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Value Creation and Value Capture at Manufacturing Firms: Importance of Non-functional Value

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Abstract

Most large Japanese manufacturers are good at creating value utilizing their engineering capabilities but poor at capturing value in terms of creating profit and added value. This paper discusses conditions to capture value, after explaining a distinction between value creation and value capture. In order to capture value, manufacturers have to (1) link manufacturing excellence with uniqueness and differentiation from competitors, and (2) create customer value, enticing customers to pay premiums for the differentiation, and to do these two things simultaneously. In the second half of this paper, we particularly focus on customer value and discuss the importance of the non-functional value. Non-functional value has become a critical factor for manufacturers to capture value by creating customer value.

1. Introduction

In recent years, superb manufacturing capabilities and excellent

products do not necessarily lead to success in business in terms of creation of added value and profits anymore. Most first-rate Japanese manufacturers with strong engineering capabilities often prove to be second-rate value creators. American, South Korean and Taiwanese firms, while inferior to their Japanese counterparts in engineering and manufacturing, are often better at making profits.

The relationship between engineering/manufacturing capabilities and creation of added value or profit has become complex and ambiguous. Simply put, the correlation between these two has diminished. For example, although some Japanese companies have become known as superb manufacturers of semiconductors, flat-screen TVs, and solar batteries in recent years, these manufacturers do not make much profit. Particularly, electronics and IT product manufacturers such as Hitachi and NEC, which have led the world in state-of-the-art technologies, have been performing poorly in making profits over a long period of time. For the last twenty years, for example, the operating profit divided by sales at major Japanese consumer electronic appliance manufacturers on average has been about only 3%. On the other hand, American, South Korean and Taiwanese companies, inferior to their Japanese counterparts in manufacturing, have been making far more profits. For example, Dell's

personal computers and Apple's portable products contain less-than-perfect elements of component design and manufacturing or final assembly, but these companies are much more successful than the Japanese firms. In the semiconductor sector, which encompasses not only memories but also system LSIs, newly-emerging firms without original manufacturing technology such as Taiwan-based Media Tek enjoy a higher profit rate than full-fledged manufacturers. Indeed, divergence has grown between manufacturing excellence and high-level added value.

In short, the Japanese manufacturers are good at “value creation” in terms of developing and manufacturing products with excellent engineering and manufacturing, but are poor at “value capture” in terms of creating profit and added value.

Even though the relationship between value creation featuring engineering and manufacturing and value capture has been becoming weak, the importance of engineering and manufacturing has not been diminished. On the contrary, for Japanese firms in particular, value capture without engineering and manufacturing is out of the question. What they need to do is to capture value by taking advantage of their capabilities in value creation with excellent engineering and manufacturing.

In this article, presented against the background outlined above, after proposing definitions of "value creation" and "value capture," I shall firstly discuss the importance of capturing value and conditions required for successful value capture, and secondly describe the concept of "non-functional value," which is an indispensable condition of capturing value.

2. Value Creation and Value Capture

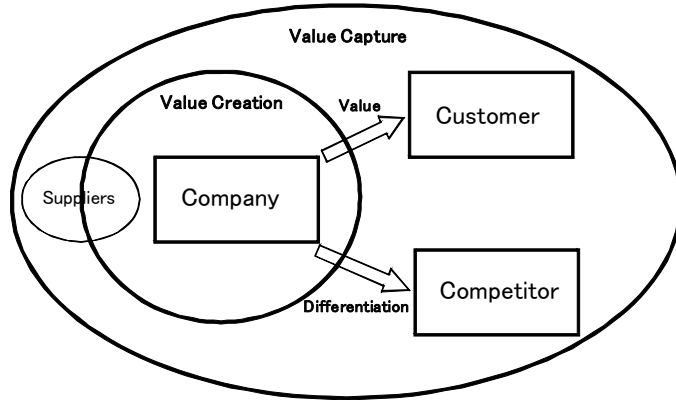
Let us briefly examine the two concepts central to this article, value creation and value capture. Value creation aims at developing and producing goods of excellent functionality or quality at the lowest possible cost. Excellent products require innovative technological development as well as efficient and superior organizational processes.

Value capture, on the other hand, aims at creating economic value. Specifically, economic value created by a firm corresponds to the customer value (benefit) as measured by the amount of price paid to a product minus the investment and production cost required to develop and manufacture the product. Basically, it is "added value," which is defined in an economics dictionary as "value newly added in the process of production, corresponding to the amount of output minus that of raw materials and other intermediate inputs."

In Japan, the notion that creating financial value (added-value and profit) is the most critical element of social contribution for manufacturing companies tends to be overlooked. It should be noted that the financial resources supporting social welfare and public education, employment, and basic research and development are all results of added value created by businesses. In addition, because added value is produced because a product has high customer value, the greater added value a product has, the more it contributes to customers as well.

