
USING TARGET COSTING TO MANAGE SPORTING GOODS

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Abstract

The rapid change in technology has altered the business landscape drastically. Instead of observing one company competing against another, we have more frequently seen one supply chain competing against another. To succeed, companies have to develop better products more frequently and more quickly. Target costing has been recognized as one of the effective tools to achieve this objective. With its unique approach to price setting, target costing ensures that new products will be priced competitively while maintaining adequate quality level.

The main objective of this research is to explore the implementation of target costing in a global supply chain setting. We suspect that the complexity of varying operating conditions of global supply chain partners may require a unique approach to successfully implement target costing. To find evidences, we conducted a case study, relying on company visits and manager interviews, with a focus on the sporting goods industry. The companies we studied include brand name companies, such as Nike and Asics, and their suppliers.

Our study has shown that the implementation of target costing can be divided into three distinctive phases: 1) market-driven target costing, 2) product-level target costing, and 3) component-level target costing. Establishing a collaborative relationship between a brand company and its suppliers is essential to remain competitive. We found that a brand company tends to form a long-term partner relationship with those contract manufacturers that are capable of producing complex products. Once the relationship is established, extensive communication and assistance from the brand company facilitate the implementation of target costing in their factories.

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1. Introduction

Facing intense global competition, firms have found it increasing difficult to rely on mass production with lower product costs as a competitive strategy. More companies are using superior product design to gain capability of directly addressing customers' requirements in terms of quality, functionality, and costs. To help companies gain such capability, target costing has been frequently

recognized as an effective tool. First developed and implemented in Japan, target costing takes a unique approach in determining the price of a new product. Unlike the traditional pricing practice of adding profit to production costs and overhead, target costing starts from extensive market research. It sets the price of the new product based on what can motivate consumers to buy. Target cost, subsequently determined by subtracting proper profit from the set price, will become the “budget” for various resources required in developing new product including materials, labor, machine time, overhead, and others.

The literature of target costing has focused on its application as a product development tool in technology oriented industries, such as automobile and consumer electronics (Cooper & Chew, 1996; Dekker & Smidt, 2003; Ibusuki & Kaminski, 2007; Monden, 1995; Tani, Okano, Shimizu, Iwabuchi, Fukuda, & Cooray, 1994). Very few studies have paid attention to traditional industries and their global supply chains. It is therefore the objective of this research to bridge the gap and explore the implementation of target costing in the development of sporting goods, especially athletic footwear. In the following sections, we will review the athletic shoe industry and the literature of target costing. Section 4 explains the target costing method with a focus on the three-phase procedure adopted in managing the supply chain of a sporting goods company. A case study, included in section 5, illustrates the brand companies’ role in leading the development of athletic shoes. This study revealed that contract manufacturers’ active participation in developing prototypes, providing solutions, and continuously improving processes is critical to the success of new product development. In section 6, we discuss the importance of the collaboration among supply chain partners. Finally, we conclude that successful target costing implementation depends heavily on the collaborative partner relationship.

2. The Athletic Footwear Industrial

The United States has been the world’s largest market for athletic shoes and apparel, accounting for roughly 50% of the \$32 billion spent globally each year (Bowen, Huckman, & Knoop, 2006). In the 1970s and 80s, newly styled shoes for jogging and aerobics were introduced to this growing market mainly by four major manufacturers: Adidas, Nike, Reebok, and Converse. In fact, Reebok’s Freestyle athletic shoes were the icon of the 1980s fashion scene (Wikipedia.org, 2007). Starting in the 1980s, however, the U.S. manufacturing plants were gradually replaced by plants in Japan. As brand companies closed down their factories, they began outsourcing, which allowed them to concentrate on their core competencies including establishing brand names and developing new products. In the late 1980s, South Korea, and Taiwan replaced Japan to become the new shoemaking kingdoms. Today, most athletic shoes are manufactured in countries like China. The International Trade Administration (2008) reported, that 74% of global footwear were exported from China in 2008 .

Globalization has forced brand companies in the sporting goods industry to maintain their competitiveness by focusing first on understanding customers’ needs and then designing new products that meet these requirements. In addition, contract manufacturers have strengthened their processing capabilities through a series of learning that has gradually extended from manufacturing to product development. Because of the increased collaborations between brand company and contract manufacturers in product development, the implementation of target costing has also undergone significant expansion. In fact, the global division of labor in the sporting goods industry has divided the target costing practice into three distinctive phases: market-driven target costing, product-level target costing, and component-level target costing (Cooper & Slagmulder, 1997). In the beginning, brand companies will create a new product concept and establish a development plan based on market demand. This process is facilitated by market-driven target costing with an objective of developing a new product that will lead the “fashion” industry in quality but still offer competitive price. Subsequently, brand companies cooperate with contract manufacturers in achieving product-level target costing. A close partner relationship between the brand company and its contract manufacturer can then be built to

enhance process efficiency and to gain mutual benefits. Lastly, contract manufacturers will focus on the component-level target costing to ensure delivering value to customers. Continuously improving efficiency by adopting “lean production” has thus become crucial for contract manufacturers to retain orders from the brand companies.

