

Standard is also a measure to reduce transaction costs.

3.1 Standard Corresponds to Interface

The standard functions as a fixed interface in the area of management.

3.1.1 Discussion of Standard from Perspectives of Interface

Perspectives of interface elaborate the structure of standard simply.

The concept of fixing interfaces strongly relates to the one of a standard. In order to gain higher ROI of an interface, fixing alone is not sufficient enough. The recognition and full use by every related person (effectively the standardization) is indispensable. If the number of users is small, the ROI decreases, which prevents compensating the cost for fixing the interface. Such valueless developments frequently occur in companies, amounting to huge losses.

Such losses could be avoided by comprehension of the advantages and disadvantages, and necessary actions, not just by the designers of interfaces but also by the users. The purpose of this chapter is to deepen the comprehension of a standard as a fixed interface and to improve the effectiveness in practice. It is highly difficult to conceive the essential concept of a standard and to embody the maximum utilization despite the fact that most of basic management tools are strongly related to standards.

The standardization of interfaces plays a significant role not only in operation but also in product market strategies. Companies that successfully achieve standardization of their products dominate all profit in the market. This “winner-takes-all” phenomenon is evident in the cases of the Microsoft Windows, the Google search engine, and the Facebook communication platform. It is not an

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exaggeration to argue that the acquirement of standards became the most significant strategic goal. The argument is applicable not only to software and services on the Internet but also to all physical products.

It has been frequently seen that alliances of the weak are formed to compete with the “winner” for the market share and the standard position. The JAVA consortium was formed and the open source initiative was spread to compete with Microsoft. The Open Handset Alliance and the consortium for standardizing Android are currently competing with the Apple iPhone.

At the opposite side of such leading-edge industries, the wine industry exhibits a similar trend. French wineries with histories as long as 2,600 years have dominated the market for a long time, and just until recently, extremely complicated interfaces of products using location and year of production have been used by which the values are not easily evaluated and compared. Consequently, other regions have not been able to compete, and the French wineries’ high prices supported by their elite brand image have been maintained. Despite the inefficiency of the small-scale family businesses, they have been the standard of the market.

The emerging competitors from “the new continent” such as California, Australia, New Zealand, Chile, and South Africa have been increasing in number due to the spread and new developments of technologies such as improvements of soil, cultivars, and cultivation. They selected grape cultivars (e.g., Cabernet Sauvignon, Pinot Noir, and Chardonnay) as their product interface in the standardized manner.¹ California (such as Napa Valley near Silicon Valley) adopted the interface first, and all other new-entry countries and wineries followed and standardized it.

With this standard interface, the consumers can compare products and make buying decisions very easily without feeling confused as they did before. Modern management technologies such as mass production and scientific analyses were introduced entrepreneurially into the whole winery processes, while the production and consumption as art have been respected conventionally. The consequences are that the prices were reduced and the quality improved drastically, making a contradiction that the quality of low-priced wine is more stable regardless of the weather (the high-priced wines are regulated not to blend across the production location). Since the conventional wineries have started adopting the interface of grape cultivars as well, it will enhance the standard position further except for the very best brands. It will improve the cost performance further and increase the market size globally. In this manner, the consumers greatly benefit from standards having been established.

The value of standards as interfaces can be apprehended by anyone from day-to-day operations, but often only standards’ negative features are emphasized, and standards per se are frequently rejected entirely, with comments that standards rigidify behaviors and robotize people. As the comprehension of the market dominance of standard-

¹The presentation of wine varieties by location of production is called “terroir” and by grape cultivar is called “cepage.” As terroir is regulated and protected by law and the comparison is extremely complicated for the ordinary consumers, there arises no substantial competition.

setters is superficial, market strategies are not appropriately formed. In the significant processes of establishing standards in the society and companies, it is often seen that the arguments become unreasonably emotional or political.

While there have been various definitions of a standard in convention and academia, a consistent comprehension can be obtained by deploying the concept of an interface and conceiving a standard as a fixed interface. In this chapter, it will be argued that the objects of standardization are always interfaces regardless of the type of standards, whether in organizations or in the market. It will be concluded that the standard as an interface is one of the most significant sources of competitiveness and objects of management. It will be discussed that organizations *nearly* correspond to standards and fixed interfaces correspond to standards. Without harming the diversity or personality of people, fixed interfaces and standards make people function collaboratively, not destructively. Organizations can never be efficient or effective without standards being understood and utilized by all employees. Without standards or fixed interfaces, organizations would process all activities in nonstandardized ways and inevitably depend on individual skills and expertise, which is no more than a community or a collection of people without any organizational arrangement. Although it is no argument that individual flexible processing and growth are necessary, organizations with standards are the foundation of all competitiveness of strategies and products. In order to create competitive strategies and products intentionally. Competitive organizations must be shaped first.

In this chapter, standards in markets, those in companies, and those in societies will be discussed systematically, and the practical applications in organizations and strategies will be explained from the perspective of transaction interfaces. This chapter is an awkward but significant step to deepen the comprehension of transaction and a transaction cost.

Practical methodologies to design and manage standards will be discussed in Chap. 6. The cause of the emphasis on the negative features of standards is identical with modules, processes, systems, and IT and therefore will also be included in Chap. 6. This chapter will focus on explanation of the structure of standard per se using illustrative cases and examples.

3.1.2 The Term *Standard* Has Various Aspects

The term *standard* has many definitions and is used on various occasions.

3.1.2.1 The Concept of Standard Covers Much Ground

Because *standards* appear in every aspect of society to a greater or lesser extent, everyone has his/her own opinion on them. The following is a list of some of the typical examples which are conceived as *standards* by researchers:

Telephone, mobile phone, the Internet (TCP/IP, HTML), electronic commerce, Electronic Data Interchange, the OS and software of the PC, user interfaces of the PC, connection protocols of the PC peripheral device (PS/2 of mice and keyboards,

DVI, RS-232 of projectors), USB/micro USB, terminals and shapes* of earphones, WiFi, keyboard sequence, GPS, Facebook, Twitter, Google, electronic money, prepaid card, credit card, iTunes, game console, VCR, DVD, Blu-ray, the electric voltage, dry cell battery, screw/bolt, paper size, building materials (e.g., 2x4), gasoline, metrological standards, qualification/license, standard weight*, standard height*, standard income*, franchise chains (hamburger shops, family restaurant), cooking time* of instant noodles, shape of plastic bottles, driving method of cars, number of the wheels of cars*, uniforms, fashion trend*, ISO, IFRS/accounting standards, CMMI²/COBIT³ (the process level of companies), de facto standard*, textbooks of compulsory education, rules (standard process, standard operation time, standard procedure, standard parts, manual, and so forth) in companies, standard specifications, traffic rules/sign, diplomatic protocol, culture, custom, manner, ethics, railroad system, currency, law, the society of Japanese, and the society of the USA

*Regarding a feature of standards: *models most widely accepted and employed*, which will be explained later. The rest are regarding another feature: *rules/criteria*.

At the end of the list of standards above, the society of Japan and the society of the USA are listed. These interesting examples were picked up from comments from my American students who mentioned that Japan is a very standardized country while the USA, with national hamburger chains, shopping malls, and supermarket chains, appears very standardized to Japanese. The cause of these diametrically opposed perspectives raised a significant question that leads to the profound comprehension of standards and will be discussed later in this chapter.

Standards in the market have been gaining attention after Microsoft and Intel established the de facto standard positions of OS and CPU, respectively, in the 1980s, showing extremely high business performances. In the late 1980s when this trend began, the US government was strengthening pro-patent policies and becoming relatively tolerant with monopolies.

The term *standard* originally refers to the specification protocols designated by the authorities such as ISO, ITU, and national governments. However, after products of private companies obtained major market shares, which became the infrastructures of exchanging and sharing data, the establishment of de facto standards became the critical strategic object, especially in the IT-related industries. Riding on this tide, free or nearly free products and services have been increasing. During the writing of this chapter in 2013, Chinese Internet commerce companies have been intensifying the price competition, and, as a result, their shipping charges are becoming zero and sales below cost are increasing. It is because the company that survives this competition will dominate all the profits as a standard of the market. This is a typical example of astonishingly intensifying price competition in quest of a standard. At the same time, multiple companies increasingly ally to promote their own products or technologies to establish standards.

