

## *R&D Project Planning, Selection, and Evaluation*

In this chapter, I will show the key concepts you will need to be aware of in order to plan and implement new products and businesses. First of all, I will indicate the necessity of gaining an understanding of your internal and external circumstances and then of reexamining your own company to discover new themes in extended areas of your business or in completely new domains. I will then discuss how you could start prioritizing those discovered themes and then turning them into projects. Additionally, I will discuss the structure of management that needs to be in place for implementing the projects, the principles of appropriately making decisions for continuing or terminating them, and finally, the perspective of realizing standard products/businesses at the time of success.

### **3.1 Planning and Selecting R&D Projects**

#### **3.1.1 *Recognition of existing product/business circumstances***

First of all, when launching new products and businesses, it is necessary to have a grasp of the present conditions of existing products

and businesses. When I say “existing,” I am largely referring to only two viewpoints. They are as follows:

- Internal environment (existing products and businesses of your own company), and
- External environment (market conditions and other companies’ existing products and businesses).

With regard to the external environment, I will elaborate not only from the perspective of other companies’ competing products and businesses, but also from the perspective of the marketplace.

1) *Understanding the present conditions of the internal environment (your own company’s existing products and businesses)*

When attempting to grasp present conditions, it is necessary to see the lineup of the products of your company in a new light. In particular, it is necessary to recognize new such points as the quantity, quality, and sales period of existing products. Generally speaking, new businesses that readily achieve success are the ones that involve products that are positioned as extensions of your company’s lineup. This is because their bottom lines are clear, and it is easy to understand how to promote their growth.

However, products have life cycles as those described in Figure 3-1, and depending on their stage of market development, the worth of releasing a new product can be determined.

For example, during the period of the growth phase of your company’s product, the development of a new, augmentable product that is peripheral or related to the existing product will not only serve to support the existing product, but will also raise the possibility of success for itself.

When an existing product enters its mature and waning phases, in response to the trends of the times, there may be a need to see this product make a paradigm shift toward a new domain, where

	Introductory phase	Growth phase	Mature phase	Waning phase
Marketing objective	Recognition of product and promotion of trial	Acquisition of market share	Maximizing profits while protecting share	Reap profits
Product	Basic product	Product extension, offering of services and warranties	Diversification of product lineup	Gradual phasing-out of weak models
Price	Cost build-up approach	Market penetration price	Price equals or exceeds competitor's price	Price reduction
Channel	Selective	Channel cultivation	Channel cultivation	Elimination of routes with low profitability
Promotion	<ul style="list-style-type: none"> <li>• Advertisement for initial adopters and dealers</li> <li>• Large-scale sales promotion aimed at promoting trials</li> </ul>	<ul style="list-style-type: none"> <li>• Advertisement aimed at arousing recognition and interest in the mainstream market</li> <li>• Scaling down sales promotion costs</li> </ul>	<ul style="list-style-type: none"> <li>• Advertisement that emphasizes factors of differentiation and merits</li> <li>• Enlargement of sales promotion costs to push forward the switchover of customers from other companies</li> </ul>	<ul style="list-style-type: none"> <li>• Level of advertisement necessary for maintaining key customers</li> <li>• Minimum sales promotion costs</li> </ul>

Figure 3-1: Product Life Cycle and Marketing Strategy

new products can be created. However, if you have a product that is in its introductory phase, you should refrain from launching a new product in a similar domain, since doing so will raise the possibility of competition among products of your own company. Furthermore, in the event that one of the products fails to become a hit, there is always the possibility of bringing about mutual ruin.

On the other hand, there are cases of launching new products that are not extensions of your company’s lineup, as described above. This applies to situations of moving into separate domains in terms of the corporate strategy and does not involve taking your company’s products into account. Instead, this involves taking the entire market and existing products of other companies into account.

The above-mentioned viewpoints do not only apply to new products but to new businesses as well, so it is also equally important to have an accurate grasp of the life cycle of existing businesses. Therefore, to assure that conflicts of interest within the company do

not occur, it is necessary to ascertain the domain of new businesses. In this case, domain mainly refers to target customers and product categories.

2) *Understanding the present conditions of the external environment (markets and other companies' existing products and businesses)*

Next, it is necessary to understand other companies' products and businesses as elements of the external environment. In the case of products, such elements include all companies that have launched competing products. In the case of businesses, likewise. In other words, it is appropriate to gain a comprehensive overview of the market of the product line you wish to introduce and the peripheral environment of products and businesses as well. To obtain such a comprehensive view of a market requires considerable effort.

Therefore, you need to be able to examine a market from all possible perspectives, such as the following:

- Market trends
- Market scale
- Principal companies
- Situation of competitors and new entrants
- Technological trends
- Product and service attributes
- Channel attributes
- Customer attributes.

When launching a product upon examining a market as a whole, it is necessary to clarify the 4Ps of marketing (Product, Price, Place, and Promotion) and the 4Ps of other sales points (Positioning, People/ Person, Partnership, and Packaging) along with targets. However, in order to first of all understand present conditions, you would do well

to adopt the above-mentioned perspectives, which take the marketing factors into account.

### Market trends

Market trends are the vogues of the entire market itself, while products and businesses are matters that depend on the support of customers. Therefore, trends can occur when customers become influenced by economic conditions or seasonal vogues. For example, customers tended to “save” during the period after the burst of the economic bubble, and goods that are related to events that take place once every four years, such as the Olympics and the Soccer World Cup, become popular when they occur. It is necessary to recognize these trends and if a response to these trends have already been made by another company, the decision to have your own company do the same or not needs to be made carefully. Trends can be fleeting or they can last up to several years. If you fail to understand them properly, there is always the possibility that your product or business will turn out to be outdated when launched.

In addition, current trends can also be said to be “creations of companies.” Favorite sports of the Japanese, such as baseball and volleyball, can become ideal trends. For example, there were the festive events of the World Baseball Classic (WBC), which caused a sensation in Japan when the country’s national team became champions, and the World Cup of volleyball. In particular, world tournaments held within Japan can become one single trend. Creating trends with the use of mass media through such tournaments and elements of entertainment is a characteristic of the modern age.

Even deregulation can turn into a trend and help broaden the scope for market entry in the process. In the past, many companies made their entry when the liberalization of communications took effect and, in recent times, in addition to the liberalizations of finance and electricity, the convergence of broadcasting and communications can be mentioned as a case in point.

### Market scale

Market scale is crucial in helping companies find room for entry. As can be inferred from the often-used description, “X % market share,” we see a market in terms of units of companies that offer products and services. This indicates how much of the total market is secured at a given time, and while it depends on the definition of the market, in markets where a state of oligopoly has advanced to some extent, no matter how good a product or business you intend to launch may be, if the market is insular, making an entry may prove difficult at times.

In many cases, market scale varies in accordance with the passage of time. While fluctuations in basic necessities, such as food, clothing, and shelter, are small, the scale naturally changes in accordance with the state of the economy. In markets where fluctuations are intense, such as the information and communication market, the scale tends to repeatedly increase suddenly within a short period of time or become stagnant all at once.

### Principal companies

The subject of principal companies is precisely about the situation of competitors. If certain new products or new businesses are an extension of an existing product or business, then they represent your present competitors. In fact, it is highly likely that you may have already been monitoring them, so it may be easy to recognize them. However, in the case of entering into a new domain, it is necessary to see whether there is any company or companies dominating the market or whether your firm has the opportunity to dominate it after making an entry.

In addition, it is also necessary to take note of the financial situations of these companies themselves. This is because in the event your product starts to engage in price competition, you will be able to clarify how much cost you will be able to bear. At times, companies strategically rush their products or businesses into price competition

in a bid to prevent other companies from following. A good example of this is SOFTBANK, which released its ADSL service at a bargain price from the very beginning in the broadband market. At first they managed to create a situation whereby it became difficult for existing communication carriers to flex their muscles. They accomplished this through distributing modems for free through parasol promotions (street-side sales promotions), making other companies hesitate to make their market entry. Ultimately, various companies made their entries and competition became fierce, but they nevertheless repeated such techniques and developed into the No. 1 company in the broadband market.

It is necessary to accurately recognize major companies that dominate within such markets. While existing major companies can be recognized easily through general information, in order to grasp whether a company has the potential to become one, supplementary and detailed corporate analysis and research becomes necessary.

