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A Study for Relationship between Design Strategy and Decision-Making Style in Design Development Process[1]

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1. Research Purpose and Analysis Framework

The purpose of this research is to unfold the logic (cause-and-effect relationship) between a company's design strategy types and its decision-making style (see Chart 1).

Our focus on this relationship is based on an assumption that there exists a close connection between them. Differences in the decision-making style among nations and regions were revealed in the prior research "Brand Management through Design." As part of this research, we investigated the decision-making style of automotive and electric companies in Japan, the U.S., Europe and South Korea (Specifically, automotive companies in Japan, the U.S. and Europe, and electrical companies in Japan, Europe and South Korea.). While the development process of design itself was similar among all nations and regions, a major difference was found between their decision-making styles. The same research also revealed major differences in the nature of design produced by these companies, as well as the types of design strategies to determine such nature. From these research findings, we developed an assumption that there exists a decision-making style according to the types of their projected design (design strategy).

Another basis for our focus on this relationship is because both the design-making style and the design strategy may have a strong influence on the nature of the produced design. Needless to mention, the design strategy is considered to have a major influence on the nature of design, since its decision-making process serves as design filter in companies. For example, it is still our fresh memory that after Carlos Ghosn assumed the position of CEO, Nissan changed the decision process of design, successfully bringing major changes to the nature of design. Compared to other processes such as manufacturing, the development process of design mostly takes place inside the designer's head, thus

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very few parts of this process can be clearly represented. Consequently, decision-making through assessing and selecting the represented areas is an especially important process in the development of design, where in many cases playing a more important role than the suggestion process (Sato, 1999).

In the second chapter, typifying of the design strategy is discussed and conducted for those adopted by companies in each nation and region. The third chapter discusses the decision-making styles. Specifically, we unfold indicators that determine the decision-making styles, as well as differences in decision-making styles among nations and regions. Based on these findings, the forth chapter discusses the relationship between the types of design strategies and decision-making styles (see Chart 2). The final fifth chapter provides summary of this research and illustrates challenges for future.

2. Typifying of Design Strategy & Logic of Strategy Development

This chapter unfolds the typifying of design strategy and logic of strategy development. Specifically, we first highlight the rules in classifying design strategies, as well as classification criteria and actual classification models. This is followed by an illustration of how such design strategies are developed (logic of strategy development).

2.1. Typifying of Design Strategy

In this research, typifying of design strategy follows the following two major rules. The first rule is to classify and define the design strategy based on the pure observation of nature of produced design, through which design characteristics of companies

Chart 1　Analysis Framework

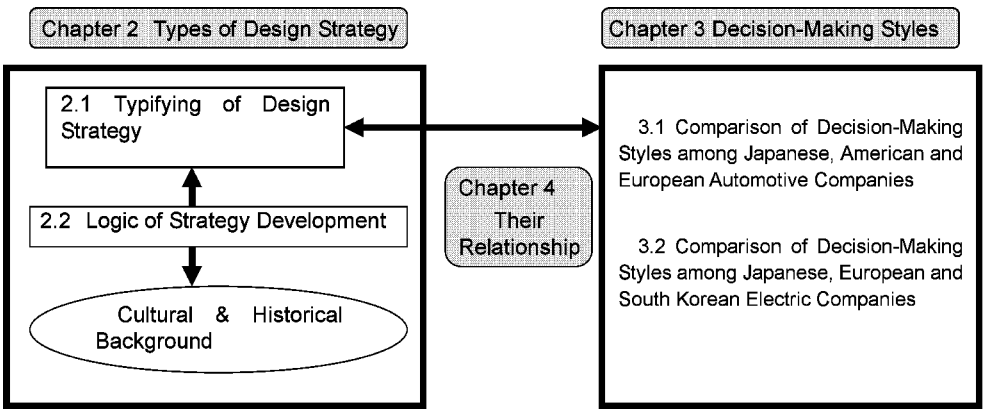

Chart 2　Overall picture of this research

in each nation and region are assessed. This classification method focusing on the nature of the output follows the existing research method for technology strategy, which classifies high-tech companies' product strategies using specification data. (ex. Nobeoka, 1996: Kusunoki, 1992: Sanderson and Uzumeri, 1990). Yet contrary to high-tech products, there is no objective data for design, thus we have left the classification up to four industrial designers.