² Capability Maturity Model Integration.

³ Control Objectives for Information and Related Technology.

De facto standards in the IT-related industries besides OS and CPU include office tool software, database software, ERP software, network routers, sound cards, groupware, HDDs, communication protocols (e.g., USB and PSI), and many more. The Internet is an aggregation of de facto standards. Standardization proceeds in services on the Internet as well, such as Amazon, Google, and Facebook. As described, standards have been established mainly in the IT-related industries in which connection, exchange, and sharing are relatively significant. However, as the merging of IT with home appliances, mobile phones, automobiles, and entertainment contents continues, this trend proceeds beyond the IT-related industries.

The standardization regarding business processes may be considerably influential to companies. ISO9000 and ISO14000 standardized companies' business processes to guarantee the quality of business outputs. EDI and ebXML,⁴ which expands EDI to computerize all processes of commerce, are trying to standardize business terminologies and even business processes in various industries.

In the IT industry, also for the promotion of outsourcing businesses, the criteria that assess and evaluate the level of standardization of internal business processes (there are many standards such as CMMI, COBIT, and so forth, all of which are essentially identical) are competing for a standard. These qualify the status of business process standardization and designate the level of the processing capability as follows (CMMI example):

Level 1: Initial: Processes are ad hoc and not well defined.

Level 2: Repeatable: Processes for managing costs and schedules are standardized.

Level 3: Defined: Standardized processes are organized for every activity.

Level 4: Managed: Activities are monitored quantitatively and controlled.

Level 5: Optimized: Standardized processes for continuous improvements are prepared.

3.1.2.2 Standard and Winner-Takes-All (De Facto Standard)

In IT, networking in particular, connection, exchange, and sharing take significant roles, and therefore one product is preferably selected by consumers to have common protocols with others. This is called *network externality* in economics. However, even in consumer goods that do not appear to relate to it, the standardization called "winner-takes-all" has been frequently observed. In professional sports such as football and basketball, very few athletes dominate popularity and obtain a major portion of salaries. In entertainment, very few entertainers oligopolize the market. The same phenomenon has been seen with best sellers, but it is interesting that a limited number of brands dominate even the fashion markets, in which uniqueness should be valuable. In Japan's cramming school businesses, their success or failure depends on a few teachers who gain super popularity among students.

In the electronic components industry, the winner-takes-all idea does not seem to relate, but actually many examples of de facto standards exist. The following

⁴Electronic Business using eXtensible Markup Language.

products have 60–90 % market shares: Mitsubishi Chemical’s LED red fluorescent material for LCTV, Nidec’s spindle motors for HDDs, Kuraray’s LCD polarizing films, Toppan Printing’s LCD anti-reflection films, Murata’s ceramic capacitors, and many more. The semiconductor manufacturing equipment industry has the same tendency, and companies like ASML of the Netherlands (steppers), Tokyo Electron (resist coating and developing apparatus), Advantest (DRAM testing equipment), Nidec-Read (CPU package testing equipment), Shibaura Mechatronics (BD-ROM sputtering equipment), and Ushio (FPD lithography UV lamps) gain the vast majority of market shares. Similarly, the winner-takes-all by Toyota in the automotive industry was argued in the early 2000s.

The issue is how those seemingly complicated standardizations should be structurally analyzed.

As to the methodologies to establish standards, the great shift has arisen. Many product prices are set at zero from the launch to achieve the purpose these days. Almost all the services on the Internet and most of the application software on mobile phones are free or very low-priced. As the prices of using standards reach to free, the methodology to earn profits from the acquired standards is becoming the biggest issue of concern for companies. That is, not just the establishment but also the application of standards is crucial for recent corporate strategy.

Apple, a famous unilateralist, obtained the dominant market share through the iTunes store, an online market of application software and content, and the effective utilization of the platform drove the promotion and success of the iPhone. Currently, competition for the online market share has been intensifying with the entries of most of the world’s telecommunication companies, smartphone manufacturers, PC hardware manufacturers, Intel, Microsoft, and so forth, all of which are in quest of the standard position. Nexus of Google, Kindle Fire of Amazon, and Kobo of Rakuten are reportedly all distributed below cost to acquire the standard position of a window to the online market.

As described, structuring the phenomena of the standardization and the winner-takes-all for better understanding and applying in marketing strategy increases significance. In this chapter, first of all, the definition of a *standard*, which has remained ambiguous for a long time, will be clarified. In order to obtain profound comprehension, the borders of problem space and the framework of discussion will be systematically designated. Second, the strategic shift from establishment to application of standards will be discussed. Although intellectual property becomes open (lower-priced or zero-priced) quite commonly these days, without an explicit scenario of applying standards as means to earn profit and to expand growth, the free distribution of products becomes just a social service. Last, the neo-marketing strategy in the open network economy will be examined by universally extending the frameworks proposed later in this chapter.

3.1.3 Commonalities in Various Standards

A standard refers twofold: models most widely accepted/employed and rules/criteria.

In order to deepen comprehension of standards, a complicated concept, some discussion must be endured for a while. Because it is so abstruse, the methodology of application has not been developed and utilized, except by a few quick-eyed companies. However, after equating the standard with the interface and the standard with the organization, the application of standards can be managed with quite simple and universal methodologies. Even de facto standards in markets have structures identical to the ones in companies such as standard processes, standard costs, and standard procedures, and both should be managed by means of the same methodology.

Reference to dictionaries provides a brief overview regarding how a *standard* is conceived generally, and the two definitions below are most frequently seen relating to the context of this book.

- (1) Models most widely accepted and employed or the situation
- (2) Rules, norms, or criteria

In the previous list of standards, items with an asterisk are examples belonging to (1) and the rest belong to (2). A critical perspective for the following discussion will be obtained by distinguishing those two definitions. In management studies especially, (2) is more likely to receive attention, but the increasing significance of (1) in the global competition and that of the combination of (1) and (2) will be argued emphatically.

Although the term *standard* in management studies generally implies an artifact created and managed artificially, in conventional usage it means a spontaneously generated situation. Therefore, both artificially created and spontaneously generated *standards* should be included in this discussion.

As described thus far, (2) corresponds to interfaces that are designed and developed with the purpose of becoming (1). In the situation of (1), various types of positive feedback (self-amplified effect), which will be discussed later, are likely to lead to the domination of the market (i.e., the situation perfectly accepted and employed or winner-takes-all). Therefore, the strategic significance of (1), not only (2) is increasing. In the next section, (2) is discussed first and then (1).

3.1.4 Interface Standard

Quality standards also function as interfaces.

3.1.4.1 Interface Standards and Quality/Performance Standards

Leading researchers of standard studies in management usually classify *standards* into *interface/compatibility standards* and *quality/performance standards*.⁵ According to the researchers, quality, product structure (specification), production process, and so forth are classified as *quality/performance standards*, but eventually

⁵The following studies are useful:

P. Grindley (1995), *Standards Strategy and Policy; Cases and Stories*, Oxford University Press.

quality/performance standards correspond to *interfaces* as defined in this book, due to the following reasons. Frequently cited examples of *quality/performance standards* will be examined below. The definition of this book deems both *interface/compatibility standards* and *quality/performance standards* as *interfaces*, and therefore it will be concluded that all standards in the area of management correspond to interfaces.

Interface/compatibility standards defined by the researchers are of two types:

- Interconnection interfaces between products and parts, such as telephones, faxes, software, and cameras/film
- Operation interfaces between users and supplier (products or manufacturers), such as typewriters and services

Those are predetermined so that compatibility is assured. Those features are exactly identical with the transaction interfaces in this book.

Meanwhile, another class, *quality/performance standards*, is explained to be applied to quality, product structure (specification), production process, and so forth, but it will be concluded that a *quality/performance standard* is also included in an *interface* if the concept of a *transaction interface* is understood correctly as below.