Figure 1 illustrates the relationship between value creation and value capture. In this framework, value creation is positioned as one of the components of value capture. Firms create value internally through new products by utilizing their engineering and manufacturing capabilities. Value creation does not directly result in value capture, because value capture is affected also by two external factors: competitors and customers.

Figure 1 Definition of Value Creation and Value Capture



The first factor, competition, influences the scale of value capture by a company. Two companies that develop and manufacture products of equivalent excellence in terms of function, quality and cost can capture value on totally different scales if they are in different situations vis-à-vis their respective competitors. For example, the market value of a product produced by a company is low if the company's competitor also offers a similar product.

The second factor, customers, influences value capture with their value standards. The scale of value capture of two products of similar functions and quality can differ greatly if customers are willing to pay different prices in consideration of these two products. Customers' "willingness to pay" varies a widely depending on many different factors in addition to the product's functions and specifications.

Customers' purchase behavior is determined in an intricate customer-product interrelation.

Therefore, in order to capture value, a manufacturer must develop a product that meets two conditions: a product that is offered by only that company, and that is attractive enough for customers to buy at high price. This kind of product is truly valuable for society after all. While value capture is described above as creating economic value, it should be noted that it differs fundamentally from mere profit-oriented management. Value capture is more important than value creation as a way for manufacturers to contribute to society.

A great divergence has occurred between value creation and value capture because the importance of the two external factors, competition and customers, has increased as determinants of value capture. Let us briefly examine why these factors have grown in importance.

First, competition among companies has come to influence value capture to a far greater degree due to recent globalization and the resultant intensification of competition. A company introducing innovative new technology or product such as optical disk devices (e.g., DVD recorder) or LCD TV sets is soon forced to reduce the product price due to numerous competitors offering similar products in the wake of the pioneer product. That is to say, an excellent product alone

is no longer sufficient to contain inter-firm competition, which has become a faster and more powerful factor in affecting value creation.

Second, customer value has become increasingly complex, weakening the correlation between engineering excellence and customer value. As a result of worldwide technological advances, it has become easier for many firms to satisfy customer needs in terms of product function and quality. For example, in the United States, the world's largest flat screen TV set market, VIZIO obtained the largest market share from 2007 through 2009, despite its short history in TV development and manufacturing. This is proof that even a young manufacturer can relatively easily satisfy customer needs today simply by assembling purchased components.

Under such circumstances, manufacturers, in order to capture value, need to persuade customers to purchase products with value that surpasses mere functionality or quality, even when it means that customers pay a premium in many cases. Representative examples of such products are Apple's iPhone and iPod, and Nintendo's Wii. From a purely technological viewpoint, these products are not superior to their respective Japanese rival products (such as cell phones packed with up-to-the-minute high-tech features and Sony Computer Entertainment's PS3).

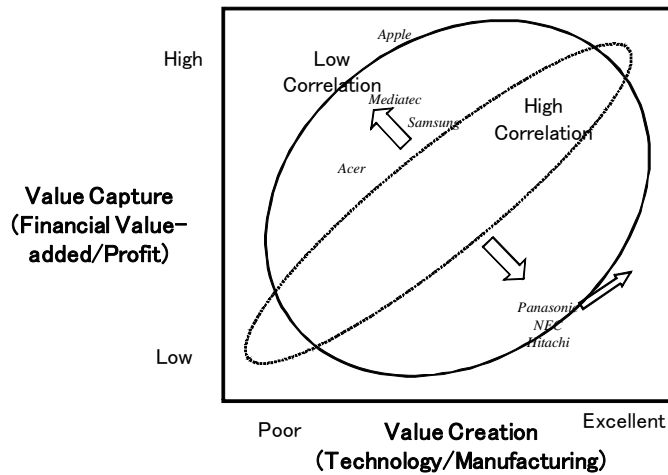
The same can be said about the extremely popular Dyson vacuum cleaner. Functionality and quality are largely determined by engineering and manufacturing, but customer value, which lies beyond these attributes, cannot be assured merely through engineering and manufacturing. In other words, the relationship between technological excellence and customer value is no longer straightforward.

Given the greater influence of competition and customer value, the relative importance of “value creation” realized by engineering and manufacturing as a component of “value capture” has diminished (See Figure 1). As a result, the correlation between value creation and value capture has been lowered. Figure 2 illustrates this phenomenon. It shows how Japanese companies' manufacturing excellence, although unchanged, has ceased to capture value (they are situated in the lower right-hand quadrant of Figure 2: high-level manufacturing and low-level value capture).

At the same time, the world has seen an increase in the number of manufacturers who excel at capturing value despite their relatively low level of technological competence (situated in the upper left-hand quadrant of Figure 2). Today, manufacturers can realize substantial value capture without internal manufacturing strengths by taking

advantage of industry-wide horizontal specialization and open innovations.