### Situation of competitors and new entrants

Time must factor into the discussion of the situation of competitors and new entrants. In other words, competitors must be considered as not only the present ones, but also those who are planning to enter the market. Specifically, it may be necessary to recognize market entrants as not only companies that have expressed their intent to enter, but companies that can readily enter from related markets (even if they belong to a different sector), companies that can possibly offer substitute products or businesses, and even individuals who can possibly start up a spin-off venture business, as has been happening in recent times. If you underestimate these emerging powers, your company may be caught off guard by an unconventional approach, and end up becoming a case study of a “conservative company in decline.”

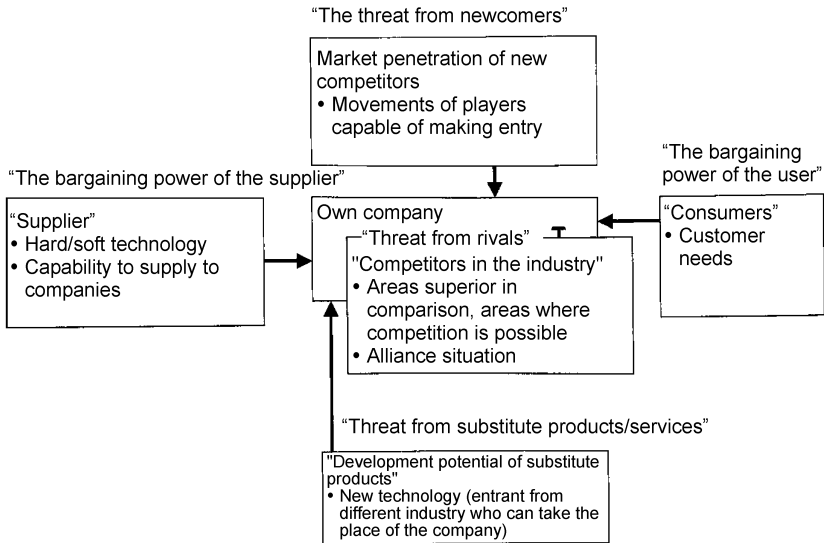


Figure 3-2: A Summary of the Five Forces Analysis

Source: This author's summary of Michael E Porter's *Competitive Strategy*.

In sectors where market entry is easy, competition is intense. Obstacles to entry include not having the necessary capital, staff, technology, and sales channels, in addition to regulatory restrictions. It must be taken into account that these hurdles are being relaxed through the recent deregulations, rise in the availability of information, the development of outsourcing, mobility of the workforce, and, in addition, injection of capital from foreign companies.

Such a situation of competitors and new entrants can be subjected to a Five Force Analysis, as illustrated in Figure 3-2, for example.

### Technological trends

When examining a market, while it is necessary to not only look at seeds-oriented approaches that focus on such issues as technology, but also at needs-oriented approaches that take customer viewpoints into account, technological trends are nevertheless crucial. Though there seems to be no point in considering products and businesses



that are technically incompatible, if you consider only compatible ones on the other hand, you may find that a new product you release into the market after completing its development is obsolete and no longer competitively viable, since its technology may have become outdated. For such a reason, keeping a check on these trends becomes crucial.

Furthermore, technology is concerned with not only products, but with many other aspects, ranging from the procurement of raw materials to factory production, distribution, inventory management, and the process of gathering information for upgrading products. For example, if a real-time system excelling in inventory management can be created, it will become possible to realize efficient delivery of products, and you will be able to avoid carrying unnecessary stocks, which will in turn lead to cost reduction. In effect, this will lead to improving your product and the plant equipment required to make the product, making it easier to produce new products. Technological development plays a significant role in such a positive, upward spiral.

Among the technological trends seen in recent times, you should pay particular attention to patent-related issues. Even when it is possible to swiftly adopt and develop cutting-edge technology, another company may be holding the rights to it. The present age is considered to be the age of intellectual property, and if you think little of intellectual property management, you may have to pay a hefty price in the end. Previously, Japanese companies had failed to heed this point, and had to pay sums of money that amounted in the billions of yen to US firms as compensation. In societies such as the US, where patents are highly valued, there are companies that rely on them for a large part of their revenue stream, with the number of staff working in some companies' intellectual property divisions totaling in the hundreds. In these internationalized times, even if a company only targets domestic markets in Japan, international issues are certain to arise. Consequently, it is important to properly recognize the

technology patent systems of such aspects as the technology of other countries.

Furthermore, recently, there have been intra-company lawsuits taking place. For example, the inventor and former employee of Nichia Kagaku Kogyo, Mr. Shuji Nakamura (presently a professor of the University of California in Santa Barbara), filed a suit against the company over the invention of the blue-light emitting diode, and the company eventually was made to pay a substantial sum of money to him. In effect, the company had the carpet pulled from under its feet by a former employee, a researcher demanding compensation for the value of an invention. From the inventor's point of view, it is natural to be rewarded for the invention, but for Japanese companies so far, such as Nichia Kagaku Kogyo, such a matter apparently does not merit serious consideration. Perhaps for the corporation, this day and age will prove difficult to navigate, but it can be clearly seen that the management of technological intellectual property is becoming vital.

### Product and service attributes

Needless to say, it is important to recognize product and service attributes. It is necessary to understand from the beginning such matters as whether a product is one whose costs can be easily recovered after carrying out mass production for it or whether development services and marketing services cannot be separated from each other. In other words, no matter how much expense you decide to tolerate in the development stage, if you can generalize it, you will receive enough change afterwards. On the other hand, no matter how much cost you manage to reduce in the development of a product, if there is a need to make use of very expensive human resources and locations in order to offer it, realizing a profit will not be easy. It is necessary to have a sufficient understanding of such characteristics, and in particular, if you are attempting to offer a new product or service by carving out a market that is different from an existing one, you will

need to do your research well, since there are no precedents you can refer to for guidance.

### Channel attributes

When investing in a product, channels are important, along with the pricing strategy. The channels you need to recognize have the attributes of width and depth. The matter of the channel width of other companies is a matter of how extensive their coverage is. In other words, to put it simply, it is a matter of whether the coverage comprises Japan and/or overseas. Channel depth, on the other hand, is a matter of whether a company interacts with customers through brick and mortar stores or through a virtual means such as the Internet. By recognizing these corporate channels existing within markets, a company will begin to understand where to sell its goods and where its deficiencies lie.

For example, there are some companies that have a nationwide coverage of retail outlets, but do not provide Internet channels. This is because they wish to avoid giving a negative impression to their sales agents, who serve as their existing distribution channels, even when the Internet route is clearly cheaper and will allow them to hold down the price of their product. After all, using the Internet will mean that they will be able to sell directly at bargain prices. But this would cause a conflict of interest with the existing channel companies, who will certainly put up a fierce rebellion against the company. A famous precedent is the case of Matsushita Electric and the Panashop stores located in various places nationwide. Matsushita Electric was seen to be refraining from selling through the Internet, since doing so at bargain prices could lead to the annihilation of the Panashops, which had been contributing nationwide to date.

In terms of understanding existing circumstances of channel attributes, it therefore can be said that if another company has a nationwide coverage through its channels, your company may find

it difficult to develop new products and businesses, and may refrain from doing just that. On the other hand, this same situation could also make the development of your company's Internet sales easier and even help your company to make use of the Internet in an offensive fashion.

### Customer attributes

Though I touch on this subject here at the end, explanations of it have appeared before. Products must be designed with the customers of a relevant target segment in mind. It is the customer who buys the product and if you do not reach an understanding of such an individual who exists in the market, new R&D projects will be impossible to carry out.

To grasp customer attributes of the target market, you need to recognize variables of market segment elements, such as the following:

#### A) Behavior attribute types

##### *Behavior variables*

- (1) According to usage rate: Frequency of visiting stores, etc.
- (2) According to expectation level: Benefits sought after, etc.
- (3) According to customer satisfaction level: Satisfaction levels by the service, next-time purchase intentions, etc.

##### *Psychological variables*

- (4) According to personality: According to how interested one is in new things/how conservative one is, etc.
- (5) According to lifestyle: By TV viewing frequency, by favorite sport, by frequency of travel, etc.

#### B) Basic attribute types

##### *Population dynamics variables*

- (1) According to inherent attributes: By gender and age, etc.

- (2) According to change (growth) attributes: By educational background, annual income, occupation, ownership of house/rented property, household number [alone/more than two (presence of minors—age of the head of household (under or over 60 years old))], etc.