Quality, product structure (specification), and production process define the quality level on the basis of which users make purchase decisions. The term *quality* in *quality/performance standards* refers to configuration/performance specification of products, service performance quality, product structure/production process (as assurance measures), and errors of all the above, all of which are presented to potential users during the purchase process. Users purchase the quality (through the product). Those are significant pieces of information regarding the transaction conditions that must be presented to, negotiated with, and agreed upon with potential users. *Quality* is one of the most significant transaction interfaces. In this manner, quality specifications and related conditions should be included in transaction interfaces, and the one predetermined between consumers and suppliers as a fixed interface becomes the *quality/performance standard*.

Manuals, work processes, management systems, institutions, rules, and norms, which are agreements regarding the assurance of quality (including production errors), should also be deemed as the *quality/performance standard* such as ISO9000. Various licenses provide the assuring information regarding the

P.A. David (1987), "Some New Standards for the Economics of Standardization in the Information Age," in P. Dasgupta and P. Stoneman (eds.), *Economic Policy and Technological Performance*, Cambridge University Press.

P.A. David and S.M. Greenstein (1990), "The Economics of Compatibility Standards: An Introduction to Recent Research," *Economics of Innovation and new Technology*, Vol. 1, No. 1.

P.A. David and G.S. Rothwell (1996), "Standardization, Diversity and Learning Strategies for the Coevolution of Technology and Industrial Capacity," *International Journal of Industrial Organization*, Vol. 14, No. 2.

R. Hawkins, et al. (1995), *Standards, Innovation and Competitiveness*, Edward Elgar.

suppliers' capability of embodying the specifications such as the production, training, and governance processes, and therefore all of them function as interfaces that are *quality/performance standards*.

Standards in organizations function as interfaces between people to define the *quality* of activities. For example, a manager manages, controls, and educates his/her subordinates according to a manual, expecting that his/her subordinates will also comply with the manual. Standard processes function as manuals identically, in this case interdepartmentally instead of hierarchically. All those are organizational interfaces that are applicable to any kind of human relations, including those between managers and subordinates, between peers, between departments, and between companies. All those are *standards* when those are widely accepted and employed.

Most of the interfaces between managers and subordinates used to take the form of *manuals* that prescribed behaviors in detail. However, manuals are frequently criticized these days for restricting the activities of individuals and destroying individual creativity and autonomy. As organizations become flat and autonomous, the specification of outputs (and other transaction conditions such as delivery) is increasingly emphasized instead of the employees' conduct. That is, only transaction interfaces become determined instead of *production*, as autonomy, creativity, and collaboration are highly prioritized. Distinguishing *production* and *transactions* as objects of manualization makes it easier to understand this argument.

Metrological standards, a typical example of standards, correspond to the rules regarding quantitative presentation in transactions of information. When information such as 1 kg or 1 cm is determined and publicized, the transaction costs for communicating complicated information such as 1 kg and 1 cm decrease drastically. The value would be easily understood by inferring an alternative way to communicate such complicated information without using the metric system.

3.1.4.2 Network Externality of Standard as Interface

Externality in economics refers to the influence of other (external) entities' activity. *Network externality* or *network effect* refers to the externality that affects products connected to networks and the popular phenomena, such as e-mails and online markets, by which the value of the products increases as users increase in number. The term was introduced recently after the spread of the Internet. Networks are a type of transaction interface, the efficiency of which increases as the users increase and the cost per user decreases. This phenomenon is seen in databases as well, where the quantity and quality of the data increase as the users increase.

This also holds true to some extent with regular (not networked) products because it becomes easier to obtain the information regarding usage, operation, and problem solving as the users connected online or offline increase. For example, the Excel spreadsheet software offers a tremendous number of functions, but it is considerably easy to acquire the operational information from users through the Internet. Even Word is valuable because there are so many users who exchange and share data either online or off-line. It is the same with regular home appliances, as information regarding operation, exceptional usages, modification, repair,

maintenance, returning, disposal, and user support can be exchanged and shared with users. The *network externalities* have existed from the past but have been gaining attention as the network spreads and its effect becomes conspicuous.

Interfaces in organizations (e.g., processes, systems, and rules) also increase their value as the users of the interfaces increase. This phenomenon is not limited to interoffice mails or information sharing systems, which originally contain network externality; it becomes easier to acquire any kind of information for any resource as the users increase with or without network. This means that network externalities correspond to *interface externalities*; it is more efficient to access and utilize others' resources, the accumulated value of which increases as the users increase. Although *network externalities* have existed long before the Internet, only *network* has been focused due to the phenomena caused by the accelerated spread of the network, such as the drastically increasing value from the users and of the resources, which had been impossible to obtain without incurring huge transaction costs.

In this manner, positive feedback functions with interfaces and standards to further increase the number of users.

This is another *economy of scale* by the number of consumers in the consuming activity, meaning the increase of the value (from other consumers) caused by the reduction of transaction costs per capita due to the increase of the consumers. These are the *economies of scale on the consumer side*⁶ that have never been discussed in the past. In addition to the conventional economies of scale on the producer side, utilization of the new type of economies of scale has become crucial in the open global economy, which will be emphasized repeatedly in this chapter.

3.1.5 Standard as Product with Majority of Market Share

A product becomes closer to the standard position as its users increase in number.

The above discussion regarding interfaces is related to the features of standards: (2) *rules, norms, or criteria*. In this section, the features of (1) *models most widely accepted and employed or the situation* will be examined. It corresponds to market share in the management domain, obviously. For example, a standard in fashion is the style with the largest market share, which does not relate to an interface. Particular fashion colors dominate the market every year, and there have been fashion trends such as skinny jeans, minimalism, vintage clothing, and hippie garb.

Given this background, there seems to be a behavioral pattern of following others' consumption decisions. This herding behavior is called the "bandwagon effect" in economics. It refers to the positive feedback structure in which consumers follow the buying decisions of the majority and products with larger market share increase the market share further, leading easily to the winner-takes-all. Such behavior has increased as the information regarding others' buying decisions has

⁶ It is regarded as economies of scale because output (value obtained by consumers) increases with the same amount of input (transaction costs expended by the consumers).

become more readily available via the Internet. For example, the “Like” click function on Facebook transmits the information instantly to a large number of “friends,” who are likely to be influenced by the information. This reputation information has existed in the past, but the spread of the Internet enhanced it tremendously and brought wider attention.

The reasons that consumers follow others can be explained by:

- (A) Rational psychology to minimize risk associated with an uncertain buying decision
- (B) Security psychology to connect and gather in a herd

A typical example of (A) is a popular question at a restaurant in an unfamiliar town: “What is the most popular dish in this restaurant?” This can be accomplished by much lower transaction costs than issuing a questionnaire to the past patrons of the restaurant. In the same manner, following the decision by the majority generally reduces the transaction costs by eliminating the need for a detailed investigation of the market and product. The companies that satisfy many customers can be judged as credible, and the products that satisfy many customers possibly would satisfy any given individual. Actually, Web sites that collect the reputation of products and restaurants have gained enormous popularity these days. The products and restaurants that are selected by consumers gain more consumers. This phenomenon is not new, but it has become conspicuous due to the decrease of the transaction costs and the increase of the information available on the Internet. This is another network externality.

The market shares as buying factors to minimize the risk appear to be significant with consumer goods, but the principle holds true even in business markets. For example, the largest management consulting firm, law firm, and system integrator are most likely to be selected because the buying manager responsible for the buying decision can make an excuse that his selection itself is blameless if the project failed.

Examples of (B) include all kinds of trends. The reason why one or a few best sellers dominate all readers is not explained only by the quality satisfying most of the readers. It holds true with baseball players and musicians, and a few dominate all the popularity and rewards. In the recent trend of Japan and Asian countries, the most popular musicians play as units or groups, not solo, to absorb some diversity of the audience in the bandwagon. Korean superstars, who are designed and developed under a national strategy, fit the argument perfectly. They are the artificial products designed to appeal to the security psychology.

