the product, its benefits, what's different from the competition and how the customer should perceive it. Then create a short statement for public consumption that supports this.

Public Relations

Public relations is one of the most effective methods for communicating a product to the world. PR is much more effective than advertising in both the breadth and quality of the message and is much more believable. The most important role of PR is to communicate with industry journalists, who, through their writings and reporting, tell their audiences about a product.

Customer Service

Instead of considering customer support as a cost center, consider it a marketing investment. Problems are common with high-tech products, so companies should plan for dealing with them. Rates of defective units can be in the double digits in the first few months of production. The early buyers take the most risk and are

often the ones with a preponderance of problems. They need to be treated well, not only because they deserve it, but because they are the most influential; they are the first to write about their experiences.

Establishing Price

Price is dependent on the perceived value, the product's cost and how the product is distributed. With products that are more differentiable, there's less pressure on pricing and it's better to set prices on the high side, particularly in the beginning when demand is higher. Users expect the prices of high-tech products to fall over time, so if the price is reduced it, won't come as a surprise, even to those who paid the higher price.

Distribution: Getting Your Product to the Consumer

Build it and they will come. That rarely happens. Not only do you need a marketing program, but also a plan. There are four channels available for getting a product into the hands of the consumers.

Sell products through retail storefronts: Putting products into real brick-and-mortar (B-and-M) stores makes it easy for customers to see, try and buy. Having the product in stores creates awareness, promotes sales and creates legitimacy for the product. This option provides the biggest upside but also requires working with the distributors that provide products to stores.

Supply products to a marketing company: Supplying products to a company that has established distribution channels allows the product to get to market more quickly and is easier than trying to establish your own relationships with distributors and corporate buyers.

Sell over the Internet: Selling through the Web is often a good way to get started, particularly selling from your own site. Selling directly lets you get close to your customers to gain valuable information. A Web site is also a wonderful vehicle for posting press articles, reviews and awards, and a well-designed site provides a bigger-than-life presence. Retail Web sites like Buy.com and Amazon.com operate similarly to B-and-M stores and obtain their products through the same distributors and can also increase sales.

License the product to another company: This arrangement offers your invention to another company to manufacture, market and distribute and sometimes even design. In return, you receive a percentage of sales, typically up to 10 percent of the wholesale prices.

Distributors

Rather than selling directly to the stores, it's more common to sell through one or more major distributors that inventory the product and supply it to retailers, because retailers prefer to order from distributors. It's best to identify target customers and where they would go to buy such a product, then work with distribution companies that already have a relationship with these retailers.

Distributors offer many services, including warehousing and product fulfillment, billing and terms to resellers, and in some cases training and marketing for the product. However, don't expect the distributor to do the selling for you. You still need to market or promote your products directly to the key retailers to convince them to carry your product.

Distribution Costs

Each time someone touches a product, the cost increases. In the distribution model for consumer electronics, the retailer may take from 20 to 60 percent of the retail price. The distributor will take an additional few percent, up to 10 percent. Retailers often extract miscellaneous fees for shelf space and promotion. These are called *soft dollars,* and the

Top 10 Rules for Taking a Product From Concept to Consumer

- Success depends on more than having a great product.
- Manage development using a small, focused, cross-functional team.
- Be creative in the development process.
- Don't obsess over perfection. Being early to market is often more important.
- Market test the product using simple, common-sense approaches.
- Do what you do best and let other companies do what they do best.
- Plan the next product while doing the first, and then offer the best competitive response to your own product.
- Understand the sales and distribution channels and make sure product costs allow for a competitive selling price.
- Avoid building huge inventories of parts or products before knowing how well the product will sell.
- Don't believe your own hype.

creativity of the retailers to extract fees is never-ending. These fees are more important to them than direct profits from the sale of the product, and if they aren't paid, they won't play. Soft dollars can also result in excessively large orders by the distributor that are not justified by the actual sales, and then the product can be returned with little consequence to the distributor and retailer.

Selling Through

Getting a product to a distributor is just the first step, it means little if the product sits on the shelves and doesn't sell through. Regardless of the payment terms negotiated, consider the product to be on consignment; there's a real possibility that it will be returned. Close contact with the retailers is a must to carefully monitor actual sales and returns to ensure that the product isn't being overproduced. ●

Legal Advice: Knowing When to Ignore It

The value of legal agreements to Asian companies is much less important than to those of us in the U.S. and Europe. Asia has fewer lawyers and a much less litigious legal system. Sound relationships are not based on having tight legal agreements but are the result of finding a good company with the right skills and a management team with high integrity, and many Asian partners are willing to begin work on a handshake.

Patents

With respect to consumer electronics products, the best way to protect intellectual property is to keep improving the product and fight it out in the marketplace. It can take several years for a patent to be issued, during which time you can't prevent another company from copying your ideas, and with shorter development times, a company can often introduce a competing product in months. By the time a patent is issued, both you and your competitor's products may no longer even be on the market!

On the other hand, if you're developing products that are the result of years of research, such as microprocessors, software technology and biotech, that have a long life, patents may have a significant value, particularly when the company behind the product has the resources to defend it.

Development and Manufacturing Agreements

Waiting for an agreement to be signed before engaging an Asian partner can seriously impact your time to market, especially when agreements need to go through translations. Find a company you can trust, establish the details of the business relationship from the start and then move on.

The best way to enter such a relationship and begin without detailed agreements is to first execute an NDA (nondisclosure agreement) in which both parties agree that the information disclosed is confidential. Outline the relationship by defining in general terms what's expected from each side and develop two agreements: one that defines the details of the development phase and a second that defines the terms of manufacturing.

Legal agreements are particularly important when engineering consultants are hired to work on the design. It's important that there is a clear understanding of who owns the designs that result from the relationship, and this prevents those who contributed to a successful product from coming back and claiming they should receive added compensation.

Now What?

After the creation of a successful product, expect it to be copied. Keep ahead of the competition by focusing on your own products. The best defense is to develop a follow-on product while competitors are busy copying the current one, keeping you one generation ahead. Introduce a second model with more features but at a similar price, and lower the price of the original model. This is the best way to hold your price.

A dilemma that many companies face after introducing a significant new product is whether to grow the company by working in the same category or to expand into another area of expertise. There is no correct answer; it depends on what you want your business to become. Expanding in a given area is generally less risky. With more products you can increase market share and the efficiency of your operations.

Once a company has developed a successful product, there's sometimes the possibility of selling the company to another. Many companies need products to add to their own lines, and an acquisition can provide a source of new products, on an ongoing basis. It's not always easy to consider this option, but sometimes selling is the best choice; some companies don't have a second act. ●

RECOMMENDED READING LIST

If you liked *From Concept to Consumer*, you'll also like:

1. ***The Art of the Start* by Guy Kawasaki.** Kawasaki takes you through every phase of creating a business, from the very basics of raising money and designing a business model through making your way to market.
2. ***Be the Elephant* by Steve Kaplan.** Kaplan shows entrepreneurs how to grow big enough to make an impact and remain financially healthy.
3. ***Reengineering the Corporation* by Michael Hammer and James Champy.** Here's how to make quantum leaps in performance by analyzing and redesigning your work practices.