#### *Geographical variables*

- (3) According to the area: By metropolis, districts, and municipalities, etc.
- (4) According to environment: By climate (warm/cold districts), etc.
- (5) According to scale: By population density (cities/municipalities designated by government ordinance), etc.

An understanding of the above points to a certain extent will give you sufficient preparation for initiating an R&D project. If your understanding becomes too detailed however, you may fail to see the forest for the trees. It goes without saying that it is important to recognize customer attributes for any project.

### 3) *Importance of recognizing existing circumstances*

Up to now, I have been stating the necessity of understanding internal and external circumstances, or in other words, the existing circumstances of your own company's and other companies' existing products and businesses, and of the market as a whole, from all angles. From now on, having such a multifaceted understanding will serve as an extremely important preliminary step toward initiating and promoting R&D projects in the future. Without recognition of existing circumstances, it will be impossible to make new developments.

In concrete terms, all of this boils down to the 3Cs (Customer, Company, and Competitor), which should be monitored when drafting a marketing strategy. Among these 3Cs, while you must certainly recognize the Customer aspect, if you fail to recognize the Company

and Competitor aspects as well, even if you initiate a new R&D project, not only will it fail to lead to absolute success, but the question of whether it will even take off will remain doubtful.

It should be noted that these are confidential matters that can lead to the creation of new products and businesses, and therefore should be mainly researched by your company on its own. One method, as seen in recent times, is to collect information through Internet searches, conducting interviews with experts, and making use of research firms and consultancies. Incidentally, this writer served as one of the consultants in the initial stages of the development of Chapter 6's "Karada Meguri Cha" and proposed the keywords, "Chinese medicine," to allude to the fact that the product is a distinctively Chinese health tea. The proposal was made by taking existing circumstances into account.

### 3.1.2 *The search for new product and new business themes*

Next, I will discuss how you can go about creatively finding new product and new business themes. As mentioned above, you should take into account existing circumstances, and upon looking at their strengths and weaknesses, you should ascertain what opportunities (and threats) there are for you to consider. However, you should not only carry out a SWOT analysis that simply looks into strengths, weaknesses, opportunities, and threats, but you should also include other perspectives to facilitate your search for themes. In the following section, we shall examine several methods of searching for new product and new business themes.

#### 1) *Cross between SWOT analysis and value-chain analysis*

Figure 3-3 shows how SWOT analysis can be combined with the analysis of a product's value chain. In this case, the diagram shows how a company, whose brand appeal is strong in the AV (audio and visual) and PC (personal computer) sectors, can attempt to launch

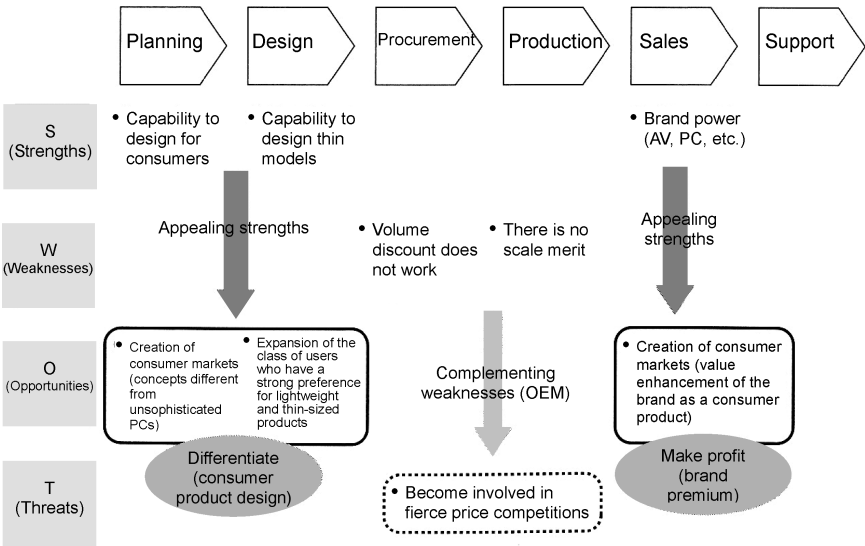


Figure 3-3: Examples of SWOT Analysis and Value-Chain Analysis

a different product targeting the consumers in the same sectors. In effect, by combining value-chain and SWOT analyses, you will be able to ascertain where to attempt differentiation and where you may generate profit, discovering new product and new business themes in the process.

While the above explanation is abstract, it advocates the idea of having your company discover opportunities that make use of its several fortes, instead of competing in the market with its weaknesses. In other words, the above explanation promotes the concept of a product that takes threats into account. Such products can have a premium appeal and may not be suitable as consumer-oriented, general-purpose items. Since a premium product does not lend itself to mass production/mass selling, it is not profitable in an explosive sense. However, it is reflective of a business strategy that aims to profit through unit-by-unit sales. But a product such as this, as mentioned previously, will also necessarily pass through the life cycle of “the introductory phase → growth phase → mature phase → waning

phase,” so you will need to ascertain whether its market is one that will not foster price competition.

## 2) *Cross between SWOT and megatrend analyses*

Here, I will indicate the necessity of ascertaining megatrends as well. Linking with SWOT analysis is achieved in the manner mentioned above, but trends are something you should recognize in the beginning, as indicated in the section on recognizing existing circumstances.

In particular, this will entail breaking them down as follows in order to ultimately ascertain what your company can do (opportunities (O) that make use of strengths (S)). Toward this end, you will need to be aware of megatrends on a constant basis from a middle to long-term perspective.

Step 1: State a megatrend (social currents, innovations, deregulation).

Step 2: Assume what will happen from there (change, creation, termination).

Step 3: Assume new circumstances and needs that will arise due to this.

Step 4: Consider what can be accomplished by applying your firm's resources (technology, customer base, brand, distribution channels, etc.).

An example of these steps is illustrated in Figure 3-4. The figure shows the flow of a company's search for what responses it can make in the area of highly functional medical treatments in light of the fact that society is aging while experiencing a low birth rate.

Megatrends do not change suddenly, but generally change when they lose the weight of layers that decline after other layers increase. For example, in the case of the auto industry, as indicated in Figure 3-5, differentiation has no longer become possible on the



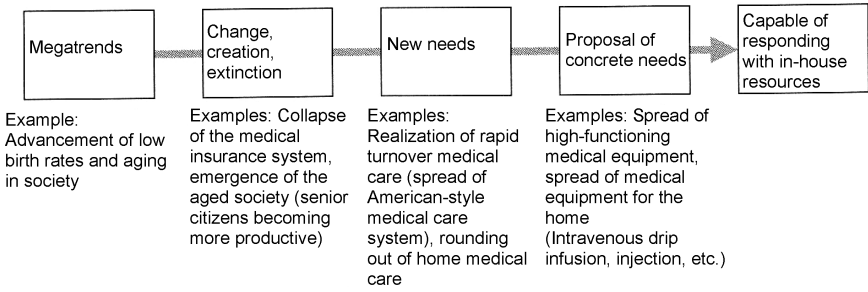


Figure 3-4: Step Examples of Megatrend Analysis

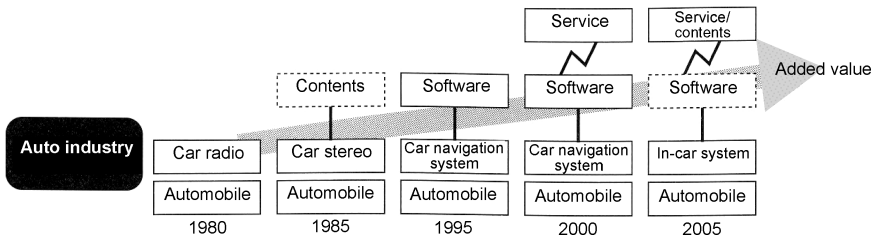


Figure 3-5: Megatrends of the Auto Industry

grounds of appealing the object of the car itself. Instead, as seen in recent times, the addition of contents to services has become a requirement, and toward this end, telematics has been attracting attention. In addition, the auto industry itself has been transforming into one form of an advertising media as well.