Figure 2 Correlations between Value Creation and Value Capture



In this situation, however, first-rate Japanese companies should not be tempted to shift toward the upper left-hand quadrant by emphasizing value capture to the detriment of engineering and manufacturing. Their current management challenge lies in re-aligning their strong technological capabilities (value creation capabilities) with value capture, despite the generally low correlation between value creation and value capture. In reality, value capture would be easier if companies only focused on value capture without paying attention to internal engineering and manufacturing. In many cases, it would be

more efficient to outsource necessary technologies, especially given the ongoing diffusion of modularization and open innovations. However, it is specifically for this reason that Japanese companies should also remain focused on manufacturing as they strive for value capture as well as value creation. This is a significant challenge for Japanese manufacturing firms.

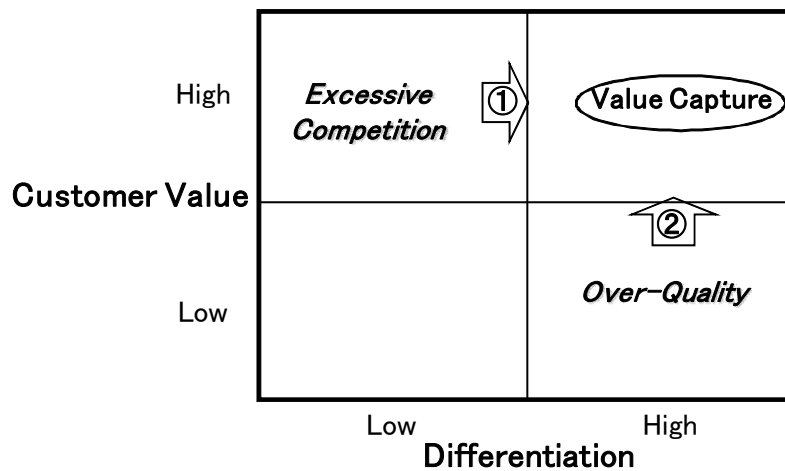
3. Conditions to Capture Value: Differentiation and Customer Value

As stated above, value creation does not directly result in value capture due to the interference of the two factors, competition and customer value. This means that, conversely, to capture value it is necessary to (1) link manufacturing excellence with uniqueness and differentiation from competitors, and (2) create customer value, enticing customers to pay large premiums for the differentiation, and to do these two things simultaneously. In many cases, Japanese companies unfortunately have managed to perform only one of these two conditions in recent years, as illustrated in Figure 3.

Companies in the left-hand quadrant have products that please customers by satisfying their needs but a low level of uniqueness that differentiates them from competitors. In this situation, competition eventually flares up, driving customer purchasing prices down

relatively quickly. In heated competition, even products that are technologically advanced and fully satisfy customer needs cannot capture value, as in the case of many flat screen TV sets.

Figure 3 Two Pitfalls: Excessive Competition and Over-Quality



To avoid excessive competition, companies pursue originality and differentiation. However, this process presents another trap: companies end up moving from the upper left-hand quadrant to the lower right-hand quadrant. That is to say, companies work on new technological development and functional improvement to attain originality, but the "originality" thus realized is interpreted as excessive elaboration of product specifications or over-quality by customers who, in an increasing number of cases, refuse to pay the premium corresponding

to the increased cost. This happens because an ordinary level of technology offered by many companies can easily satisfy most customers. The VIZIO TV set, technologically inferior to Japanese flat TV sets, nevertheless won the largest share of the US market, as stated above, because the customers decided that what VIZIO had to offer was good enough for them.

In order to capture value, firms need to simultaneously realize originality/differentiation and customer value (situation represented in the upper right-hand quadrant in Figure 3). For this, companies can proceed in either of the two directions indicated by the arrows (1) and (2) in Figure 3: (1) give priority to customer value (customer needs), and attempt differentiation with technology that assures customer value; or, conversely, (2) give priority to sustainable differentiation/originality, and create customer value that corresponds to the originality. For Japanese companies, the latter approach is particularly important; that is, embracing manufacturing strength and acquiring new customer value on top of it. I shall explain below why approach (2) is more important than approach (1).

First, approach (1) contains some fundamental contradictions. To be inimitable and sustainable, a company's originality and differentiation must be attained not in individual products or technologies but in

organizational capabilities or core competences. A theoretical framework that explains this point is the Resource Based View of the Firm (RBV), which has become the mainstream of recent theories of management strategy (Newbert, 2007). The RBV focuses a company's own tangible and intangible resources and abilities and processes to utilize them, that is, a company's originally constructed organizational capabilities that are non-tradable in the market. Individual products, though differentiated, can be quickly imitated, whereas organizational capabilities or core competences are inimitable (Itami, 1987; McEvily and Chakravarthy, 2002).