The second rule is to classify the design strategy based on the classification criteria different among each industry. As noted earlier, this research analyzes two industries—automotive companies and electric companies—, and we classify each industry's design strategies based on the different criteria. Generally, a certain level of common features in adopted strategies and management style can be found among companies headquartered in the same country or region, irrespective of industries. This is because they share the same history and culture in their areas. Yet there exists certain differences in management environment and product characteristics among automotive and electric industries, thus the same criteria cannot be used in discussing the differences in design strategies.

Details are to be discussed later, but to illustrate some examples, unlike automotives, 'white goods' such as refrigerators, vacuum cleaners and washing machines are not within the framework of globalization in companies of any region, which mostly remain in the domestic framework. Consequently the classification criteria (standardization & adaptation) on the 'destination' used in automotive companies cannot be used for these goods. As such, considering such different characteristics, different classification criteria of design strategies for each industry is used in this analysis. The classification criteria in this research and the subsequent typifying of design strategy types are noted below.

Firstly, classification of design strategies for automotive companies follows the two classification criteria: "Standardization strategy (strategy not to change designs according to destinations) or Adaptation strategy (strategy to change designs according to destinations)" and "degree of design consistency (whether designs are consistent or not)." This led to the following classification and defining of design strategies: Japanese companies—"change designs according to destinations but place importance on their consistency in the destination (in short, positively making use of design as a weapon for design identification yet pursues Adaptation strategy)"; European companies—"do not change designs according to destinations and maintain design consistency (in short, positively making use of design as a weapon for design identification and pursues Standardization strategy)"; the U.S. companies—"do not change designs according to destinations and do not place importance on their consistency (in short, pursues Standardization strategy yet do not make positive use of design as a weapon for brand identification)." (See Chart 3)

Secondly as to electric companies, classification of design strategies follows these two criteria: "degree of individual design characteristics (distinctive or non-

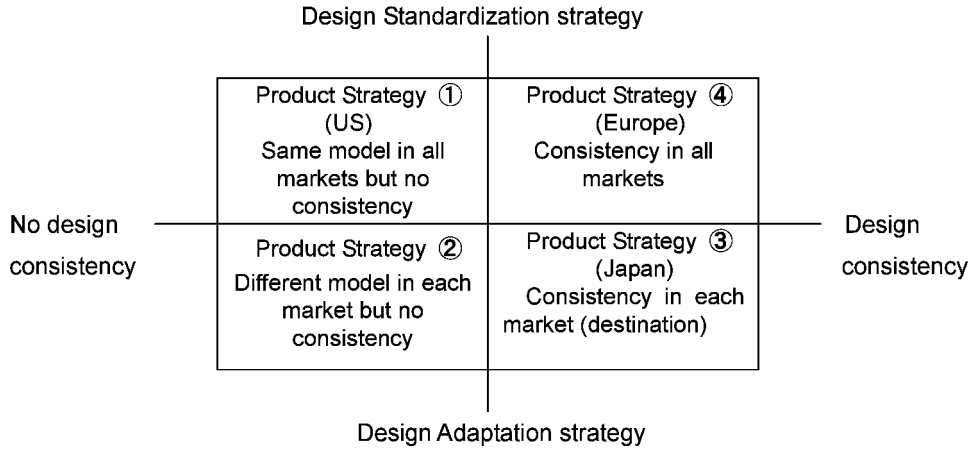

Chart 3 Typifying of Design Strategies for Automotive Companies

distinctive)" and "degree of design consistency (consistent or not consistent)." This "distinctiveness" merely refers to the difference from others, thus does not necessarily suggest positive implication. Another point to note is that unlike automotive companies, electric companies use mapping-type classification for their wide range or products, including 'white goods (e.g. refrigerators, vacuum cleaners and washing machines),' 'audio-visual equipments (e.g. TVs and DVD players)' and 'telecommunication equipments (e.g. personal computers and mobile phones).' Likewise, areas of business operation vary among companies, and companies with wider operation tend not to employ standardized design strategies, as different product characteristics and business environment exist in each operation. Since the patterns of projected design varies according to products in most electric companies, clear typifying as in automotive companies proves to be difficult, thus mapping-type classification is chosen for this case.

The result of this classification of main design strategies are as follows: Japanese companies—spanning from "not seeking design consistency within product categories yet each design is to be non-distinctive" to "seeking design consistency within product categories yet each design is to be non-distinctive"; European companies—"seeking design consistency within product categories and each design to be distinctive"; South Korean companies—spanning from "seeking design consistency within product categories yet each design is to be non-distinctive" to "not seeking design consistency within product categories yet each design is to be distinctive" (See Chart 4).