3. Literature Review

3.1. Lean Product Development

As the product life cycle shortened drastically in many industries, the development of new products has become a major concern for many companies. More specifically, they consider it essential to timely and frequently introduce new products with good profit potential into the market. To accomplish this, it is necessary to incorporate various concerns, such as quality, profit, and cost, in the product development plan. Product development has understandably become one of the focal points of a company’s competitive strategy.

Product development starts with concept initiation, followed by the development and execution of product plans. To manage the lead time, proper utilization of project management, information systems, employee autonomy, and early involvement of specialists to reveal problems have been identified as crucial (Warnecke & Hüser, 1995). In addition, lean product development (LPD) using team structure has been recommended for removing wastes in various product development stages (Karlsson & Åhlström, 1996). LPD concept comprises numerous interrelated techniques including supplier involvement, cross-functional teams, and concurrent engineering (Adler, Mandelbaum, Nguyen, & Schwerer, 1996; Dyer & Hatch, 2004; Langerak & Hultink, 2008; Quesada, Syamil, & Doll, 2006; Schonberger, 2005). It also requires integration of various business functions such as sales, marketing, design, engineering, manufacturing, purchasing, and even suppliers.

In traditional product development, once a new product line is determined, the project is immediately assigned to a high-level planning group, possibly with a marketing background, to develop the product concept. Industrial designers are then assigned to develop sketches, followed by engineers, who take the drawing and work out the technical details (Morgan & Liker, 2006). LPD, however, executes this process in a different way. Once top management decides to develop a new product, LPD immediately selects a chief engineer to become the project manager, responsible for overseeing design projects to ensure timely completion within budget (Fujimoto, 2000; Womack, 2006). The corporate functions participating in LPD include: R&D, human resource (HR), and public relations (Kale, Singh, & Perlmutter, 2000; Liker, Adler, & Fruin, 1999; MacDuffie & Helper, 1999). Liker (2004) stated that a long-term perspective in decision making, efficient manufacturing processes, adequate personnel and partners, and effective problem solving are essential to building up the company’s capabilities. Flexible production plants that adopt team-based work systems and maintain low level of inventory and repair buffers consistently outperformed traditional mass production plants. The management of those flexible production plants values their employees, provides them with trainings for future growth, and encourages them to get involved. This management philosophy has enabled many companies to become innovative learning organizations with much better performance (Langerak & Hultink, 2008; Liker et al., 1999; Stenzel & Stenzel, 2004).

3.2. Lean Production

To improve competitiveness, many companies have attempted to achieve a high level of quality, productivity, on time delivery, and flexibility simultaneously (Bayou & Korvin, 2008; Womack, Jones, & Roos, 1990). Lean production, a concept originated at Toyota Motor Company in the 1950s that stresses on the importance of “just in time” (JIT) manufacturing, is capable of meeting the designers’ expectations because it integrates product development, production process, and purchasing as a total system (Warnecke & Hüser, 1995; Womack et al., 1990). In fact, lean production encompasses several components, such as total quality management, continuous improvement, design for manufacturability, flexible manufacturing, and close supplier relationships (Liker, 2004; Shah & Ward, 2003). Applying JIT philosophy to parts procurement enables manufacturers to carry out fast and effective prototyping and production startups (Fujimoto, 2000; Warnecke & Hüser, 1995).

3.3. Target Costing

3.3.1. Target Costing Concept

Target costing, a long-term comprehensive management system, can be implemented in various stages of product development including; product concept, product planning, and product design. Through inter-departmental integration, target costing can accomplish the goals of developing a new product with its functionality, quality, and price acceptable to consumers (Cooper & Slagmulder, 2003; Dekker & Smidt, 2003; Ellarm, 2006; Fujimoto, 2000; Kato, 1993; Tani, 1995; Tani et al., 1994). The key principles of target costing include price-led costing, consumer focus, design emphasis, product life-cycle orientation, cross-functional structure, and value-chain involvement (Swenson, Ansari, Bell, & Kim, 2003). Using this approach, the development of a customer desired product is planned in detail. In addition, a target cost, determined by subtracting the product’s target profit from its estimated competitive market price, is achieved through implementing a series of value engineering (VE) by the design department (Cooper & Slagmulder, 1997; Ellarm, 2006; Kato, 1993; Monden, 1995; Tani et al., 1994).