Organizational capabilities cannot be imitated because they have been accumulated over a long period of time (Dierickx and Cool, 1989). They include empirical knowledge acquired through repeated trial and error in the process of technological and product development (Lado and Wilson, 1994; Hatch and Dyer, 2004), organizational processes that have been fine-tuned over a long time, and manufacturing facilities into which repeated improvements have been integrated (Hatch and Mowery, 1998). Meanwhile, customer value and needs change quickly within just a few years. It is extremely difficult to adequately adapt organizational capabilities, which require many years to construct, to such rapid changes. It makes more sense for a company to give priority

to developing its organizational capabilities and then to create new customer value by advantageously drawing on its organizational capabilities, as in approach (2).

Many Japanese companies are found in the lower right-hand quadrant in Figure 3 today. Japanese manufacturers enjoy intrinsic international superiority in the construction of organizational capabilities for two societal reasons. First, compared particularly to American firms, Japanese firms have the temporal leeway to adopt a long-term perspective because they are exposed to less pressure from shareholders for short-term profits.

Second, major Japanese companies have many talented technical employees and engineers who stay with them for long periods of time thanks to the life-time employment system. As a result, a large portion of their organizational capabilities can be retained in-house as knowledge is acquired by individual employees under specific corporate business systems and task requirements over an extended period. In other words, Japanese companies are in an advantageous position to build up organizational capabilities, although they are not particularly good at creating customer value. Consequently, many Japanese companies find themselves in the lower right-hand quadrant. This is why customer value creation (approach 2) is essential for value capture

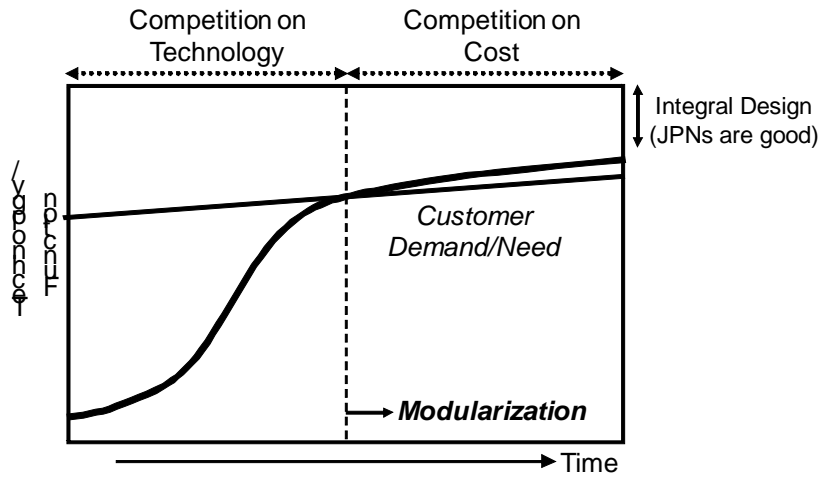
by Japanese companies.

4. Leveling-off of Customer Needs: the Importance of Non-functional Value

Japanese companies are now confronted with difficulty in persuading customers to pay a large premium for the functional improvement of their products, now that basic customer needs can be easily met in the case of many products. For example, many customers consider personal computers to be good enough if they provide word-processing functions and an Internet connection, and many desire no more than reliable calling and texting functions from cell phones. The leveling-off of customer needs is the current trend.

Offering far more product functions than what is sought by customers eventually results in price competition. Product quality enhancement through technological innovation is not necessary if customer requirements do not exceed a certain level. Low functional standards that meet customer needs accelerate product modularization and standardization, facilitating market entry by new competitors, which in turn results in excessive competition. The high-level technological expertise of Japanese companies begins to lose *raison d'être* once customer needs have leveled off.

Figure 4 Limitation of Function-based Customer Needs



Technological development can be generally expressed with a dull "S," as in Figure 4. Technological development stagnates toward the end of a product cycle because technological limits have been virtually attained. In addition to this, in more recent years, leveled-off customer needs have also begun to interfere with this process. In the case of digital camera CCDs, for example, a pixel count exceeding 10 million may not be necessary. Note, however, that what has leveled off in this example are customer needs regarding functions and specifications that can be mostly quantitatively determined. Considering that the peaking of customer needs triggers price competition, to capture value, it is necessary to explore customer value in areas outside product functions

and specifications.

Products that have succeeded in high-level value capture do not depend solely on high levels of functionality or technology. One recent symbolic example of such products is Nintendo's Wii, as already mentioned. Compared to Sony Computer Entertainment's PS3, which is technologically and functionally much superior, Wii has created overwhelmingly greater added value. PS3 is superior in terms of technological features and specifications thanks to its most advanced semiconductor, called "Cell," developed at enormous investment costs, but it is nevertheless inferior in value capture. Likewise, Apple's iPhone is more successful at capturing value than cell phones loaded with the latest functions, such as those developed by technologically superior NEC and Panasonic. Those products are successful because customers have found in them value far beyond their mere technological functions.