3.1.6 Standards that Are Not Accepted by the Majority

Standards conventionally also refer to models not accepted by the majority, but they are excluded from the discussion in this book.

The term *standard* is generally conceived as (2) rules/criteria that are accepted (or supposed to be accepted) by (1) the majority. However, there are *standards* that are

not accepted by the majority. Rules/criteria that are developed supposedly or purposely to be accepted by the majority but failed to be diffused are occasionally called *standards*. Rules/criteria obligated by law, even not accepted by the majority, are the same.

For example, Open Systems Interconnection or OSI was designed and designated as an international standard by ISO and ratified by the governments of the world. Therefore, it was supposed to be a standard legally and had been called a standard despite its low penetration in the market. However, the Internet protocol or IP coexisting with OSI at that time grew in its market share gradually, and as a result it has come to dominate the market completely.

Another example is the electronic money card, which was booming in the 1990s and promoted by many local governments. In reality, however, they did not reach the majority or the level of penetration that leads to positive feedback, and, as a result, all of them disappeared without any success. Buyers (consumers) did not carry the cards until sellers (shops) carried the card readers, and sellers held down their investment until buyers carried the cards. That is, a situation that illustrated the opposite of the bandwagon effect arose, in which everybody waited for others to start using a product. In this manner, there have been countless interfaces designed to establish standards failed to gain users.

Standards that are not accepted by the majority are also included in the conventional usage of the term, but the value in management is trifling, except the term may be used as a means of political promotion. Therefore, standard rules/criteria that are not accepted by the majority are beyond the scope of this book. Instead, methodologies that do not fall into this undiffused situation will be the focus of this book.

3.1.7 Positive Feedback Structure During the Standardization Process

Positive feedback effects appear stronger when users increase.

Acknowledging the positive feedback effect (self-amplified effect) during the standardization process is crucial for understanding the essence of standards, especially standards as transaction interfaces. Appropriate utilization of the effect increasingly determines the success of standardization strategies. In order to achieve the establishment of an interface as a standard, not for self-complacency, an increase in users is indispensable. It generates positive feedback not only for IT-related products that have network externalities but also for any kind of general products. In this section, the positive feedback effect will be examined further by decomposing it into three aspects:

- (1) Network (interface) externality effect
- (2) Bandwagon effect
- (3) Economies of scale (the conventional one on the production side)

The interaction mechanism of these three will then follow.

The network externality effect corresponds to the economies of scale in consuming activities (transaction) *after purchase*, the bandwagon effect corresponds to the economies of scale in consuming activities (transaction) *before purchase*, and economies of scale corresponds to the traditional economies of scale in production.⁷

The three types of positive feedback effects in standardization will be discussed in the following:

(1) Network (interface) externality effect

Network externality corresponds to the structure in which transaction costs per unit (transactions) are reduced as the numbers of users and transactions increase, thus increasing value from the network and the efficiency of transactions through the network. It increases users of the network further and shapes the positive feedback cycle. This effect has existed from the past because the increase of users provides advantages even with general products unrelated to networks; however, the effect has become conspicuous as the quantity and quality of resources from other users have increased drastically due to the spread of the Internet. In today's economy, this effect should be carefully considered in planning any kind of strategy.

(2) Bandwagon effect

Bandwagon effect refers to the mechanism where after the larger number of buyers selects a product, the followers of the buying decision increase. As a market share increases, it is more likely to shape the positive feedback to generate winner-takes-all. This behavior is based on both rational psychology and security psychology. Rational psychology, by which buyers follow the buying decision of the majority, reduces uncertain risks. And the security psychology of herding behavior generates concentration of purchase and winner-takes-all.

(3) Economies of scale (the conventional one on the production side)

Economies of scale are one of the most significant concepts of modern management. All the managerial devices such as strategy, organization, and market segmentation are aimed at improving productivity due to the economies of scale. As purchases and revenue increase, economies of scale are enhanced in every aspect of management, such as production, sales, and overhead, which leads to increased competitiveness. When sales concentrate from all over the market, the information regarding the market concentrates as well to provide a comprehensive view regarding growing customers and emerging innovations. This is significantly advantageous for strategic resource allocation (e.g., inventory, production capacity, and R&D resources). This is also contributed by the reduction of transaction costs for collecting the market information dispersed all over the world.

⁷In order to simplify the discussion and to illustrate the significance of issues, both internal and external activities are included in the "economies of scale" discussion here.

There occurs a synergetic interaction of the three positive feedback effects as follows.

Increase of transaction volume is also critical to increase ROIs of fixed interfaces developed for reducing transaction costs. The key success factor of fixing interfaces is to increase the usage frequency, for which the increase of transaction volume is indispensable.

Surplus profits gained by the success of fixing interfaces due to the increase of transaction volume and by the improved productivity will be allocated to enhance the cost performance of products or to decrease the price for competition. Reduction of transaction costs on the supplier side provides an infinite number of strategic options to enhance the effectiveness (e.g., product development, brand image, customer support, and R&D). That is, as economies of scale are enhanced, not just cost competitiveness but as well as effectiveness will be strengthened, leading to further increase of customers and eventually strengthening the positive feedback effects.

3.1.8 Drastically Increased Significance of Standard Due to the Structural Change by the Internet

Standards correspond to products and technologies that are in the positive feedback cycle.

According to the discussion above, a standard comes to correspond to the product (including technology, service, and the supplier) that has increased the market share and eventually has dominated the market by means of the three positive feedback effects: (1) network (interface) externality effect, (2) bandwagon effect, and (3) conventional economies of scale. All those effects have been enhanced drastically due to the spread of the Internet and their synergistic interactions. In this section, the seemingly complicated phenomenon will be elaborated and summarized simply.

First, the Internet and mobile communication network has advanced in the application products and services, including home appliances, TVs, and automobiles, have increased, which share some kinds of interfaces. As a result, the network (interface) externality effect and the related positive feedback started functioning more conspicuously. In addition, platforms such as blogs, SNSs, and Twitter, which propagate reputations, have become widespread all over the world, as a result of which the bandwagon effect is enhanced much more than in the past. The Internet reduced transaction costs so that purchases from remote locations that were practically impossible before have increased. Sales accrue to only one company that supplies the product with the best cost performance. In the past, a few companies could exist in each local market, which were few enough to adjust the prices in closed communities. However, after many unknown competitors from

unfamiliar countries entered into the market, fierce battles started without concern for existing business conventions. Jack Welch, at that time chairman of General Electric (GE), announced its withdrawal from businesses that were not ranked in the top three in the world market, proposing the notion of “selection and concentration” in the 1990s. Shigenobu Nagamori, a president of Nidec, which has 80 % market share in the precision motors market, describes the current situation of the winner-takes-all by saying that No. 2 cannot earn profit at all, No. 3 goes into deficit very seriously, and No. 1 gains all the profits from the market. The consequence of the large-scale concentration of sales accelerated the speed of the companies’ growth in volume. The companies that dominate others by volume also overwhelm both cost competitiveness and value added. Eventually, the conventional economies of scale and the related positive feedback started functioning astonishingly.

Synergetic interactions of the three positive feedbacks also arose; the companies with larger market share continue to thrive and expand further their market share.

The increasing significance of standards cannot be overemphasized, although it is not well acknowledged publicly. The companies that conceive this structural change, consciously or unconsciously, intensified the competition to obtain the winner-takes-all and started taking enormous risks (e.g., the price competition among online commerce companies in China). Those risk-taking actions will likely result in failure. However, there is no more chance for companies to obtain success without taking such enormous risks in the current business environment.

The three strong positive feedbacks above are theoretical; to obtain real benefits, management needs to activate and control the effects appropriately. Thus, very basic management technology distinguishes companies’ performances. Some companies, even in large scale, do not acknowledge it precisely, having grown only by coincidence or luck. Those large-scale companies possibly become the prey of start-up companies and module-oriented SMEs that concentrate all their resources onto one point in a quest for the maximum utilization of economies of scale. The management technology regarding economies of scale becomes crucial given the fact that the global competition is intensified. In that case, the transaction interface needs to be focused to ensure improved efficiency.