3.3.2. Target Costing Applications

Target costing has been applied to both assembly and process industries (Tani et al., 1994). During the decade of 1990s many case studies, such as Daihatsu Motors, Matsushita Electronic, Olympus Optical, Toyota Motors, and Sony, have been conducted to investigate the practices of target costing in Japan (Cooper & Chew, 1996; Cooper & Slagmulder, 1999; Fisher, 1995; Kato, Böer, & Chow, 1995). Despite its wide spread implementations in Japanese firms, target costing is still relatively new to U.S. companies with only a few implementations. To examine target costing practices in the U.S., Swenson (2003) conducted four case studies: Boeing, Caterpillar, DaimlerChrysler (now separated), and Continental Teves. They reported American implementations of target costing are consistent with those in Japan, which emphasized employing cross-functional teams, listening to customer request, reducing new product development costs, and eliminating wastes throughout the supply chain. These companies demonstrated certain commonalities in supporting the target costing process. DaimlerChrysler has five cross-functional platform teams. It also uses “Toolboxes,” including value engineering/value analysis, Kaizen, and lean manufacturing to improve productivity and reduce costs. In the past, Boeing attempted to provide almost anything the customer wanted without considering the cost. It now starts to assess whether the cost of innovation is greater than the value to its customers. Both DaimlerChrysler and Continental Teves view

their supply chain as part of the extended enterprise where they can share information to meet cost reduction goals (Swenson et al., 2003). Moreover, Ellarm (2006) compared the theoretical and actual target costing implementations among U.S. companies in the computer peripherals, semiconductors, and telecom services industries. This study reported distinctive features in target costing implementation, such as frequent and earlier involvement of the suppliers. There appears to be a tight linkage between supplier management and the design function in target costing implementation, which allows suppliers to become involved early in the process and thereby maximizes product value, shortens time-to-the-market, and ensures manufacturability (Ellarm, 2006).

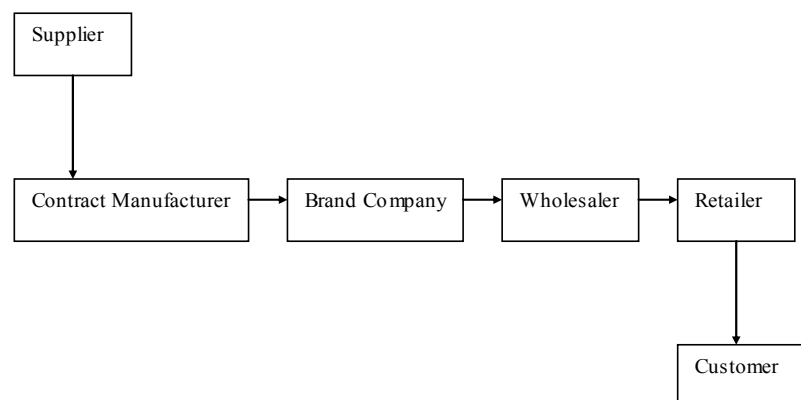
Target costing is less popular in Europe. An Irish study showed that target costing is one of the least applied cost management techniques among Irish manufacturing companies (Pierce, 2002). In the Netherlands, Dekker and Smidth (2003) surveyed 32 manufacturing companies and found 19 of them claimed to use the target costing concept but under different names. Their target costing processes, with the main objective of cost reduction, were developed independently of the Japanese practice.

4. Research Methodology

The purpose of this research is to examine how target costing has been applied in the development of sporting goods. This research employs case study as the tool as it has become a more accepted method in operations and supply chain management research. For example, Ellarm, , recognized it as a legitimate and valuable approach to add insights into the body of knowledge that traditional empirical and modeling approaches cannot provide (Ellarm, 2006).

Since the goal of this research is to study applications of target costing in the sporting goods industry, we have chosen two companies from six dominating brand companies in the industry as our focus: Nike and Asics. The first company, Nike, has been the undisputed market leader in sporting goods industry. Its double-digit profit growth certainly warrants a thorough study. On the other hand, Asics, representing the Asian brand, has a global reputation as a high-quality professional athletic footwear provider. Four contract manufacturers of Nike and Asics were also chosen, as suggested by the brand companies to represent their major business partners. Figure 1 displays this supply chain relationship.

Figure 1: Supply Chain Relationship



After selecting the Brand and Contract Manufacturing companies, we studied their practice of three-phase target costing: 1) market-driven target costing implemented by brand companies during the product conception and planning stages, 2) product-level target costing jointly executed by brand companies and contract manufacturers during the product design stage, and 3) component-level target costing exercised

by contract manufacturers during the process design stage. To implement target costing in its entirety, each phase requires collaboration among members of the supply chain. To illustrate how the partner relationships of the supply chain affect business performance, we will use Lambert and Knemeyer's volume and product complexity analysis (Lambert & Knemeyer, 2004).