### 3) Matching needs with seeds

Where searching for themes in domains that are extensions of your firm’s existing product or business is concerned, carrying out a search for new product and new business themes by incorporating SWOT analysis should become a common practice. However, in the case of examining beyond such domains, the use of such an approach only will prove insufficient and difficult. So, as mentioned in the section on recognizing existing circumstances, you will need to have a broad view of the “consumer needs” found mainly in the

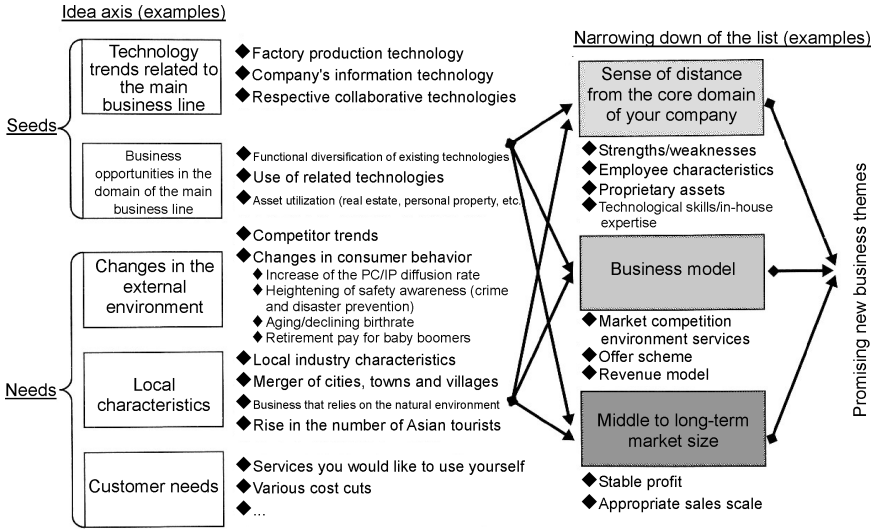


Figure 3-6: Process Flow of Creating Promising New Business Themes (Examples)

external environment. Then by matching these needs with seeds, you will, in effect, be able to search for new business opportunities or opportunities to make product offers.

For example, as seen in Figure 3-6, you need to enumerate items that relate to seeds and needs prior to determining themes. These in turn can be narrowed down by applying such criteria as the relevance with your firm's core domain, business model, and middle to long-term market scale. The results then can be established as themes for promising new businesses (and opportunities to offer new products).

To derive ideas, you need to carry out brainstorming sessions after determining items such as those mentioned above. Once you have the ideas, you can group them and apply such methods as the KJ technique to further accelerate inspiration and create a long list of potential themes. This list in turn could be narrowed down into a short list.

Incidentally, the KJ method is a technique for developing creativity (or for creative problem solving) and was conceived by the cultural

anthropologist and former professor at the Tokyo Institute of Technology, Mr. Jiro Kawakita. The name of the technique is derived from the initials of his name. A short description of the technique follows.

Write down brainstormed ideas and opinions, and miscellaneous information collected from research on small cards, using one for each item. From among these cards, sort out the ones that you feel are closely related to each other and group them into stacks of two to three. Then go on to assemble them into medium-sized and larger groups. Through such a process, you will be able to find clues and inspiration that will help you to settle on themes.

Brainstorming methods other than the KJ technique will be mentioned later, but to come up with new ideas, it is easier to merge different ideas, or in other words, to cross-fertilize or hybridize ideas and improve upon them. Such combinations are considered to be as follows:<sup>1</sup>

- 1) Technology fusion (such as a new material created through the fusion of multiple materials);
- 2) Business fusion (such as the fusion of communication and broadcasting, which is characteristic of the Internet society);
- 3) Industry fusion (such as the ATM found in a convenience store, which represents a fusion between the banking and distribution industries);
- 4) Social system fusion (such as the ITS, which represents a fusion between the traffic infrastructure and technological innovation);
- 5) Policy fusion (such as welfare medical care, aviation, and space, which are areas that receive the regulatory cooperation of relevant authorities).

Create a long list of your new business (and new product) themes by making use of your understanding of seeds and needs and external and internal environments as key concepts, while also cross-fertilizing ideas. And then gradually narrow down your list into a short list by

ascertaining the utility of your business model, whether the market is medium-term or long-term, and what the SWOT analysis of your firm is in order to eventually determine your new business (and new product) themes.

#### 4) *Searching for themes with the revised key-needs method*

In the last part of this discussion on searching for new product and new business themes, I will be presenting a simple outline of how to search for themes with the revised key-needs method.

The original key-needs method was created by marketing business consultant Mr. Nobuyoshi Umezawa (PhD in business administration, and former marketing research manager of Sunstar Inc. and of Johnson Corporation). At the time it was developed, there was no other method available that could facilitate the development of product concepts responding to consumer needs. Over time, it has gone through improvements and has evolved into a systematic process.

The method I explain here shares the same objective and almost the same approach of the original, but it is a more simplified version of it. Basically, it requires an investigation into latent needs, questioning what needs there are from a customer's (consumer's) perspective (what would they find to be beneficial if they were to have it?). Designed to promote the discovery of such insights, the method can be further explained through the following outline.

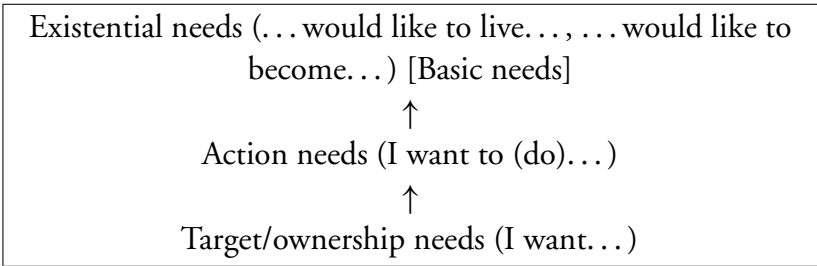
First of all, to put it simply, the proceeds generated by a product or business depend upon the following 3 factors:

- *The appeal of the product or business*: The idea behind them, etc.  
×
- *Selling power*: Power of the sales outlet, price appeal, etc.  
×
- *Advertisement power*: Recognition~usage promotion.

Toward assuring the fulfillment of these three factors, the method involves repeating action steps 1 through 4 stated below:

- 1) Make a list of needs. Are the needs enumerated truly the needs of the many? (o : yes or X : no)

Take note that needs could vary in the following ways:



- 2) Do the needs from action step 1 require a novel product or is there an existing product that already responds to them? (o : novel product or X : existing product)
- 3) If the above is X, is there a defect in the existing product?
- 4) Show the needs that respond to the defect → Go to ♣ (repeat until the answer to ♣ becomes o).

Needs that finally become o in ♣ will fall under the category of Figure 3-7's "Genius." However, they need to be translated into a business through the creation of themes that can be parlayed into products with the available technology (see Figure 3-8).

And so this concludes the discussion on the steps that need to be taken into account when creating new products or businesses. The distinctive characteristic of this approach lies in its emphasis on arriving at novel products (and businesses) by focusing on consumer needs first. While I discussed in the beginning the necessity of incorporating all perspectives, creating thoroughly from the basis of needs can possibly help to narrow down variables and ultimately make the process easier to carry out. It is believed that similar approaches to this one are being adopted at various product development scenes.

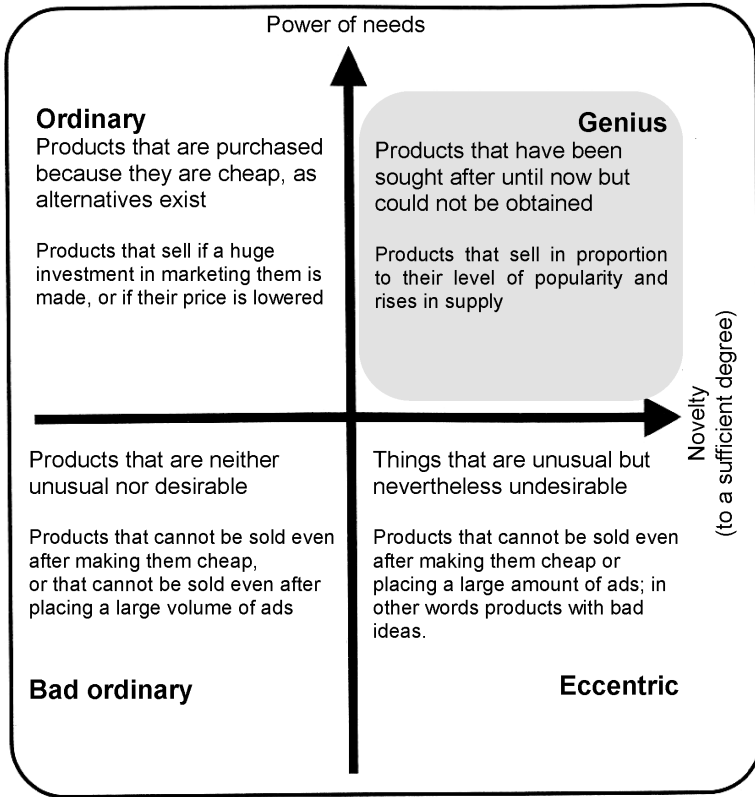


Figure 3-7: Needs and Categories of Novelty

Needs	Yes/No (○/×)	Novelty (BUT—existing drawbacks)	Yes/No (○/×)
(1) Would like to un-clutter the wiring of office automation equipment	○	(2) Company K's product A BUT (3) Cannot be used in cramped rooms	×
(1) ...			
(1) Would like to have uncluttered wiring that could accommodate cramped rooms	○	(2) There are no drawbacks.	○

Figure 3-8: A Summary of the Main Method's Creation Steps

### ***3.1.3 Prioritization of new product and new business themes and selection of R&D projects***

Next, I would like to elaborate on how to prioritize searched themes for new products and new businesses, and on the flow of parlaying them into R&D projects.