Only network externalities appear to be related to the discussion of *standards* and focused generally. However, both the bandwagon effect and conventional economies of scale are increasing the significance as well, and all of them enhance their powers mutually and synergistically. In practice, utilizing the effects in those three axes has become strategically important.

3.2 Values of Standards

By conceiving standards as interfaces, the effects and values are easily perceived.

3.2.1 Variance in Values of Standards According to Stakeholder's Position

Values of standards vary among standard users, standard advocates, and product manufacturers.

Variance in values among stakeholders causes some confusion in the discussion of standard. Thus, a perspective to distinguish the values of the standard user's side from those of the standard advocator's (supplier's) side is proposed here. In addition, a standard is just an intangible description of an interface that needs to be corporealized by introducing products; the values also differ depending on either the advocators of the standard manufacture the product or they are just only the users.

In this section, after distinguishing the four stakeholders' positions in Table 3.1, the value of standards will be discussed for each group. Companies should select their own appropriate position strategically by comparing each value and their own capabilities.

Case 1: Values for Users of Products Complying with a Standard

This is a discussion regarding the values from the position of using a product that complies with a standard, not relating to the standardization activities, or the value in a transaction from the buyers' side. The reason why users select standard products is because network externalities, the bandwagon effect, and conventional economies of scale contribute as described in the previous chapter. As for network externalities, the transaction costs per volume of shared resource with other users decrease as users increase. As for the bandwagon effect, buying risk decreases as the decision was made by the majority and security psychology in a herd is obtained. As for economies of scale, the product selected by the largest number of users probably provides the best price, quality, and service as it was produced and sold most efficiently due to the scale effect.

Case 2: Values for Supplier Companies of Products Complying with a Standard

This is a discussion regarding the values from the position of supplying products that comply with a standard, not relating to the standardization. It is much easier to appeal to customers when the specification of the products is already well known and accepted. Users prefer standard products as described above in Case 1, and a certain amount of revenue is promised for the suppliers as long as their products comply with the standard. However, fierce price competition possibly arises as the product is a commodity—that is, the interface is also open to the competitors. In the case that a high license fee for using the interface is charged by the interface owner, the number of competitors is smaller, but the profit becomes less favorable.

Table 3.1 Positions of standard stakeholders

Value for users of standard		Value for advocators of standard	
Value for users of product	Value for product manufacturers	Value for advocators who do not supply a product	
Case 1: Only use of a product	Case 2: Only supply of a product	Case 3: Use of both a standard and a product	Case 4: Only supply of a standard

Case 3: Values for Companies Both Advocating Standards and Supplying the Products Complying with the Standards

It is overwhelmingly advantageous to standardize an interface and supply the product complying with the standard. Microsoft, which has standardized Windows OS, is a typical example. In that case, it is possible to apply the standardized interface to various products. For example, Microsoft developed Office software and other products on the OS to dominate all the markets and standardize all the products successfully as well.

In order to standardize an interface, products complying with the interface should flood the market, which is benefited by cooperation from other suppliers. In that case, because the supply of the product from the advocator (owner) of the standardized interface is competitively most advantageous, other suppliers are likely to hesitate to enter the competition by adopting the interface, as a result of which the suppliers do not increase in number. Therefore, the advocators of standardized interfaces tend to focus on the standardization, not committing to the supplies of the products. Case 4 below is the case in which the suppliers of the products complying with and applying the standards differ from the advocators.

Case 4: Values for Companies Advocating Standards, Not Supplying the Products Complying with the Standards

If a company’s interface becomes a standard, a large volume of sales and profit is expected as users acknowledge the value as described in Case 1. However, an enormous number of companies intensify the price and quality competitions in a quest for standards these days, finally reaching to the business models of zero-price, as a result of which the high profitability is no longer expected. In this situation, the advocators become likely to disregard the supplies of products and focus on standardization by increasing their allies.

3.2.2 Values for Standard Advocators Besides Direct Revenues

The advocators need to prepare for increasing fierce competition pursuing values besides direct revenues.

Many companies start setting their prices at zero, offering free services such as shipping, reducing delivery time, or increasing quality of products with the same price as competition intensifies. In that manner, only small profit can be expected. In order to make businesses sustainable, the advocators need to recognize and utilize values from the standards besides direct revenues. It will be explored in detail here by subclassifying *Case 4: Values for companies advocating standards,*

not supplying the products complying with the standards in the previous section further into two cases: *direct quantitative value* and *indirect qualitative value*, where shaded cells indicate the values obtained without regard to the prices of standards, the utilization of which is increasing the significance, and white cells indicate the values from selling standard products, which are decreasing these days. These have been utilized actively by the currently expanding business models of zero-price, the cases of which will be illustrated in Sect. 3.5.2 in detail. In this section, only the fundamental concept will be discussed.

(1) Value from network externality of a standardized interface

If it is charged for the uses of standardized interfaces to the users, direct revenue is expected (the white cell of Fig. 3.1), but it has been decreasing drastically due to fierce price competition. It is significant to focus on other values from utilizing standardized interfaces. As standardized interfaces are shared by the majority, people are interconnecting and cooperating through the interfaces and the network externality functions. This network of people benefits recruiting engineers and developing partners, not only for introductions but also for personal profile information collections. Through the establishment of standards, expertise and information must have been accumulated to overcome other competitors, all of which must be fully applied to expand businesses. This will also lead to “first-mover advantages.” Above all, the largest value of standards for advocators is obtained from transaction interfaces established with customers, which include information on both transaction parties such as specifications, trust, and methods of access, delivery, and payment. In practice, the resources such as accumulation of customers’ data, brand awareness, popularity of products, and opportunities for cross-selling can be utilized for attracting customers and launching other related businesses. It will contribute to the promotion of the products related to the standardized interface, such as education and training, consulting services, live-actions (e.g., speeches, lectures, book-writing, and concerts), item-based payments on online games, and brand/character goods business.

(2) Value from the bandwagon effect due to the dominant market share

As dominant market share and consequent brand awareness attract a large number of customers by the bandwagon effect, it will benefit activities of advertisements and sales promotions (for own and others’ products) especially in consumer markets. Another consequence of dominant market share is establishment of trust in the market, which leads to procuring resources such as recruiting and funding. Market and customer information, especially regarding growing companies and areas, will be collected overwhelmingly from the dominated market and applied to new product developments and marketing strategy formation. Companies with major market shares have relied on advertisement revenues thus far, but they should consider diversifying revenue sources early or late.

(3) Increasing value of products by the conventional economies of scale

Increasing the volume of sales and production will lead to various opportunities for reducing direct and indirect costs. The former is the narrow definition of *economies of scale* and the latter is the broader definition, which is

Dimension	Direct Qualitative Value		Indirect Qualitative Value
Interface (Value from network externality of standardized interface)	-Revenue from standard products (decreasing drastically)		-Personal network (with recruits and partners)
	-Revenue from related businesses		-Accumulated expertise regarding related businesses (including first mover advantages)
Market Share (Value from bandwagon effect)	-Reduction (distribution) in promotion costs		-Attracting people for advertising businesses
			-Brand awareness (for customers) -Comprehensive information regarding the market
Product Competitiveness (Value from conventional economies of scale)	Reduction in Direct Cost*	-Reduction in all direct costs of the standard product	_____
	Reduction in Indirect Cost*	-Reduction in indirect costs of related businesses	-Enhancing product competitiveness and service levels such as market database

* Reductions are applied to the costs per unit


 Areas in which the value increases by active utilization of standards

Fig. 3.1 Values of standards for advocates or owners of standards

frequently called *economies of scope*. As to direct cost reduction, bargaining power for parts and materials will increase. As to indirect cost reduction, all overhead costs (e.g., general affairs, personnel, finance, accounting, and IT) allocated to each product will decrease as long as economies of scale in the overhead activities are controlled to function appropriately. For example, if the market and customer information is archived in a database and utilized by all departments, the allocated cost decreases while the strategic value increases enormously.