This study relied on field investigation to collect needed data for analysis. In October 2005, we visited offices of Nike and Asics in Taiwan and their four contracted manufacturers in China. Empirical data were gathered while visiting those companies and interviewing top management. In the following sections, we report the major findings of this field investigation.

5. Case Study

5.1. Nike and Asics

In 1964, Nike's predecessor, Blue Ribbon Sports (BRS), started to import "Tiger" shoes to the U.S. from Onitsuka, a Japanese company that later became Asics. Although, before the mid-1977, Nike shoes were not as good as Adidas', their quality had been consistently improved (Strasser & Becklund, 1993). Nike, founded in 1964, became a published company in 1981 with \$458 million in revenues (Hays, 2000; Strasser & Becklund, 1993). Their core business activity has been the design, development, and worldwide marketing of high quality athletic footwear, apparel, equipment, and accessory products. Nike has \$16.7 billion registered capital and 32,500 employees. It sells products in over 180 countries and 52% of the total sales are from international markets. In the fiscal year of 2008, Nike reported \$18.6 billion in revenue with a 45% gross margin (Nike Inc., 2008). Virtually all of its products are manufactured by independent contract manufacturers.

Asics, is an athletic equipment company that started in 1949 when Onitsuka Company began manufacturing basketball shoes in Kobe, Japan. By 2004, Asics ranked number six in worldwide sales (Bowen et al., 2006). Asics has registered capital of \$0.2 billion and 3,800 employees. In fiscal year of 2008, Asics generated net sales of \$2.26 billion, or 226 billion Japanese yen (Asics, 2008). Sixty-six percent of the company's income came from the sales of athletic shoes, with forty-nine percent of sales in Japan. Table 1 provides the profiles of these two brand companies.

Table 1: The Profiles of the Brand Companies

Name	Year Established	Capital*	Annual Revenues*	Employees	Gross Margin
Nike	1968	\$16.7	\$18.6	32,500	45%
Asics	1949	\$ 0.2	\$ 2.26	3,800	43.7%

Source: The annual report of Asics and Nike in 2008.

* Measured in billion.

5.2 Contract Manufacturers

For proprietary reasons, the real names of the contract manufactures are disguised. Instead, generic names such as Company X, Y, and Z will be used. Company X, established in 1971, is the second largest shoe manufacturer in Taiwan, employing 80,000 people worldwide with a market capitalization of \$138 million in 2006. This company moved its plant to Fuzhou China in 1989. This plant, coded X1, produces about 430,000 pairs of Nike shoes per month with 8,600 employees in 2005. Moreover, Company X has a joint venture with Nike that sells products to the Chinese domestic market, which is called “local for local.”

Established in 1971, Company Y is the largest shoe manufacturer in Taiwan with more than 300,000 employees worldwide. It produces approximately 6% of Nike’s total footwear demand. By 2005, Company Y had established more than 400 stores in China to be closer to their end users. Their two plants located in Donguan, coded Y1 and Y2, produce approximately 360,000 pairs for Nike and 200,000 pairs for Asics each month respectively.

Company Z was established in 1984 as an OEM factory for baseball and football shoes. Today, they receive orders from Adidas, Asics, Mizuno, Vans, and Lottos. Its Chinese factory, coded Z1 set up in 1990, now has a production capacity of 300,000 pairs of Asics shoes per month. Table 2 presents the profile of the contract manufacturers X, Y, and Z.

Table 2: The Profiles of the Contract Manufacturers

Company	X	Y		Z
Capital (in \$1,000,000)*	138	708		Undisclosed
Year Established	1971	1969		1984
Annual sales (in \$1,000,000)*	333	1,593	516	900
Production Plant	X ₁	Y ₁	Y ₂	Z ₁
Location in China	Fuzhou	Donguan	Donguan	Guangzhou
Year Volume Production Began	1989	1988	1988	1990
Customer	Nike	Nike	Asics	Asics
Monthly Capacity (in 1,000 pairs)	430	360	200	300
Est. order volume (in \$1,000,000)	320	440	219	140
Product Complexity	High	High-mid	High	Mid-low

*Revenues based on each company’s 2005 annual report.