The question is how should you go about narrowing down the themes you have derived from the above methods? In other words, how should you prioritize them? To gain approval within the company, and for the sake of future developments, this is something you need to do.

To put it briefly, you should carry out R&D by prioritizing themes that correspond to the category I of Figure 3-9. The themes in this I category are highly effective while being highly feasible at the same time.

With regard to the effects themes can produce, there are various kinds of them, but in terms of future growth, the effect of market scale should be examined. In addition, if you neglect to carry out an earnings and expenses simulation to calculate a rough estimate of the market, you will not be able to know the extent of your product or business's positioning and market share. In other words, to understand the effect, you will need to have a rough estimate of revenues as well. Furthermore, qualitative effects, which are difficult to show numerically, such as synergy effects with your firm's existing products or businesses, can also help to further your understanding.

You must take the criterion of feasibility into account as well. No matter how effective a certain product or business theme may seem to be, if you cannot materialize its effect, investing in it will not be worthwhile. To judge the feasibility of a theme, you can look at how suitable and compatible it is with your firm's product or business. The higher these qualities are, the more likely the product or business of a theme in question will be an extension of your existing product or business, and therefore the higher its feasibility will

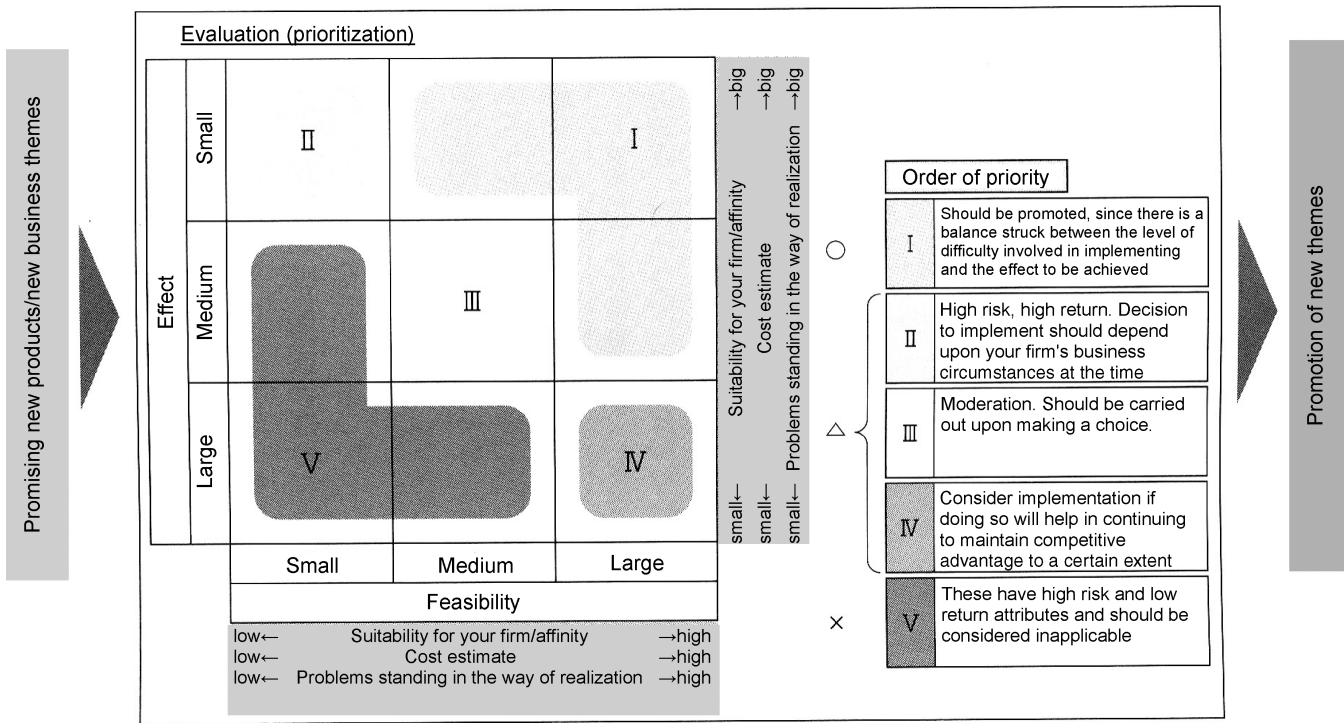


Figure 3-9: Evaluation of Promising New Business Themes (Prioritization)



be. In addition, the rough estimate of expenses calculated in the simulation of earnings and expenses is naturally important to consider as well, and if this were high, feasibility would be low. Feasibility would also become low with the existence of many other problems that would need to be addressed before a product or business could be realized.

So when you are contemplating which theme to start working on, you must take such feasibility factors into account. If you clearly arrange your themes in an organizational framework as the one shown in Figure 3-9 for your reference, your understanding will be facilitated.

The figure clearly shows that you should begin with the items that fall under the  $\circ I$  category, which are items that rate the highest in terms of effect and feasibility, and then go on to carry out the items in categories II, III, and IV (as indicated by the  $\Delta$  symbol) in their respective order. As for items that fall under category  $xV$ , there is no use in taking them up, since they are low return items while being high risk as well. And so this concludes the discussion on how you should prioritize and select your R&D projects.

#### **3.1.4 Preparations for R&D projects**

In the last part of this chapter, I will explain how to go about turning the prioritized themes of new products and new businesses into projects.

First of all, in order to research and develop the recommended themes, you will need to prepare an intra-company circular to obtain approval. This circular will have to be approved by a committee set up for promoting new businesses or by holding management conferences. Furthermore, if the value of investment is substantial, then you will have to gain approval from the board of directors. To

obtain this approval, you will need to prepare a proposal that includes particulars such as the following:

- Background details (for completed themes)
- Corporate objectives and strategies (according to the theme)
- Return on investment (ROI) assumption
- Issues that need to be resolved for implementation
- Implementation strategy (including methodology)
- Implementation schedule and procedure.

Failure to specify such points will preclude official investment and prevent you from beginning your R&D project in an official capacity. That is the way the corporate world works.

If you incorporate your present assumptions into the strategies to be included in the above-mentioned proposal, you will become more persuasive. These assumptions could be on matters such as the following:<sup>2</sup>

- New market creation (become a market pioneer)
- Single-focus strategy (aim for the domination of a niche market)
- Guerrilla strategy (also aim for surrounding niche markets after experiencing growth)
- No. 1 strategy (aim to become No. 1 in regions)
- Fake/decoy strategy (to help other products/businesses)
- Others (brand use, every possible form of full-fledged attacks).

These are new product/new business entry strategies for securing a competitive advantage, and need to be clarified not only in the preparatory stages, but also after development projects are initiated.

While such strategies need to be included in your proposal, you will also need a driving force. Toward this end, you should organize in-house groups or teams that do not require to be profitable, labeling them with names such as Project Team X or Preparation Room Y. At times, such organizations are set up to begin vetting proposals,

while in other cases, preparatory groups come into being only after a cross-departmental project team vets proposals.

For example, when Square (currently Square Enix) was about to begin an Internet-based game business, the management, who planned the project, set up a new project team named PlayOnline and then went on to establish a preparatory room for this project. On the other hand, when Rakuten was contemplating to launch a finance business on its own, it did not set up a project team, but instead established a preparatory office as a distinct organization of the company. In the end, Rakuten launched its new finance business by buying the credit card company (Kokunai Shinpan, the current Rakuten KC).