(4) Other means to utilize value from standards

Probably the first idea occurring to anybody regarding other means to utilize value from standards is the shift from an advocates’ position (the position of *Case 4: advocating a standard without supplying a related product*) to a suppliers’ position (the position of *Case 3: advocating a standard and supplying related products at the same time*) after the success of standardization—that is, to start the supply of products complying with the standard after the standardization is achieved. This seems most advantageous to utilize a standard, but it means swindling the partners who trusted in and cooperated with the standardization by investing in their product developments, a consequence of which is losing trust from the society.

The most recent anti-example is Google’s entry to the tablet PC market (e.g., Nexus 7 and 10, which are outsourced to ASUS) and to the mobile phone market (Nexus 4) by acquiring the mobile phone division from Motorola after the successful standardization of Android OS, which impacted all the manufacturers that adopted the OS from Google.

Google must have had appealed to those companies to adopt their OS to make it prevail. The selection of a standard is crucial to any manufacturer because its fate will be shared with the standard. Standard advocators should obtain assurance from the potential partners that they will never compete with them. In this case, however, the following three points should be considered carefully.

First, the OS that Google developed is distributed as open source software. Open source software is licensed for free use for anybody and basically not proprietary. That is, it can be conceived that the manufacturers used it just arbitrarily with or without trust in Google.

Second, the Google brand comprises a threat to the competitors not as the developer of the OS but as a popular consumer brand obtained from its global services. That is, the use of the brand as an advocator or an owner of a standard is unethical, but it is conceived that this is not the case.

Third, the standard competition has been intensifying to proceed beyond free software to free hardware, and the competition with hardware manufacturers has received little consideration. Google, Amazon, and Rakuten are selling their tablet computers below cost in order to acquire the standard position. Amazon even paid the 3G data telecommunication fee for some models of Kindle Fire. That is because the standardization of its hardware will lead to the standardization of the application and content marketplace. It is impossible to participate in such competition for companies that manufacture only hardware. As the competition between Google and the manufacturers is conceived over, the conventional ethics is conceived to apply no more to this case.

Applications and content are more profitable than hardware, but free software dominates the market increasingly and even content is offered for free. One thing one can say is that the competition for standardization has become so intensified that the common knowledge of the past is no longer relevant.

3.3 Design Methodology, Cost, and ROI of Standards

The design methodology of standards corresponds to that of interfaces.

The development of interfaces in markets or in companies without being enforced/promoted and utilized appropriately is valueless. Because the methodology of designing, developing, operating, and utilizing standards is identical to the one of interfaces, it will be discussed in Chap. 6, collectively. The subjects include design methodologies of standards, capability development of designers, costs and ROI of standardization, barriers and solution to standardization, and objections to standardization and counterplans.

3.4 Closed Standards and Open Standards (Level of Openness of Standards)

There are closed and open standards, and there are different levels of the openness.

3.4.1 Opening Property Rights of Standards

Opening of property rights corresponds to decreasing the use fee of standards.

3.4.1.1 Value of Opening Property Rights of Standards

As the establishment of standards in markets leads to enormous profits, many companies, organizations, and governments have been competing to obtain them. In order to achieve the goal cooperatively, alliances, such as the open source initiative, have become popular. As described previously, the prices are decreasing frequently to zero. Decreasing the use fee of interfaces corresponds to opening the property right of the interfaces. If property rights become open to the public, users increase in number. The more open property rights, the more users increase so that it becomes closer to the standard position. There is also a philosophy that the property right of software should be open to the public, and programmers increasingly follow the philosophy. However, when the right is opened, the use fee for the right is lost. In contrast, if the owner is so confident with the value of the interface and believes users will increase without opening the right, it could be possible to retain the ownership of the property right.

The property right of a standard to a varying degree becomes open to the public to obtain users, and the significance of the openness will be discussed in this section.

3.4.1.2 Closed Standard

If ownership of a standard is possessed by one or multiple parties proprietarily and it is not available to public, the standard is perceived as “closed.” Following the miracle success of the standard products by Microsoft, many companies have tried to standardize their products and technologies, keeping the property right very closed up until the early 1990s. Some companies such as Adobe, Oracle, Cisco Systems, and SAP have reached to or nearly reached to the position through the fierce competition.

3.4.1.3 Open Standard

A standard of which the property right is available to the public is “open.” However, the degree of *openness* of property rights varies. First of all, a property right is a complicated collection of various rights. In addition, there are various levels for each right, from completely free to any party to very expensive licensing with much additional enforcement (e.g., tie-in sales) that may violate the antitrust laws. The company that adopted the open strategy first to compete with the strongest closed

standard was Sun Microsystems. The company introduced an interface of a computer language, JAVA, to compete with Windows, setting the price reasonably low. The reason it could not break the wall was because it charged even a small license fee, and Sun Microsystems supplied not only the standard but also the products complying with it. Other companies hesitated to adopt the interface, fearing the relative competitive advantage of the standard owner. It was conceived as a bold, unique strategy at that time, but it may be considered not open enough today. Incidentally, the company's closeness in which it adhered to in-house development of the OS and in-house manufacturing of the CPU was widely known. In its difficult times afterward, it decided to release the JAVA interface as open source, which was too late. It was acquired by Oracle and disappeared eventually.

The proprietary property right of an interface that became a standard by selection of users is called a "de facto standard". In contrast, when it is owned by a government, it is called a "de jure standard". The de jure standards are developed for public purposes and the property rights are available to the public equally and fairly.

3.4.1.4 Degree of Openness

The levels and types of opening of property rights vary, and the example of software, which is a complicated aggregation of property rights, will be examined here. Originally, a property right is an aggregation of various rights, and the pieces are separated and conceded to others for compensation. The property right of software is copyright generally, and copyright holders decide to separate various pieces for profit. Free or charged, and the amount if charged are the factors to determine the degree of openness.

- (1) Rights of use: Rights of use are generally charged by software businesses. In order to increase users (market share), software is likely to be offered for free, limited to some of the product functions and/or for nonprofit purposes, and the users are charged only for special functions and/or profit purposes.
- (2) Rights of sales: Rights of sales are provided to many or few resellers, depending on distribution strategy, which is also frequently related to the standardization strategy. The degree of openness to confidential information regarding products determines the degree of the openness as well.
- (3) Rights of modification: This is a right not only to use but also to modify acquired software. This degree of openness influences the degree of openness considerably as well as the rights of reproduction and redistribution.
- (4) Rights of redistribution: As the purposes of redistribution of software are sales or free reuse by others, the rights of redistribution corresponds to rights of sales and reuse.
- (5) Rights of reproduction: As software is reproduced only for the purposes of redistribution and reuse by others, the right of reproduction corresponds to rights of redistribution and reuse, essentially.
- (6) Copyright: Copyright is opened only in the special occasion of "public domain," in which the use and redistribution are available to the public.

However, rights of publicity (the right to claim the presentation of the creator's name⁸) are conventionally respected.

In this manner, to open the property right, the significant strategy in today's business environment, is much more complicated than it seems, which is legally granted after multiple transactions of contracts regarding various rights.

Incidentally, it is popularly accepted to make exceptions of the programs to be open that are protected with patents, even when the property right of the software is opened.

3.4.2 Examples of Reducing Transaction Costs by Opening Property Rights

Examples of reducing transaction costs by opening property rights have been increasing these days.

3.4.2.1 Open Source

Transaction corresponds to transfer of property rights.⁹ The example of intellectual property such as software programs that incur an enormous amount of transaction costs relating to presentation and negotiation shows the complexity of transferring property rights. The open source initiative simplified the complicated transactions of intellectual property rights drastically and reduced the transaction costs as described in Chap. 1. It impacted various areas of the society, and the idea has been spreading globally.