5.3. Product Development

In general, the process of developing a new product can be divided into four phases: product conception, product plan, product design, and process design (Clark & Fujimoto, 1991; Ulrich & Eppinger, 2000). Product Conception starts with an understanding of customers’ preferences by using focused groups, market surveys, or competitor benchmarking. It provides an opportunity to assess market trends and generate product concept. In the sporting goods market, brand companies have to face significant risk factors such as intense competition, rapid technology changes, and hard to predict

consumer preferences (Nike Inc., 2006). To manage these risks, Nike allied with contract manufacturers such as Company X to produce its products in China for its Chinese market. This ensures better satisfaction of the local customers' unique requirements. Asics has adopted a similar competitive strategy by contracting Company Y as its sole agent to produce athletic shoes for its Chinese market. The endorsement of popular athletes has been a distinctive marketing strategy of the sporting goods industry. Following this strategy, brand companies have created many sports heroes; such as NBA super star Michael Jordon. Since inputs from these athletes are extremely important, sales representatives, product designers, and project managers frequently meet with these athletes to gain first-hand knowledge of their needs.

In the second phase, product planning, the product concept is transformed by the designers into drawings and subsequently into detailed specifications including functions, properties, and quality standards. Each of the product line is then led by a product development manager (PDM), even though the development of the new product is the responsibility of a cross-functional team. The PDMs usually have adequate expertise and experience to establish close relationships with target customers. They frequently interact with both their colleagues and overseas contract manufacturers.

(Ellarm, 2006; McIvor, Humphreys, & Cadden, 2006), our study has not found early supplier involvement a common practice in the sporting goods industry. In fact, in the product planning stage, brand companies usually take charge and require their R&D working closely with other members of the product development team, including marketing and design. In this industry, trademarks and patents are important identity factors that can create a market where it offers distinguished products to its customers. As a result, brand companies have devoted enormous amount of efforts in developing new technology (e.g. applying new materials to produce "Air" and "Shox" soles at Nike) and better processes such as the advanced molding process. It is understandable that brand companies normally take a greater responsibility in developing new product plans. One exception, however, can be found in Asics's contract manufacturer, Company Y. Its subsidiary, Y1, actually conducted research and developed "D-GEL" and "Touch-GEL" cushions for Asics.

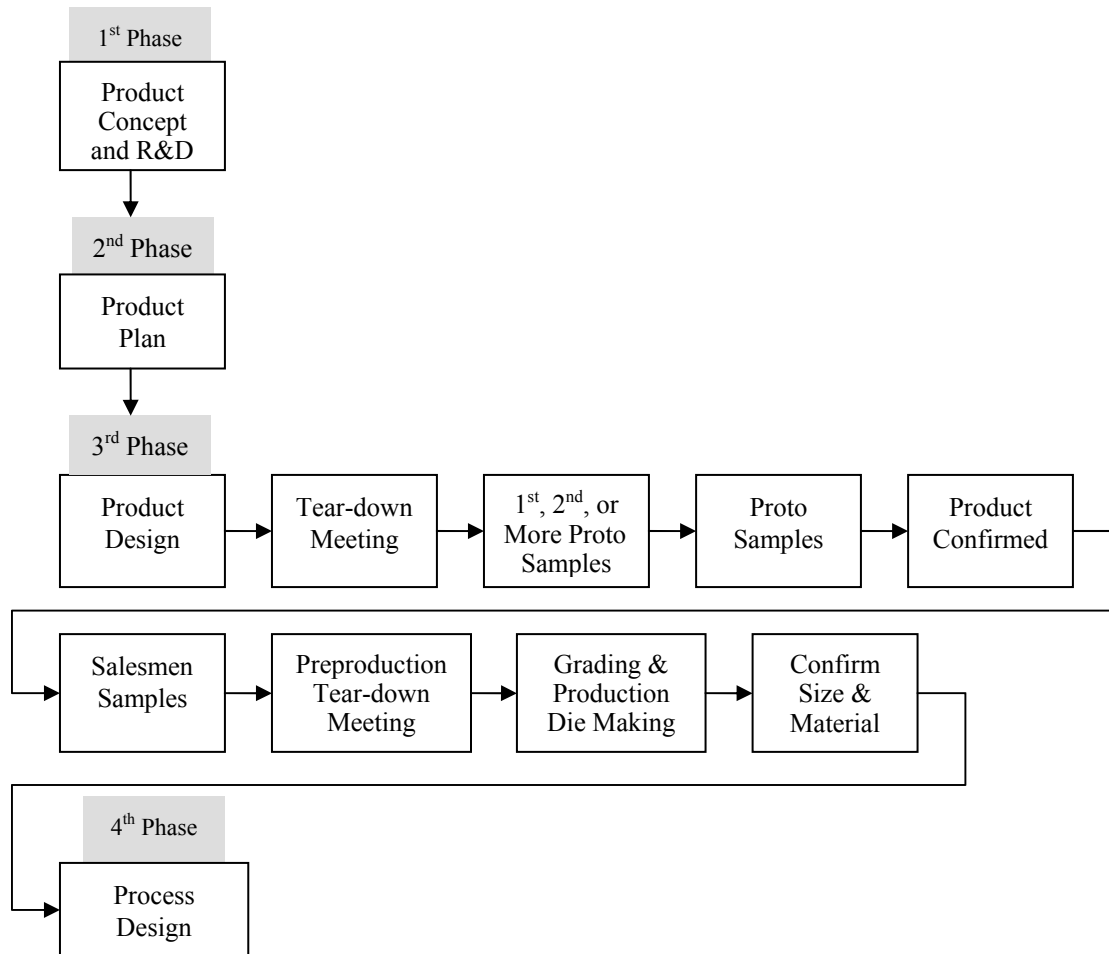
In the third phase of product development, product design, the product plan is transformed to component design, which is an integrated process of making prototypes, testing samples, and refining the final product design. Once the product design is completed and shared with contract manufacturers, the product value characters are communicated across all product development teams in the factory. The collaboration between brand companies and contract manufacturer starts at this stage.