So in this way it becomes a chicken or egg question, but in order to carry out new businesses or sell new products, an appropriate driving force becomes necessary, and the larger the scale of a project becomes, the organization of such a force becomes all the more necessary even in the preparatory phase.

## 3.2 Operational Management and Evaluation of R&D Projects

### 3.2.1 *Framework for starting and implementing projects*

First of all, in the case of beginning an R&D project for a new product or new business after obtaining approval from management, you will need to undergo the preparations mentioned previously and build a framework by forming an official organization. If you already have a preparatory organization or a project team, then all you need to do is to inherit such setups. However, there may be many times also when you will need to newly build them. In addition, even when you already have a preparatory organization, if there is a need to expand further, you will need to recruit people from another organization or from outside.

When you look at corporate trends, it becomes evident that companies that succeed in cultivating themes into new businesses from

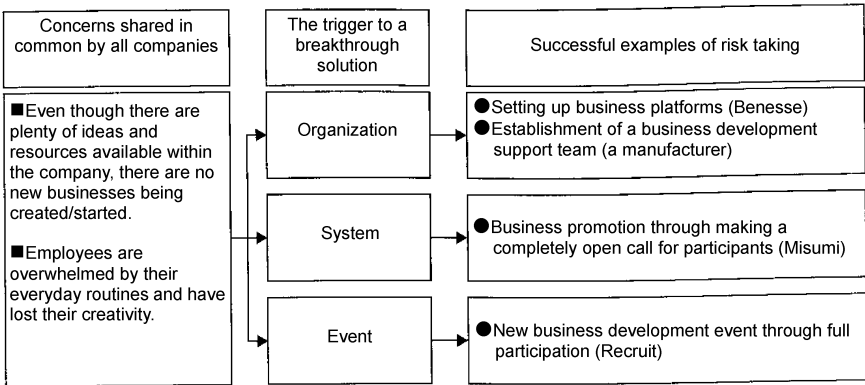


Figure 3-10: Successful Cases of Triggers and Risk Taking

the time they start an R&D project are the ones that have used either “organizations,” “systems,” or “events.” To cultivate a new business systematically, the setup of a “trigger” is mandatory. However, these are strictly speaking only “triggers” and nothing more. In order to continuously maintain and activate an organization or a system, it is necessary to actually carry out the business and accumulate successes. Figure 3-10 shows precedents of successes that were ushered by triggers.

As evidenced by the precedents, from now on, the types of organizations that invite people to join or request their voluntary participation will also help to revitalize operations within the company. Therefore, when recruiting personnel for a particular group, it would be desirable to recruit or request participation from within the company. At one time, Sony was extremely famous for recruiting in-house. This system of invitational recruitment allowed for employees to readily apply since the superiors of the departments they belonged to were not informed until the last minute. Meanwhile, departments suffered as they kept losing capable people, but the practice persisted nevertheless and was justified on the grounds that the department head was the one who was ultimately responsible for the operation

of the department. It has been said that this practice had become a major problem for organizations with existing operations.

In the case there are no personnel or experts available within the company, you will need to consider recruiting from outside. In such an event, you will need to recruit through headhunters and the company website, but you will not be able to recruit immediately in such a case. In fact, you will require a minimum of around three months, and if you factor in the current occupation of the potential recruit, it becomes highly probable that you will require half a year. Therefore, it is ideal to have the essentials of an R&D project in order during its preparatory phase, and be prepared to begin recruiting once authorization is obtained.

The staff to be recruited will require the following attributes. These attributes also apply to people recruited from within the company:

- Familiar with the subject of new businesses and new products (is an expert)
- Has motivation for developing new businesses and new products
- Feels responsible for seeing the project through to its end
- Not afraid to see the project fail
- Understands how to handle workloads by applying such methods as setting milestones
- Has the stamina to endure overtime duties required in achieving milestones
- Able to cooperate with existing staff
- Able to reason with the existing organization whenever a conflict occurs
- Able to take action on the basis of numerical evidence
- Able to adapt to circumstances as the occasion demands.

And so this is how you should prepare a setup of talented people prior to initiating your project. The required staff, whether they are from within the organization or employed from outside, need to

have an environmental arrangement that allows them the freedom of mobility.

If the people from the inside are allowed to show their strengths in coordinating with internal or existing business parties, and those from the outside are allowed to hook up with outside parties or make use of their expertise, they will be able to have a favorable impact on the promotion of future R&D projects. Often, people from the inside become dependent on being able to return to their former group in the event they fail. And, in the case of people from the outside, there are times they become suppressed by the resistance from conservative groups or individuals within the organization. When such a situation arises, much effort in searching for and carrying out promising new business or new product themes will be in vain. Consequently, the very survival of the company will be threatened, along with the decline of existing businesses and products, and the opposing conservative groups and individuals may not even remain in the company, causing consternation for everyone else in the process.

For example, Square (currently Square Enix), which launched its network-based business, "PlayOnline," not only attempted to become a pioneer for a new business domain, but also attempted to start a business that would generate a regular cash flow from a line that was different from the company's one to date. Specifically, the PlayOnline business began to offer "Final Fantasy," a formerly boxed game, on the Internet. By charging monthly fees, the business aimed to secure a stable revenue stream. (On PlayOnline, Final Fantasy 11 is being offered.) However, at the outset, the conservative group, who were accustomed to the transient nature of the boxed game business, became skeptical and uncooperative, questioning, "why new members will attempt something like that?" For this reason, the company had to go through a series of trials and tribulations before they were able to launch the business. Furthermore, Square found it difficult

to invest in PlayOnline after having failed in their movie business, which had been launched several years prior to this one — they had even turned to Sony Computer Entertainment (SCE) for a capital increase of 15 billion yen to rescue them. The upshot of this was that they ended up making a smaller investment than they had originally planned for PlayOnline. And due to the conflict between the members of the preparatory room and the conservative group, all of the members resigned eventually, and the launch of the business itself was delayed. With a lack of talented staff, the scope for the development of the project became narrowed further. (However, in terms of business objectives, the business is a medium- to long-term success, having grown into one with an annual turnover exceeding 15 billion yen at present.)

The lesson to be learned from this precedent is firstly that it is possible to become influenced by the trends of other businesses, new or existing. And depending on the changes in the staff entrusted with the implementation of the project, there will be times when it will not be possible to carry out the strategy as originally intended at the outset. In the end, due to these factors, the speed of the development of a new business declines. In addition, the project could lose direction; it may become unclear as to who the new business is for, lessening the motivation of the concerned members in the process. Once again, drawing from the above-mentioned precedent, you can also see the importance of having a setup for implementing a new business and the difficulties associated with it.

### 3.2.2 *Continuing projects (delaying and extending): Criteria for termination*

Next, after initiating a project, you will need to consider how to continue it. If it stays according to schedule within the original budget, then there is no reason to terminate it in particular. Still, at this point, it is necessary to establish a more or less clear set of procedures

(operational plan)<sup>3</sup> for determining whether to continue or terminate a project:

- Does the project show a deficit *vis-à-vis* the budget?
- Even if the project shows a deficit, is it strategically justified (in line with the initial objective) to continue it?
- Is it possible to stop the project midway and deploy elsewhere the tangible/intangible assets acquired until now?
- Instead of terminating the project at the present point, would it be preferable to terminate it when a deficit is incurred?
- Will termination have an impact on other businesses?
- If you terminate the project, will it be possible to reshuffle the personnel related to this business?

So, as a matter of corporate policy, it is necessary to determine at the outset the criteria for deciding up to what point it would be okay to continue a project, taking into account the above-mentioned requirements and procedures. These criteria should be adopted to determine the pros and cons of continuing, even when the project is experiencing a delay as it is being carried out and after it has been carried out as well. If the above observations are plotted out, they will form a flowchart as indicated in Figure 3-11.