A similar trend is also observed in the production goods sector. An industrial sensor manufacturer, Keyence, which has maintained its ratio of operating income to sales above 40% on average for the past twenty years, is not technologically superior to its rival firms such as Omron. Nevertheless, Keyence has created value by offering products that "scrupulously meet subtle and latent customer needs." Terumo, a

successful manufacturer of blood bags and other medical materials and equipment, also offers value treasured by physicians and nurses in areas outside mere functionality. MediaTek, a Taiwanese semiconductor manufacturer, technically inferior to its Japanese counterparts, has achieved great success by offering semiconductors that its corporate customers find easy to use in their product development. Successful manufacturers go beyond mere product functions and provide value truly appreciated by customers.

The value of a product is therefore not only value assured by objectively measurable functions or specifications but also value that customers attach to the product based on their interpretation and perception. In this article, the former type of value is called functional value, and the latter, non-functional value or non-functional premium value. Among consumer goods, such products as the Wii and the iPhone and among production goods, such products as Keyence sensors and MediaTek semiconductors have high non-functional premium value.

5. Definition of Non-functional Value and its Contents

5-1 Definition of non-functional value

The functional value of a product is determined by the evaluation of product functions according to objectively fixed criteria, whereas non-

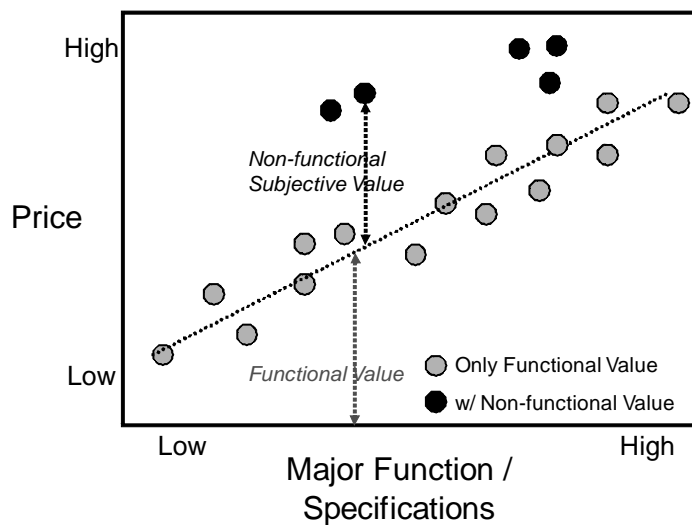
functional value is created when customers attach subjective significance to a product. Both functional and non-functional values exist when customers recognize its value. However, a difference is that while functional value exists according to objective criteria, non-functional value is attached to the product according to individual customers' subjective criteria.

One simple way to define non-functional value is illustrated in Figure 5, which shows the relationship between product specifications and prices. In the case of a digital camera, for example, basic functional features such as the pixel count, zoom range and image stabilization can be adopted as variables and statistically integrated into one index, "basic functions/specifications," to be marked on the horizontal axis of the graph. If this index has a high correlation with the corresponding price index, value of the product consists of only functional value.

Products represented by the grey circle on the graph are priced in consideration of their basic functions. That is to say, customers pay for their functional value determined according to objectively fixed criteria. On the other hand, products represented by black circles deviate from the dominant trend of function-price correlations. In other words, customers pay higher prices than those generally corresponding to the

value of the products' functions. To sum up, non-functional value corresponds to the difference between the standard prices (determined by functional value) expressed by the dotted line and the actual prices of the products.