The product design process depicted in Figure 2 is typically led by the brand company, which goes through each step including: 1) a tear-down meeting; 2) first, second, or more prototype samples made, reviewed, and revised; and 3) product confirmation.

The prototype phase of product development, which involves designing and building of the needed molds and tools, is a period of intensive learning for both the brand company and contract manufacturers. It is imperative that both parties turn problems occurred in prototype making into organizational learning and subsequent continuous improvement. Devoting considerable amount of time and resources to developing problem-solving capability ensures that there will be mechanisms in place to capture, verify, codify, and share solutions in the future.

Once the product design is confirmed, the new product is ready for marketing. The company's sales representatives can start selling the new product based on the confirmation samples, which are ordered from and then manufactured by the contract manufacturers. A pre-production teardown meeting will be conducted to make sure production will follow the specifications without errors. The contract manufacturers then perform die cutting for different shoe sizes, known as "grading," and test materials to pass safety standards. After that, all sizes are confirmed for production. However, the new product development process could be aborted at any time due to lack of market demand.

Figure 2: The Flow Chart of the Four Phases of Product Development



Process design, the final phase of product development, determines the proper production processes and the specific tools or molds needed for efficient volume production. As the competitive environment shifts rapidly, brand companies try to shorten the product development lead-time and thus reduce the time-to-the-market. It now takes 11-12 months for Asics to complete a new product development, starting from product conception to process design, as compared to 18-24 months required several years ago. After implementing several programs, such as integrating data processing systems and implementing lean production, Nike has shortened its product development lead-time from 18 months in 2000 to 6-9 months now. These efforts, such as implementing lean production, have also been effective in improving operational efficiency and eliminating waste.

5.4. Applying Target Costing to Product Development

Target costing has been proven to be an effective tool for cost control and profit enhancement. However, with the global division of labor, we suspect that it may require a different approach to implement target costing in the sporting goods industry. With partners spread across distant locations, this industry applies

target costing to product development using a three-phase process. In the following subsections, we will explore the unique approach of implementing target costing in the sporting goods industry.

5.4.1. Market-driven target costing

The first step in target costing is to identify products or services that will fulfill customer needs. Careful examination of the product, technology, pricing, and customer feedback in an existing market enables a company to adequately assess market competition. In the product planning stage, a product development manager often conducts benchmarking that includes research on competitive pricing to establish the target cost for the designed features. For example, a pair of basic running shoes sold for about \$70 in the U.S. market in 2005. Using this price as a base line, Nike analyzed the trends of consumer preferences, competitor's offering, and future technologies to establish distinctive shoe features and feasible premium price points, which become the target retail prices of the planned new products.

The target retail price is then broken down into several elements including wholesale margin, wholesale price, and target cost (refer to Figure 1 for the partner relationship among retailer, wholesaler, Brand Company, and contract manufacturer.) The brand company subtracts from the target retail price an adequate profit margin for the wholesaler to get the target wholesale price. Target cost is then determined by subtracting the adequate profit margin for the brand company from the target wholesale price. That is:

$$\text{Target Wholesale Price} = \text{Target Retail Price} - \text{Wholesale Margin}$$

$$\text{Target Cost} = \text{Target Wholesale Price} - \text{Profit Margin of Brand Company}$$

In addition to such miscellaneous costs as transportation, insurance, and duty, the target cost also includes the target FOB (free on board), which is paid to contract manufacturers as product cost. In terms of the profit margin, the brand company determines a specific margin according to their strategic plan. For instance, Nike reported a historical high gross margin of 45% in 2008. Therefore, it is the responsibility of the product development team to develop a new product that will deliver appropriate margin. Before releasing the new product plans to suppliers, the development team meets with the company's financial authority to gain approval of the proposed target price, planned profit, and target cost.