However, there are cases when you should not even start a project, let alone continue it, even if there is no deficit shown at the outset as mentioned above. This applies to cases when deducting the investment amount from the Net Present Value (NPV), which is the future cash flow of properties converted into its present value, results in a negative figure. However, insofar as the project is in progress, investments have already been made until that point and so decisions on future investment amounts should be made on the basis of the value of the present value of the future cash flow of properties. In other words, you must look toward termination if the sum of investments (made up to the present) and the NPV yields



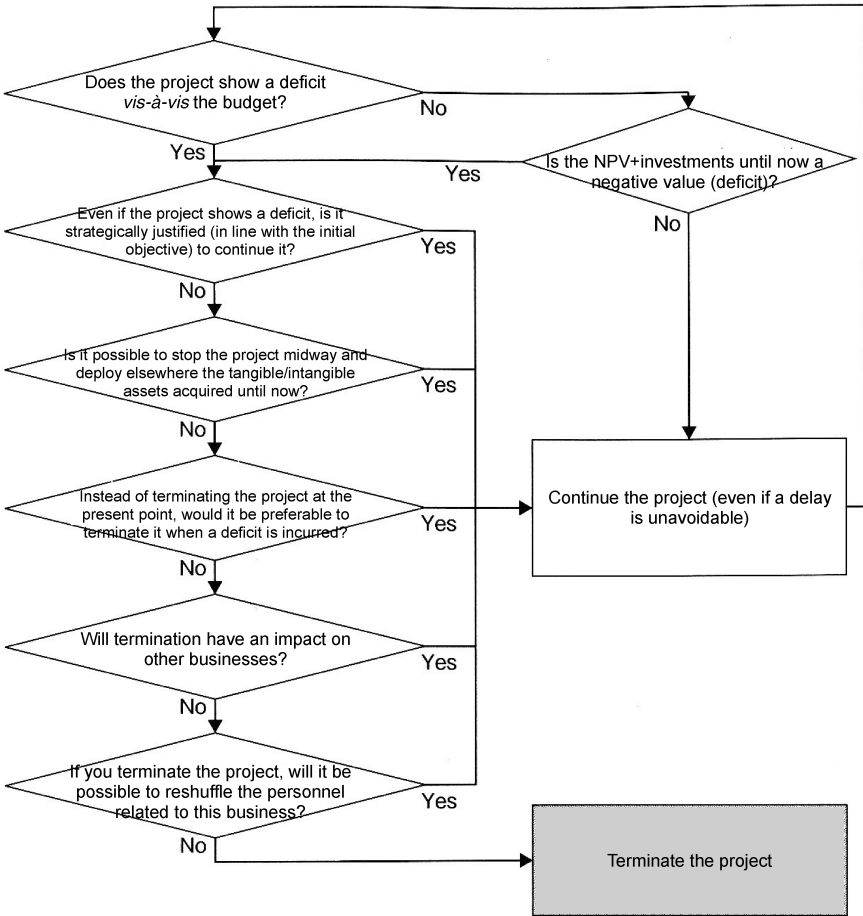


Figure 3-11: Flowchart of the Process Leading Up to the Termination of a Project

a negative figure, and there are no other factors that offer justification for continuing. In other words, to a certain extent, this assessment is considered to be similar to the above-mentioned first step of asking, “does the project show a deficit?” Figure 3-11 also reflects these points in the right-hand flow sequence. As it can be seen, you will do well to follow this procedure and regularly repeat the steps in the flowchart when deciding whether to continue or terminate a project.

In most cases, initial corporate decisions on investments are based on this NPV calculation. This is also known as the way to “evaluate a business’s profitability through the discounted cash flow method” and it is applied when planning milestones.<sup>2</sup> In most cases, proposals showing a negative NPV value are not written, even when they are for investing in public-sector services (including transportation companies such as the railways). Only after turning the value into a positive figure and initiating the project can the NPV be revised. If you fail to do this, in this day and age, it will not be possible for you to obtain understanding from stockholders during the initial stages of your project. After starting the project, as indicated above, with respect to your future investment value, you should convert the future cash flow of properties into its present value to evaluate profitability, or in other words to arrive at a decision on whether to continue or terminate your project.

### 3.2.3 *Terminating unsuccessful projects*

I have explained that you should judge the pros and cons of terminating a project on the basis of the criteria elaborated above. As for projects that you have decided to terminate, you will need to rearrange the related products and the tangible and intangible assets that have been acquired until the present, while also deciding on what to do next about the related staff.

When you terminate your project though, you will have to take action immediately, since expenses will continue to accumulate one after another, such as the remunerations and costs related to staff and facilities belonging to your company or to your subcontractors, and the costs related to employee benefits.

At this point, I would like to elaborate on a project that suffered substantial loss because it was not terminated.

The previously mentioned Square (currently Square Enix) had carried out a business that specialized in the production of full

CG (computer graphics) movies. This involved establishing a subsidiary called Square Pictures in Hawaii and filming the popular RPG game “Final Fantasy” without using live-action cinematography. The business took an investment of around 16.5 billion yen altogether and generated only 3 billion yen in box-office proceeds, registering a drastic loss for the company. Despite showing earnings, the figure included earnings of distribution companies as well, so the actual share for the company was more or less zero in the end.

Why didn't the company terminate the project? The answer lies in a number of factors as pointed out below:

- As a business, the movie business needs to be well-rounded or else it will not be possible to repurpose it in other ways.
- Having no experience in film production, the company had no understanding of the bottom line until the end.
- For the company, this was the first attempt of using CG, a very costly technology.
- The project became a sanctuary for especially the top executives of the Development Division, who enjoyed a high status within the organization. Consequently, there was a lack of management oversight and while the project continued to stall during the course of production, no one was able to suspend it partway.
- The President at the time had indicated that under the best case scenario the project will be profitable, under the medium case scenario, the project will break even, and under the worst-case scenario, the project will be unprofitable, but nevertheless generate publicity. When the cost rose, he foresaw the outcome would be the worst-case scenario, but this warning did not serve as a reason to suspend the project.
- The product ended up becoming seller-centric rather than consumer-centric and was made to dance to the tune of the advertising agency.

While they may have been clear about their strategic intent to continue even in the face of being burdened with a deficit, the scale of the project's required investment was substantially large and the issues mentioned were all matters that needed careful deliberation. For such reasons, it would perhaps have been a good idea to take a longer look at the company and its implications as a business listed in the First Section of the stock exchange.

Incidentally, it was generally assessed that the project had failed because of the film's full-fledged CG graphics; it had helped to produce a photo-realistic effect that did not diverge from live-action photography in a substantial way. So the question arises of why they avoided shooting the film as a live-action one in the first place if, visually speaking, there was not to be much of a difference. Additionally, what mattered to viewers in the end, in spite of the initial fascination with the special effects technology, were the film's story and characters, just as the story and characters of a live-action film would matter. Furthermore, the story should have been given more priority, but as it turned out, it was amateurish.

Upon experiencing this failure, they turned to SCE for 15 billion yen in financing, and then went on to merge with Enix. Furthermore, Square Pictures, the subsidiary set up to handle the movie business, was dissolved, and the creators and technicians who had been gathered from all over the world were all let go.

### *3.2.4 Evaluation of a project's success/failure, and the evaluation system*

First of all, let us consider how to go about evaluating a project's success or failure. Firstly, one criterion is the number of years a product or business will take for it to be in black for a single month to a single year on the basis of its special characteristics. If the business fails to show a positive balance for even a single month, it will clearly be a failed project. However, in showing a positive balance for a single

month, even though in the case of a heavy industry company, taking over five years may not be an issue, in the case of the modern Internet business, if it fails to show a positive balance within one to three years, it is considered a failure, since success after that time cannot be anticipated. On the other hand, in the case of an Internet-based business, in the event it fails, it is easy to launch a different project, since it takes only a short time to start it up, and since the required investment is small compared to the amount required for a heavy industry company.

Next is the matter of the number of years it will take for the product or business to achieve an accumulated positive balance. If you take the NPV into account, merely showing an accumulated positive balance is of no use. The project can only be called a success when the value of the past investment and the value of the present, in which results can be seen, and the value of the future put together exceeds the investment. In other words, it can be called a success when earnings exceed the amount of investment with annual interest rates added to it. So the sooner the project attains a single positive balance, the sooner it will attain an accumulated positive balance. In other words, in the case of an Internet business, achieving an accumulated positive balance is apt to be fast, while in the case of a heavy industry business, it is apt to be slow. For example, in the railway industry, even in the case of related businesses (businesses other than the railway business), approximately ten years seems to be one benchmark. Many of these businesses are real estate like operations making use of their existing assets. When considering that they are offsetting their construction costs from the income earned through monthly rent payments, the length of around ten years makes general sense. Even though this is extremely long when compared to the period for a regular business, it is nevertheless tolerated as a special characteristic of a public enterprise.