The stronghold of Microsoft, which established the strongest standards in history, became disrupted by an assemblage of software with open property rights such as open source. The core of the power is Linux (an OS), which was developed as a product adopting the interface specifications of UNIX, widely spread before. Because the specification is not a program, it is not protected by copyright. In addition to Linux, many peripheral software programs are provided for free. Usually open source programs are deployed in the core parts of systems out of visual scope of regular consumers, and therefore these are not easily acknowledged but are widely spread as the foundation of the society.

As the open source initiative distributed software for free *as a matter of fact*, no negotiation or agreement arose regarding prices, specifications or other transaction conditions, and monitoring the contract. This new interface drastically reduced transaction costs of distribution, reuse, and utilization, and as a consequence it has spread open source software to the worldwide market in an extremely short time.

⁸Rights of publicity or personality rights are more complicated, to be precise, but the detail is omitted here as it is not closely related to the subject.

⁹As to rental and lease, these are transfers of only the rights of use, not involving rights of sales and disposition.

In the open source community, the specifications of the developed programs are shared in a database with participants of projects, and bugs and latest versions of programs are easily tracked through a sophisticatedly standardized management system, which has reduced the costs of searching and presentation of programs. In addition, many other platforms have been established to assist an enormous number of project participants living all over the world to reduce transaction costs for collaboration.

Regarding simplified transfer of property rights for reduction of transaction costs, it is also possible for large companies. The largest software developer, Microsoft, has developed a huge number of excellent software products internally. However, the simplification of transferring property rights internally has been limited to few transaction elements such as contracting and pricing, as long as the individual employees seek for personal profit. Therefore, the impact has been much less than that of the open source initiative, which aimed to open nearly all the property rights.

3.4.2.2 Creative Commons

The success of the open source initiative influenced a wide range of activities beyond software. Basically, the property rights in all the creative industries are intricately intertwined. The transaction (transfer of property rights) is so complicated that the utilization is severely obstructed. A simply organized system of intellectual property rights for creative works (e.g., documents, movies, music, and pictures) is the “creative commons” license, which was developed by Prof. Lawrence Lessig of Stanford Law School and other professionals in cyber law and intellectual property. There are many property right holders related to reuse of past productions (e.g., directors, scriptwriters, producers, and actors, in the case of movies). Because those rights are not explicitly designated, transactions of transferring the property rights are so complicated that the reuse is practically impossible. In order to promote the transactions for use and reuse, those four rights are required for creators to designate copyright as either open or closed:

- (1) Noticing attribution (copyright holder’s name) or not
- (2) Allowing commercial use or not
- (3) Allowing derivative works or not
- (4) Requiring the same or similar license as the original or not

Eleven patterns of these combinations are standardized, and creators select one to designate their intention to claim the property rights. Lessig intended that the open source philosophy be expanded beyond software to the wider range of creative works to further promote the culture in the world. In that manner, it has produced friction with the existing content holders who received the full business benefits from the huge vested property rights.

3.4.2.3 Open Courseware

Massachusetts Institute of Technology (MIT) launched the open courseware initiative in 2002 inspired by the success of the open source initiative, according to the then-president’s comment on its website. Historically, universities and academic

societies have established various open platforms for transactions of knowledge, as the consequence of which they have successfully reigned supreme over the intellectual industries. Systems and conventions that have embodied the mutual utilization of free intellectual property are well established all over the world, such as academic conferences and accommodating rules of researchers. In addition, libraries had been the largest repositories of knowledge on which transactions of knowledge have been executed. Originally, research outcomes were managed in the manner of open source software, and open courseware is an initiative to expand it to courseware materials (e.g., lecturer notes and lecture videos).

All the competitiveness of universities is inevitably threatened by the Internet, and it encourages the initiative as well.

MIT positioned the open courseware initiative as a core strategy of its eLearning program. If the institution successfully standardizes its platform, even if it does not bring in revenue, it can establish a strong brand in the higher education market of the world. It will enhance MIT's market leadership, even in offline education and other related businesses. This is an illustrative example of standard strategies described previously. Incidentally, the creative commons license is adopted for the open courseware.

China, which acknowledges its backwardness in higher education, has utilized the platform actively and translated the contents nationwide. Japanese universities also participated and provided their courseware contents to the initiative for free.

3.4.2.4 Open Innovation

Open innovation is a corporate R&D strategy to utilize others' resources and outcomes actively, instead of adhering to their own, as described in Chap. 1. Conventionally, R&D departments have not been interested in utilizing other resources, technologies, and ideas, an attitude criticized as the "not-invented-here syndrome". Therefore, they are unwilling to exchange them as well. However, if utilization of those resources is well managed, it will encourage innovation obviously. The transaction costs for exchanging intellectual property have been the barrier; various approaches have been explored, including open source and creative commons.

As discussed in this section, intellectual property has been becoming more open; prices have been decreasing, sometimes to zero. Standardization becomes critical in business and intellectual properties should be open to increase the market share. In this scenario, knowledge is distributed free and loses value. At the same time, wisdom (i.e., information processing and creating capabilities) is increasing the significance relatively. To be more precise, it is the ability of decomposing and reorganizing information for extraction of essences and creation of applications. It will put the people with the capabilities of rote memory and pattern recognition (and usually with vested rights) in trouble. In contrast, it will provide great

opportunities for many young entrepreneurs. The opening of intellectual property may be the most significant aspect of the information revolution.

3.5 De Facto Standard Strategy

De facto standard strategy as marketing strategy also needs the perspectives of standardization.

3.5.1 Enhancing Comprehension of Standards for Forming Effective Strategies

De facto standard strategy works only with precise comprehension of standards.

As a standard is a common affair, everybody has an opinion according to his/her experience and knowledge. However, structural comprehension of a standard cannot be achieved so easily, and the related argument is usually confused due to the difference of perceptions among the arguers. It inevitably obstructs the appropriate utilization of the standard.

As an illustrative example of standard strategy, the certificate and license business is considered here. There are a huge number of certificates and licenses, including accountants and pet trimmers, all of which require certificate examinations. If a certificate becomes a standard in the market, examination, education, and publication will become extremely profitable, promoted by the brand of the certificate authority. However, misunderstandings frequently occur:

- “A certificate is a standard, and therefore it makes huge profits.”
- “There already exists a company issuing the certificate, and therefore it is impossible to enter the market.”
- “The certificate business cannot be successful without an official approval from the government.”

First of all, a certificate is not yet a standard just because it exists. Only after the positive feedback cycle starts functioning and increases the market share automatically can it be called a standard. However, huge investment is indispensable to reaching this position. Many companies launched the business and failed due to these kinds of misunderstandings. In contrast, even if competitors exist in the certificate business markets, whether the positive feedback cycle is already shaped or not and whether they are possibly caught up should be prudently considered. It is not impossible to overtake the antecedent competitors with an appropriate strategy and sufficient resources.

Although governmental approval will enhance the business' competitiveness, it is costly as well and even restricts the flexibility of the business. It should be judged considering the pros and cons of the consequent influences on the positive feedback. It is not always an indispensable factor to shape the cycle.

In this manner, the success of standardization necessitates an appropriate strategy. The de facto standard strategy has been increasingly significant in the global market. In the global business environment where all profits of the market are concentrated on only one company, global strategy corresponds to the de facto standard strategy. And even within companies as well, enhancing comprehension of standards among related individuals is crucial for the achievement of standardization.

3.5.2 Accelerated Spread of the Zero-Price Business Model

The essence of the zero-price business model corresponds to the utilization of values from standardization.

Various zero-price business models have appeared that utilize the value of standards more actively than revenue business models do. The fact should be noted that the value increases in an accelerated way due to structural changes in the global market.

In Chap. 1, several zero-price business models that have been expanding were introduced, such as Google (the search engine, the e-mail, the calendar, the online memo, the maps, the office software, YouTube, the directory service, and so forth), entertainment content, SNSs, social network games, photo-sharing services, cloud computing (Dropbox, SkyDrive, Evernote, and so forth), free WiFi connection services, and application software for mobile phones.