When designing a new product while implementing target costing, the designer will simultaneously consider the requirements of the cost and quality. Moreover, engineering change does occur frequently due to changes in customer preference. When this happens after making prototype samples, the needed materials and product features can be adjusted in order to achieve the planned target cost. As pointed out by Asics's general manager in Guangzhou, "we need to consult with retailers about changes in product design to ensure that the customers will accept those changes."

It is worth noting that Nike has worldwide distribution centers. Their customers typically place orders five to six months in advance with Nike's commitment of 90 percent on time delivery at an agreed fixed price (Nike Inc., 2006). This ordering system gives Nike an excellent opportunity to estimate sales volume even before products are actually manufactured.

5.4.2. Product-level Target Costing

Product costs, reviewed and adjusted in each prototype development phase, include appropriations for two main areas: 1) manufacturing of the product, and 2) tooling owned by the brand company. Manufacturing cost is transferred to the contract manufacturers with a target FOB that typically contains

70% of material cost, 10-15% of labor cost, and 15% gross margin. Tooling cost is normally amortized over the forecasted sales quantity.

Historical costs are recorded in a cost table that contains information about material costs (e.g. component costs, material description, vendor, unit price, material usages and loss) and non-material costs (e.g. labor costs, overhead, and manufacturer's profit.) Table 3 provides an example of such a table. These tables, required for each product model in each factory, provide PDM with appropriate information to effectively make decisions. For example, after reviewing the cost tables, a better estimation of material usage for a new model can be obtained, or, a local vendor who provides cheaper lining fabric can be considered.

Table 3: An Example of the Product Cost Table

Style Name: Style Code: Plant Code: Sample Status:
 PLM: Date:

Exchange Rate:

Line	Component /Part	Material Description	Material No.	Vendor No.	Location	Usage	Loss	Unit price	Total US\$	% of Tot. FOB
1										
2										
3										
...										
Total Material Cost										
2	Labor Cost									
2	Overhead Cost									
2	Profit									
Total Material Cost										
TOTAL FOB										

5.4.3. Component-level Target Costing

The component-level target costing in sporting goods is different from that of the auto industry because the design of the product and planned production costs are determined at the product-level of target costing. Since price negotiations were completed in the prototype development stage, improving operational efficiency has become important for both brand companies and contract manufacturers to accomplish their established target costs. To reduce manufacturing cost, Nike implemented lean production in 2002, known as Nike Operation System (NOS). On the shop floor, Nike used a pilot production line to test the feasibility of implementing lean manufacturing, which has generated significant improvements. For example, defects and operational problems are easier to detect because of the smaller production lots. Lean manufacturing helped Plant X1 to save 2% of its labor cost and Plant Y1 to maintain the same productivity while reducing 3 hours of overtime per day. The outsole division of Plant

Y1 has also successfully reduced the set up time of its molding process from 70 to 40 minutes and thus increased its inventory turn-over from 15 to 17 times. Moreover, the lead-time between order receiving and shipping has been reduced from 60 to 45 days in both Plants X1 and Y1; while the lead-time from material cutting to packaging has been reduced from 5 days to half a day in Plants X1, Y1, and Z1. After implementing lean production, Plant Z1 has switched its manufacturing strategy to build-to-order that enables them to carry an average of only 500 pairs of uppers as working-in-process (WIP), comparing to a prior average of 70,000 pairs. Plant Y1 has almost achieved zero-inventory on the shop floor and thus reduced the warehouse space requirement by 60%. These improvements have successfully reduced manufacturing costs such as inventory carrying costs and material costs. It is evident that manufacturers are gaining positive results in many aspects while implementing target costing.

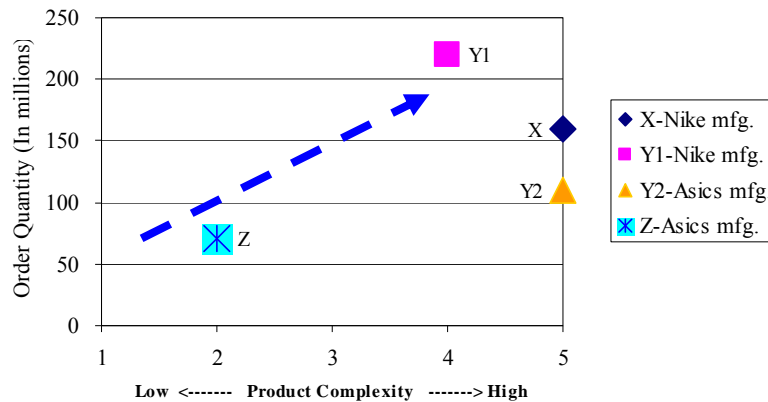
Since supplier management is particularly important to target costing implementation at the component-level, Nike actively evaluates the performance of each supplier annually. Suppliers are asked not only to meet delivery deadline and quality standard but also to continuously improve their processes. In fact, Nike expects a 20% manufacturing cost reduction after implementing NOS in each factory.