Figure 5 Functional Value vs. Non-functional Value

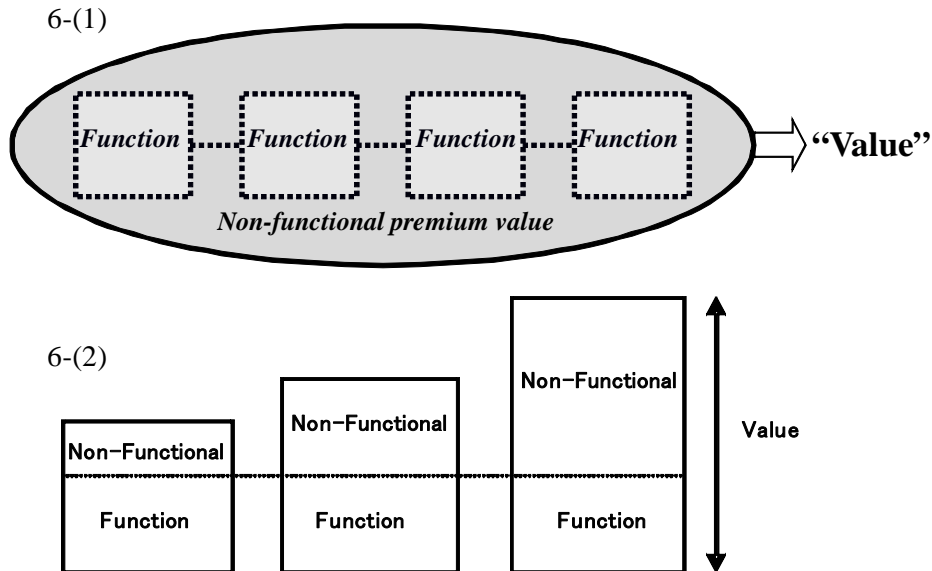


Products such as PCs and flat screen TVs usually show a clear function-price correlation, as the grey circles do in Figure 5, if their indices of basic functions/specifications are appropriately obtained. Meanwhile, in the case of automobiles, even when functions such as size, engine output and quietness may be carefully measured, a clear correlation cannot be found between functions and price. A correlation

with price may be found when the brand name, rather than other functions, is added as a variable. Brand, however, does not constitute a product specification; it is a symbolic factor of non-functional value.

In fact, there is nothing extraordinary about non-functional value. The commercial value of products widely circulated on the market is rarely determined solely on the basis of their functional value. Think of your personal effects: clothes, wrist watches, glasses and handbags—the commercial value of none of these items purely represents their basic functions and specifications. The same holds true for household products, from furniture to tableware and kitchen utensils, or office supplies such as desks and cabinets. Their prices are not based exclusively on an objective evaluation of their basic functions and specifications. Rather they are determined as a reflection of value that customers recognize in the products, based on their comprehensive and subjective evaluation of the products in their entirety, including image, perceived quality, design and so forth (Figure 6-(1)). To varying degrees, non-functional value occupies a considerable part of the total value of many goods and services, and the importance of non-functional value is growing year by year.

Figure 6 Value of Products and Services



As indicated in Figure 6-(2), this article assumes that the commercial value of ALL goods is defined as the sum of functional and non-functional value. Concepts similar to that of non-functional value have already been presented in academic journals or media, expressed in a variety of terms (Holbrook, 1999), such as "experiential value (Schmitt, 1999)," "psychic value (Khalifa, 2004)," "Exclusive Value Premium (Groth, 1994)," and "hedonic value (Hirschman and Holbrook, 1982)." These concepts are all categorized into non-functional value in that they refer to value that is not represented by the function or utility of a product. In fact, the adjectives used in these terms,

"experiential," "psychic" and "hedonic," express different aspects of non-functional value that customers attach to a product. That is to say, the concept of non-functional value contains all the other concepts. It is for this reason that the term "non-functional value" and the framework presented in this article enable comprehensive discussions of all sorts of goods, ranging from personal computers with relatively low non-functional value to Louis Vuitton bags with relatively high non-functional value, regardless of the different aspects by which their value is recognized.

5-2 Relationship between functional value and non-functional value

In many cases, non-functional value originates from a product's functions. This can be explained using the typical examples of high-performance automobiles and single-lens reflex cameras. Customers do not necessarily pay prices for those products that reflect their functionality. Some consumers may never drive at 250 km/h, but they attach significance to this engine performance if it corresponds to their taste or style. The value of a BMW is not the total sum of the different elements of functional value contributed by its engine, chassis and so forth (Figure 6-(1)). The commercial value of a product is determined when its functional value is combined with non-functional value.

However, it should be noted that the functional excellence of a BMW, such as its high-performance engine, does contribute to its non-functional value. At the same time, for those who do not recognize the significance of certain functions, these functions represent little value.

It is inappropriate to consider non-functional value separately from functions since in many cases the former derives from the latter. Non-functional value is often subjective customer interpretation of a specific function. This means that non-functional value can be created if manufacturing can produce something that touches the hearts of customers.

5-3 Non-functional value as subjective value

Since non-functional value is recognized subjectively, an identical product can represent different types or degrees of non-functional value to different individuals and firms. Subjective valuation is mainly motivated by (1) customer taste and sensibility, and (2) the context or situation in which a customer is placed.

First, non-functional value is motivated by customer taste and sensibility. For example, if a product design aesthetically pleases a certain customer, she is willing to purchase the product at a high price. For this customer, the product has high commercial value, and non-

functional value is created. For another example, some customers find considerable non-functional value in specific product functions that match their taste, such as automobile enthusiasts who attach great importance to the engine performance of a certain model.

The scale of non-functional value depends on customer subjectivity, such as personal taste and sensibility, regardless of the objectively appreciable functional superiority or inferiority of a product. Consumer taste and sensibility as sources of non-functional value are particularly important for consumer goods. However, even in the case of production goods, it is also possible that a corporate customer (or person in charge of purchasing) develops a strong sense of trust and security toward a specific supplier. In such a situation, the corporate customer prefers buying from the supplier, even if that supplier's products are not qualitatively actually superior to other suppliers' and its prices are slightly higher. Non-functional value has thus come into play.