Now, regarding the system/organization set up for the purpose of evaluating, as long as a project can output clear figures on a

product-specific or business-specific basis, it may be all right to do without a particular setup. In other words, these figures will directly factor into management's evaluation. However, if this is not possible, then the following three alternatives in particular are considered to be ideal:<sup>3</sup>

- An organization set up to scrutinize the very contents of an R&D project and evaluate whether they are truly aligned with the aims of the middle- to long-term management plan and the R&D program;
- An organization set up to consider the methods of managing the operations of an R&D project and evaluate whether human, material, and information resources are being put to full use;
- An organization set up to analyze an R&D project's investment (cost) *vis-à-vis* its effect (sales profit) and evaluate whether sufficient benefits or results are being secured for the investment effort being made.

In any case, it is necessary to have an organization apart from the one that carries out the research and development for a new business or a new product; one that will be able to carry out objective and neutral evaluations. This organization will not only be responsible for evaluating just figures, but also for evaluating such factors as whether any synergy exists between the R&D project and other projects, whether there are any strategic results, and whether the motivation of its own company's employees or that of the employees of related firms was raised.

In major companies these days, there are groups set up specifically for the purpose of examining only the launch of new businesses and new products. After considering and forming plans for such projects, they entrust their actual development to the business unit. In such a setup, it will not do to just evaluate the organization set up to consider new businesses, but instead evaluations should be made on a more overall level; they should be made on the performance

of such a business unit as well and they should be made at a stage when the activities of planning, launching, and achieving a track record have been completed to a certain extent. In that case, the investment amount needs to straddle both groups and care should be taken when contrasting it with results. To evaluate these points accurately, the managerial accounting of products and services has to be made transparent. By doing so, an indirect department such as an evaluation group can stay small, and since costs associated with an indirect group need not be included in new businesses and new products, the probability of success rises. While these techniques may amount to nothing more than cheap tricks, avoiding unnecessary costs such as these may be one factor that can contribute toward the success of new businesses and new products.

On the other hand, there is a line of thinking that advises that R&D for new businesses and new products should not be viewed as costs. For example, it may be all right if there is an element of fundamental research; the kind that shows results only after ten years or more. However, these days the number of companies that are able to make investments for such undertakings are limited and in most cases companies hook up with organizations such as universities and special corporate bodies that carry out fundamental researches for the purpose of realizing commercialization and productization. Since fundamental research in this case takes place across a considerably long span of time, it is common for evaluation groups to overlook this aspect. At the telecommunications firm, NTT, a representative Japanese company, the research facility is basically positioned in a holding company, and the cost is shared with the operational company. Similarly, even at KDDI, their research facility is established as KDDI's directly controlled subsidiary, and it is believed that expenses are shared among each business department.

An evaluation group needs to determine the extent of what should be evaluated by referring to corporate policies and societal norms. Toward this end, they need to be objective and neutral and if they

happen to be from within the company, that will be a plus. With such a setup, even members of a terminated project will be able to reach an understanding and be able to look forward to the next opportunity.

### 3.2.5 *The standardization (packaging) and withdrawal of successful projects*

Lastly, I would like to offer some thoughts on “how to standardize and package a successful project”; in other words, how to make a successful product or business attain consistent sales. If you cannot do this, you need to think about withdrawing your product or service after bringing it to market.

The newly launched product or business of a successful project will undergo the product life cycle comprised of “the introductory phase → growth phase → mature phase → waning phase,” as indicated previously. It will not just simply wait for decline to happen, but instead it will go around the cycle while modifying on the way. If it enters into its growth phase through this process, its price will gradually fall, and when it enters into its mature phase, it will fall into a price competition and become a generic product. In other words, this is the time when it should be standardized (packaged). Furthermore, when it enters into its waning phase, if it is not possible to modify it and return it to its growth or mature phase again, it will become necessary to withdraw it from the market. This is the sequence that should be noted.

However, according to what is known as the Chasm Theory, in the hi-tech product market of these days, in the process of penetration, there exists a large chasm between what are known as the initial markets, which number in the few and are made up of consumers who can be characterized as progressive, and the mainstream markets, which form the majority and are made up of consumers who can be characterized as utilitarian. An advocate of this Chasm Theory,



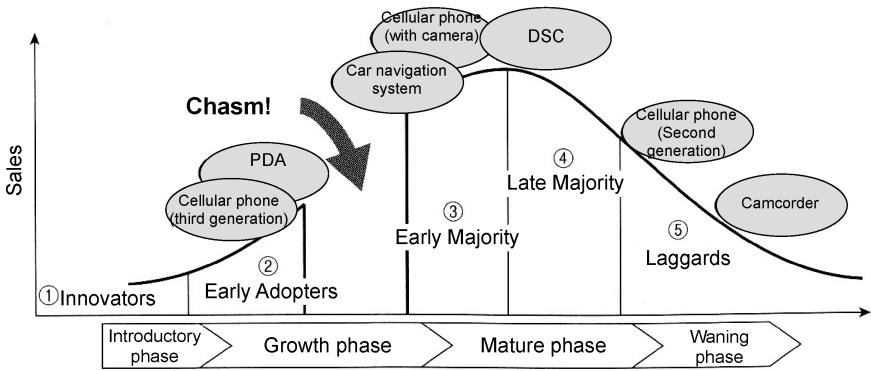


Figure 3-12: Project Life Cycle and Chasm

Source: Based on Geoffrey Moore’s “Chasm Theory”.

Geoffrey Moore, categorized consumers of high tech products into five groups as seen in Figure 3-12 and stated that a chasm exists between the early adopter and early majority groups.

As indicated in Figure 3-12, there is a chasm that needs to be crossed to reach the mainstream market. In other words, to reach the mature phase from the growth phase, this chasm needs to be crossed, and standardization can take place only after that. In the mature phase, car navigation systems and camera-equipped cell phones have already been standardized and are dominating markets. With passenger vehicles these days, there are cases where car navigation systems are offered as standard equipment, and most cell phones come equipped with cameras, becoming a threat for digital camera markets in the process (though it can be said that camera-equipped cell phones and digital cameras have been concurrently responsible for creating such a visually oriented society). As for the second-generation digital cellular phone, while it had become standardized in the past, it has already arrived at its waning phase and cell phones using this generation’s technology called Personal Digital Cellular (PDC) are gradually disappearing from the market.

- ❁ Innovators: Consumers who constantly seek new technology.
- ❁ Early Adopters: Consumers who purchase products at a considerably early period, but not because they are technologically oriented, but because they need to solve problems. They are capable of resolving some inconveniences on their own.
- ❁ Early Majority: Consumers who attach great importance to a product's utility. However, for the most part, their knowledge of technology is lacking.
- ❁ Late Majority: Sharing common traits with the Early Majority group, these consumers purchase products after industry standards become fixed.
- ❁ Laggards: Consumers who purchase high-tech products (in unintentional ways) after they become incorporated and become obscure.

And so by going through such a process of standardization, new products cease to be new products. In other words, they become generic products. In other words, the end result of an R&D project is this standardization. Once a product advances to this state of consistent sales, a single R&D package becomes complete, and by customizing this package, it should become easier to deploy it for other new products as well.

The decision to withdraw after a product or business has passed its growth phase and is in the process of standardizing should be made in the case when it is deemed that it has reached its waning phase after standardization or when it is deemed that a new product or new business was not able to reach the chasm. If you withdraw at the wrong time, it is tantamount to never having truly ascertained the project's unsuccessfulness. In such a situation, you will be substantially increasing your losses, and as indicated in the case example, the error may have an impact on the very survival of your company, leaving you with only two alternatives; seek cooperation from other companies or be resigned to a buy-off.

As can be seen, products and businesses are like living things, requiring you to constantly maintain them in top condition and foster their ability to continue creating. In this sense, new products and new businesses are just like babies, and as such, giving birth to them and raising them are no easy matters. When child rearing brings good results, it is extremely joyful, and with these good results, you will be able to go on giving birth to new lives.

*Hiromichi Yasuoka*

## References

1. Fumio Kodama, Kiminori Genba, *New Business Creation Strategy — Case Analysis According to the Theory of Industrial Creation/Technological Evolution Cycle*, Seisansei Shuppan, 2000, pp. 186–190.
2. Ken Oe, Yasutomi Kitahara, *Strategy for Making Profits — Planning, Assessing, and Examining New Businesses*, Toyo Keizai Shinposha, 2002, pp. 48, 144.
3. Akira Ishikawa, *The Q & A Primer to Information Searching for Developing New Products and New Businesses*, Dobunkan, 1988, pp. 77–78, 85.