6. Discussion

The main objective of this study is to examine the target costing practices among the supply chain partners of the sporting goods industry. After failing to establish factories in China in the late 1980s, brand companies such as Nike and Asics have found a win-win situation by collaborating with Taiwanese-owned manufacturers. Even while the relationships between the brand company and contract manufacturers appear to be the same, the role that each supplier plays is quite different.

Lambert and Knemeyer (2004) suggested a two-dimensional measurement to determine the closeness of partner relationship, which may result in different business strategy. Brand companies are interested in forming a close relationship with contract manufacturers when there is a need to produce high volume of complicated products. Based on our collected data, Figure 3 displays the relationship of the estimated orders placed to the contract manufacturers and its product complexity. Though the purchasing power of Nike and Asics are dramatically different, the pattern is evident. In general, Nike would maintain a closer relationship with companies X and Y, while Asics would like to establish a similar relationship with Company Y. Nike strategically chose their partners and assisted them in improving production efficiency, which brought benefits to both parties. Since those contract manufactures that kept rather loose relationships with brand companies can be easily replaced by new suppliers, it has become essential for them to strengthen their core competencies in manufacturing or even product development. Without an improved capability of producing/designing complex products, contract manufacturers will have a difficult time to maintain close relationship with brand companies and therefore stand a greater chance to be replaced. For this reason, Plant Z1, for example, implemented lean production to eliminate wastes even without Asics's assistance.

Figure 3: The Partner Relationship under Various Combinations of Order Quantity and Product Complexity



To achieve the goals of target costing, partners of the supply chain have to collaborate as an integrated entity. The relationship between the brand company and contract manufacturers has consequently become an important issue. From our research, it is evident that brand companies in the sporting goods industry strategically establish an alliance with contract manufacturers who are capable of producing complex and high volume products. In this strategic alliance, contract manufacturers have become more involved in product development for the purpose of achieving target cost, improving quality, and launching new products on schedule.

7. Summary

With the prevalence of globalization, the sporting goods industry has clearly been divided into two distinctive groups: 1) design and marketing firms, and 2) manufacturing firms. While previous target costing research focused on manufacturing companies with brands, our research provides observations of target cost applications in a global supply chain setting. The major findings of this research include the following three facts. First, our target brand companies in sporting goods industry have adopted a unique strategy of focusing only on their core competence (i.e. designing and marketing athletic shoes) but subcontracting all manufacturing activities to contract manufacturers. Consequently, the collaboration mechanism of implementing target costing is quite different from that of brand companies in other industries such as Daihatsu, Olympus, and Boeing.

Second, it is a common practice to manage sporting goods supply chain using a three-phase target costing implementation: market-driven, product-level, and component-level. Brand companies conduct market research on competitive pricing, establish planned profit margins, and conceptualize new product design in the phase of the market-driven target costing. Companies are no longer limited to practicing concurrent engineering by forming cross-functional teams among various departments within a company. In the product-level phase, companies are expanding target costing practice beyond their borders to the partners of their supply chain in order to accomplish its key objective: developing new, price-competitive, and quality products with a reasonable time-to-the-market. For example, Nike has assisted its major suppliers to improve quality, productivity, and lead-time by creating a better working environment for their workers. By doing so, Nike has a better chance to meet its customers' expectations. While brand companies dictate the nature of the partner relationship with suppliers, the contract manufacturers should take actions to strengthen their core competencies to meet the component-level target cost. For example, implementing lean manufacturing provides contract manufacturers with the needed competitive advantage by reducing the turnaround time of their proto samples.

Third, we have found an increasing level of involvement with contract manufacturers in developing and producing new product. These manufacturers focus on improving productivity, increasing product quality and complexity, and reducing production costs, to achieve target cost goals. Once contract manufacturers lose the capability of producing complex shoe models or no longer provide values to the supply chain, these manufacturers will face the risk of order termination. In other words, brand companies, such as Nike and Asics, manage their global supply chain by controlling the information of the end consumers and retaining their designing and marketing capabilities. They strategically choose manufacturing partners who are capable of producing or even designing a part of the sophisticated product with high volume.

In conclusion, the success of a brand company in the sporting goods industry is built upon a group of capable and cooperative contract manufacturers acting as long-term strategic partners. Once the relationship is established, extensive communication and assistance from the brand company facilitate the implementation of target costing in contract manufacturers' factories. In addition, contract manufacturers, will have a better chance to succeed with the assistance and continual business from the brand company. This win-win collaboration can be solidified by the implementation of target costing.

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