Secondly, non-functional value is recognized within a given customer context or situation. In the case of production goods, high non-functional value is created for a corporate customer when a product promises to solve a problem with, for example, product development or assembly within a particular manufacturing plant context. In other words, to create context-dependent non-functional

value, it is necessary for the supplier to thoroughly understand the situation in which the customer intends to use a product and make sure to propose a product or solution that solves the problem in that particular situation.

Nevertheless, it is important to note that non-functional value, even if well established subjectively and contextually, does not necessarily result in large-scale value creation if the value is recognized by too small a market, since this will only lead to limited sales. Subjective value recognized by an extremely limited customer population tends to be less generalized than objectively established functional value. It is possible to add a generalizing edge to subjective value. In fact, manufacturing products as well as many other commercial goods that have created great value have both characteristics of value; subjective customer value and generalized value. Outside manufacturing, hit songs and best-selling novels are good examples. In manufacturing, Apple's products have both these types of value and epitomize successful value creation. Non-functional value is often generalized by word of mouth and via the media. The importance of non-functional value has increased particularly in recent years, partly because the Internet and advances in IT facilitate the generalization of non-functional value.

6. Characteristics of Non-functional Value and its Management

6-1 Contents of non-functional value

Let us examine the contents of non-functional value, while focusing mainly on consumer goods. Two important sources of non-functional value in consumer goods are "self-expression value" and "attachment value."

A customer recognizes self-expression value in a product not when it is merely owned or used, but when it serves as a tool of self-expression vis-à-vis other people. Many customers are willing to pay a large premium for this value when purchasing apparel and automobiles. More than 100 years ago, Veblen (1899) referred to this concept in his "conspicuous consumption," and Baudrillard (1970) and many other researchers have since elaborated discussions on this theme. It is a universally recognized content of subjective value that customers find in certain products.

Attachment value, on the other hand, emerges for a customer when he or she feels a subjective "special sentimental attachment" toward a specific function or qualitative attribute of a product. In the case of an automobile, for example, a customer can recognize attachment value in subtle feeling of maneuverability or exhilarating engine note that is

not directly related to the transporting function of the car. In other products, it can be found in design, aesthetic appeal or sensation of use, unrelated to functionality or utility.

Self-expression value and attachment value correspond to external and internal axes of non-functional value respectively, and form a framework that exhaustively expresses the whole spectrum of non-functional value. Self-expression value is external since it is created within the customer's relationships with others and society, while attachment value is internal since it is created within the customer's mind.

6-2 Characteristics of non-functional value

The non-functional value of a product is subjectively recognized or created by customers according to their tastes or sensibilities within a specific context of product use. Now let us examine the characteristics of non-functional value in its three particularly important aspects: implicitness, indivisibility, and latency.

First, non-functional value is highly implicit and difficult to explicitly formulate. Customers' subjective value standards are intricately influenced by such factors as their past personal experiences, value systems and sensibilities, and the non-functional

value deriving from these factors is inevitably implicit. For example, it is almost impossible to formulate the value standards by which individuals assess certain hit songs or best-selling novels as being particularly valuable. It is difficult to identify constituent factors of value, and therefore there are no simple laws for enhancing value.

Second, non-functional value is extremely difficult to divide into components; rather, it is indivisible. As indicated in Figure 6-(1), the value of a product is not the sum of its individual functions. The value of Apple's iPhone or the Porsche 911 is not the total sum of the attributes of its various functions or specifications. A product's value is recognized as such in the overall integrality of the product.

Third, non-functional value is subjective and therefore latent deep within the customer. Given all these characteristics, implicit, indivisible and ambiguous, even the customer who recognizes non-functional value finds it difficult to describe. Furthermore, since non-functional value is recognized in a specific product, it usually cannot exist on its own without a host product. For these reasons, customer needs for non-functional value are rarely clearly identifiable.

6-3 Management of non-functional value

Considering the contents and characteristics of non-functional value

described thus far, three important points can be cited for manufacturers to manage non-functional value creation: (1) strategically, it is essential to create a new market/customer value with a product, instead of adapting a product to customer needs; (2) in managing product development, it is necessary to employ a Heavyweight Product Manager (HWPM); and (3) design is an important product attribute.

Let us recapitulate. First, new market or new customer value must be created, instead of attempting to respond to existing customer needs. Non-functional value is latent; many customers become aware of it for the first time only when they see a product that embodies it. For example, until the wildly popular Wii or iPhone appeared on the market, nobody had concretely demanded such products. Customers who had never touched an iPhone would have been unable to express their need for something like the fun and ease of handling the multi-touch screen, which accounts for a large part of the non-functional value of the iPhone. For general customers, it is also impossible to clearly express through words or drawings the designs that they like. It is for these reasons that companies must create value first and propose it to customers.