All those are essentially identical with the conventional promotion models existing from the past—that is, the acquisition of (A) present customers and (B) future customers by executing transactions of zero-price goods or services:

- (A) Present customers: it promotes sales (transaction) directly to the visitors attracted by zero-price transactions.
- (B) Future customers: it promotes sales (transaction) in the future to the visitors attracted by zero-price transactions by strengthening awareness of the company and archiving the customer information in the company's database.

The sales promotion by zero-price business models is classified into two types:

- (1) Promotion of own products: Products are sold free or below cost (the incurred cost is regarded as sales promotion cost).
 - (a) Free samples: Most cloud computing services are offered free to consumers and charged to business customers (e.g., Gmail, Dropbox, and Evernote). Personal file sharing services across PCs were started by Dropbox and are expanding to SugarSync, SkyDrive, Box, and so forth. As a consequence of the competition, the free data volume offered by those companies is increasing. A large portion of application software and entertainment content for mobile phones is also distributed free. Free samples for promotion have been known in the past, especially in the cosmetics industry, where variable costs are relatively small compared with fixed costs of brand development, and the pharmaceutical industry, where reproduction costs

are relatively small compared with R&D costs. The recent free samples especially in the IT and mobile phone industries have increased the scale considerably in comparison with the past. With the entertainment-related products, where the winner-takes-all phenomenon tends to arise, the competition is likely to intensify.

- (b) Bargain goods (prices are below cost): Groupon is an online service to distribute coupons to purchase goods and services with special bargain prices (or zero-price). Merchandisers and servicers derive benefits from the large-scale advertising on the Internet even if they distribute them free. Actually, the lower price is better for obtaining attention. The promotion methodologies of bargain goods and coupons have been utilized by merchandisers regularly from the past. For example, hamburger chains are earning profits by cross-selling and up-selling to the customers who visit for products below cost (or zero-price).
 - (c) Item-based payments (micro-transactions) on online games: Online game services or software is offered free, while the items such as avatars needed for advanced gameplay are charged. This business model is identical with the past MRO (maintenance, repair, and operations) business model used for printers, photocopiers, disposable razors, elevators, and water purifiers, which earn profits from MRO selling the main products without profit.
- (2) Promotion of customers' products: Customers' products are promoted to potential customers attracted by free services.
- (a) Advertisement revenue models: Online services such as Google, Yahoo, and Facebook earn profits from advertisements. TV, radio, newspapers, and magazines have adopted the identical business model from the past in which contents are provided free or with low prices. Retailers and servicers also have been providing free events (e.g., music concerts and arcade live shows) for collecting customers. Free WiFi connections have obtained popularity as promotional means these days.
 - (b) Sales representatives: Online affiliate programs offer sales representation businesses with a commission fee of up to 30 %. It is possible to earn considerable profits by providing content for free as long as it attracts people.

As described above, the online zero-price business model is identical with the models from the past. The only difference is that the costs have decreased drastically, while the effects have increased enormously.

The reason why sales promotion by the zero-price business model became so popular is because reproduction costs and transaction costs have decreased greatly. In the past, those two marginal (additional) costs were so large that distribution of free samples incurred unpractical costs. In contrast, as the marginal cost and the transaction costs of digital contents becomes nearly zero, the increase of scale never increases the cost, enabling large-scale and effective sales promotions.

Fiercer competition among free products and services is expected hereafter, and in that case, the reduction of transaction costs incurred by customers will be the point of the competition. In other words, the enhancement of transaction functions

such as attracting customers' glances, appealing products, and leading to purchases effectively will become significant for the competitive advantage. Servicers also need to bear transaction costs for customers; they are already offering free online shipping. This new type of competition will be expanding at an accelerated pace.

The effect of the zero-price business model has increased as well. Because the positive feedback effects strengthen in the Internet markets, the effect of attracting the power of visitors and consequent concentration of revenues has increased greatly.

As a result of the fiercer competition, prices may go below zero to minus; that is, customers may get paid (or gifts) with deliveries of free products. As cross-sell revenues could be calculated precisely, the total discounts of prices (the total cost of sales promotions) that would maximize the profit can be estimated. For example, if 20,000 customers out of 100,000 who received free products are known to make cross-sell purchases, the minus price (the amount paid to the visitors) can be calculated backward from the required total profit and the sales promotion budget. The difference between zero-price hamburgers and minus-price hamburgers is only the increase of the amount of total sales promotion cost. Both are below cost. The impact of minus price on sales promotions must be much larger when the price is minus. Actually, a US time-share resort condo agency paid approximately \$100 cash to Japanese prospects at their sales promotion event.

The zero-price business model may appear to be just an independent sales promotion methodology without any relation to standardization. However, a company cannot survive if the competitor obtains the standard position with all the positive feedback effects. The standardization became much easier to start then; the adoption of the zero-price business model as an easy sales promotion without profound consideration of standardization is likely to fail in the longer term. The strategic target should be the accomplishment of the positive feedback and the consequent standardization.

3.5.3 Summary of the De Facto Standard Strategy

Superficial comprehension and incomplete strategies fail easily.

The business models with free services and advertisement revenues such as Google have been effective thus far. Free samples have been able to attract a large number of customers. However, the direct advertisement market may reach to the saturation point someday in the future, and the effect of zero-prices may weaken when those become common.

The superficial comprehension that free products and services must generate advertisement revenues and cross-sell revenues, hopefully embodying standardization, is dangerous and too easy. It must be difficult to survive the fierce competition of zero-price business models with such a superficial strategy. Hereinafter, the various strategies to utilize obtained major market shares and consequent standards should be carefully considered, besides the present dependence on

advertisement. The positive feedback effects must be pursued not only with advertisement and sales promotion but also in all aspects of management. In this section, all the discussion in this chapter is summarized.

In order to standardize a company's products, the increase of the market share sufficient to shape the positive feedback cycle is indispensable. The following three cycles should be managed carefully.

(1) Utilizing the network externality effect on a company's interface

As the network externality (interface externality) effect is strengthening with the growth of networks, the increase of a company's market share and the consequent spread of its interface are crucial. The following actions should be carefully taken with interfaces.

(a) Appropriate design: In order to increase users, the interface should be designed so that the application ranges and the user satisfaction become maximized. Targeting too wide a range may decrease the satisfaction level of users, while a too narrow range may limit the spread of the interface. This balancing will be discussed in Chap. 6.

(b) Opening intellectual property rights: Users increase by opening the intellectual property of an interface. Opening of intellectual property rights will obviously be affected by the prices; that is, as prices are lower, the rights are more open and the users increase in number. In contrast, the revenue will decrease and the strategy to make earnings by utilizing the major market share instead is indispensable.

(2) Utilizing the bandwagon effect

The bandwagon effect, in which customers follow the purchase decision made by the majority, will decrease the transaction costs (searching transactors and information gathering) at the customers. The recent spread of reputation information available through the Internet increasingly enhances this bandwagon effect more than before. In order to utilize this effect appropriately, information provision through SNSs and Webs and response to increasing malicious negative postings should be carefully executed.

(3) Utilizing the economies of scale effect for the enhancements of cost and value-added competitiveness

Economies of scale improve efficiency, as a result of which surplus resources can be allocated for increasing value added or effectiveness. This increases the sales cyclically. Hereinafter, economies of scale should be pursued in all aspects of management more seriously than before.

(1) and (2) above are related to economies of scale on consuming activities on the consumer side. The significance has increased drastically with potential users' explosive increase in number initiated by the reduction of transaction costs.

Although (3) classical *economies of scale* on the producer side have been continuously significant as the key issue of management, there occurs a structural

change. The accomplishment of economies of scale on hardware (e.g., material and equipment) in production becomes inefficient as it is reaching to the limit, while the methodologies to deal with economies of scale in transactions (creative activities, in particular) have just started being available. That is, the pursuit of economies of scale in organizations by focusing on interfaces (the methodology of designing and operating fixed interfaces) has become significant for the first time.

In particular, a modular strategy embodies economies of scale in hardware, software, and organization consistently, in spite of its remarkable applicability to the diversified needs. It has become indispensable in the new open global economy.

In the next chapter, this modular strategy will be examined.