Some customer needs do not exist for products that are yet to come

into being, as mentioned above. Yet, exploring latent needs through market research often encounters great difficulty. For this reason as well, it is necessary to create and present new value that pleases customers, instead of unearthing latent customer needs. Therefore, companies capable of successfully creating non-functional value do not simply develop products, whether consumer goods or production goods, which directly respond to customer voices. Rather, armed with a solid knowledge of customers' circumstances of product use and value standards, they develop products that surpass customers' concrete desires and engender true satisfaction.

Second, a heavyweight product manager (HWPM), who is talented in product concept creation and demonstrating excellent leadership, plays a vital role. The HWPM is not only a product development manager but also a product development leader, who initiates and leads product concept creation. The conventional decision-making process centering on analytical management and consensus forming is inadequate for creating non-functional value with its specific characteristics. Due to the great difficulty involved in quantifying and verbalizing the commercial value to be realized, consensual coordination among project members carries the high risk of distorting the contents of the non-functional value to be achieved. The HWPM, who perfectly understands

the target non-functional value, must strongly lead the product development. Clark and Fujimoto at Harvard University demonstrate in their study that in the case of an automobile, for which non-functional value such as design and maneuverability is important, a product with high commercial value is more likely to result from a development project led by an HWPM.

Thirdly, product design is an extremely important factor in customer evaluation of the non-functional value of a product in its entirety. This does not mean that only design matters. Non-functional value, indivisible and only perceptible and appreciable in a product as a whole, is symbolized by its overall design. It is known, for example, that the largest determinant of automobile sales is exterior design (and non-functional value is very important for automobiles). Apple cell phones, Dyson vacuum cleaners and Samsung LCD TV sets are some of many successful examples of non-functional value symbolically expressed by their design.

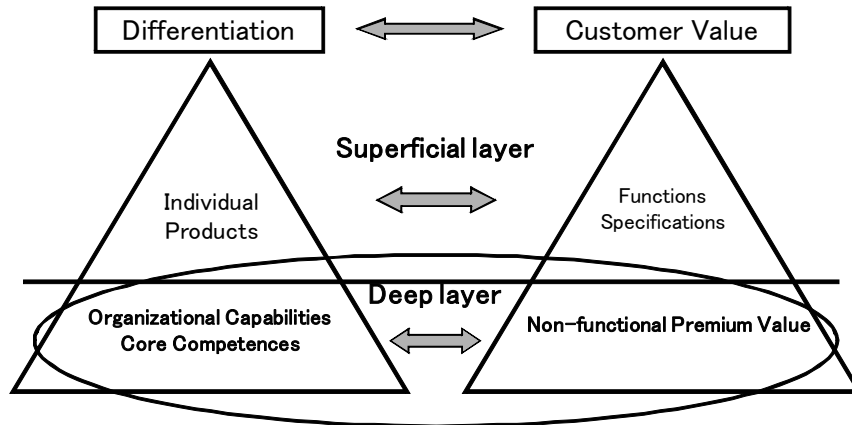
7. Conclusion

I have clarified the conditions necessary for realizing sustainable value capture and discussed the concept of non-functional value, which is particularly important among those conditions. There are two

conditions for value capture: (1) acquiring sustainable differentiation and originality and (2) matching originality with customer value. To fulfill these conditions, it is necessary to pursue "deep value creation," as illustrated in Figure 7.

In this article, I have stated that (1) for sustainable differentiation and originality, firms must focus on building up organizational capabilities from a long-term perspective, instead of focusing only on management of individual products; and (2) for high customer value creation, both functional and non-functional value must be created. As compared to superficial value creation founded on the product functions and specifications of individual products, deep value creation aims at cultivating originality through organizational capabilities and creating non-functional value. Deep value creation is required of Japanese companies today.

Figure 7 Value Creation and Value Capture at Deep Layer



In this endeavor, the greatest challenge facing Japanese companies is creating non-functional value. Its societal and economic significance is extremely large. Creating added value, which in turn supports private business performance and the national economy, requires increasing commercial value of products, a large part of which is non-functional, rather than functional. Nevertheless, business managers, policy makers and product development personnel are still focusing their discussions on new technologies, patents, functions and specifications.

In terms of functional value, the significance of the manufacturing competence of Japanese companies has been diminishing year by year because it is now possible, in many product sectors, to provide

functions that satisfy average customers simply by assembling standardized modules. Modularization is good for the worldwide economy and industrial development and is expected to accelerate in the future. However, this trend will in turn destroy the *raison d'être* of many Japanese companies. The only way to break away from this situation is creating customer value founded on manufacturing that only Japanese companies can accomplish, customer value that is non-functional and incorporated into products by optimizing Japanese manufacturing expertise. Developing organizational capabilities that make uniquely Japanese manufacturing possible and thus offering uniquely Japanese non-functional value to the rest of the world is the contribution to the world community that is expected of Japanese companies henceforth.

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