2.2 Logic of Design Strategy Development

Design strategies of automotive and electric companies in each region were classified above. This section focuses on historical and cultural aspects to illustrate the development process (how these companies come to undertake such strategies) by

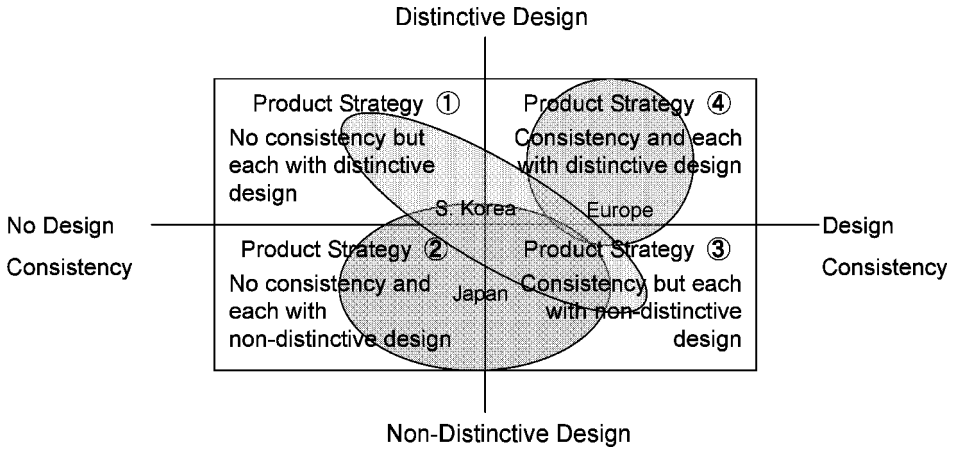

Chart 4 Typifying of Design Strategies for Electric Companies

industry (automotive and electric).

2.2.1 Automotive industry

① Logic of Design Strategy Development in Japanese Automotive Companies

This segment discusses why the Japanese automotive companies follow this design strategy: "change designs according to destinations but place importance on their consistency in the destination."

Firstly, Japanese automotive companies' adaptation strategies are related to their delayed industry development, when compared to their Western counterparts. In the past, their development and manufacturing levels were too low to produce luxury cars, limiting their exporting options to low-to mid-priced products in each market. To be competitive in such price range required them to secure volume to earn profit—they had to slash prices and compete on volume. To put it simply, it was important to gain the market share. Furthermore, gaining the share for such price range called for a reflection of many consumer requests on products, which would appeal to even more prospective buyers. Through these developments, Japanese automotive companies began to conduct the 'order-taking' style business operations, whose business strategies may have led them to change designs according to destinations.

Secondly, the main reason for their pursuit of design consistency in each destination is due to the change in the business environment that called for consistency. Aside from European markets, consistency was not of importance in the past, and this pursuit is a relatively recent trend. As discussed earlier, as long as the industry follows the "order-taking" approach, produced design is inconsistent. In particular, their main Japanese market provided an environment where specific models became dominant trends, reflecting the Japanese consumers' tendency to become bored easily, in addition to such factors as flat social pyramid and homogeneous society. This resulted in the continuous competition among homogeneous products as well as frequent model changes, with the

design becoming more and more inconsistent. Another factor for the Japanese automotive companies' distance from design consistency in the past was the uncertain nature of their product quality, leading them to place importance on technology. This shows that at least the management did not consider design to be the brand-building resource.

Yet these strategies began to change from the 1990s. Instead of leading design to follow market trends, Japanese automotive companies began to utilize design to establish and develop their brand identity, which meant a shift from marketing design to brand design. Behind these changes were catching-up of Chinese and South Korean competitors, stronger pressure from stockholders to pursue profits reflecting the structural change in the stock market (increase of foreign and individual investors), as well as emphasis on corporate brands rather than on each individual brand in accordance with fierce global competition (Chichii, 2004). To put it simply, the change in the business environment forced the Japanese automotive companies to place importance on their brand power and profitability, driving them to pursue design consistency. However, ensuring such consistency is on a market basis at this point, thus its level has not reached the across-the-world consistency level of European companies, which is to be discussed in the following the segment.

② Logic of Design Strategy Development in European Automotive Companies

This segment discusses why European automotive companies follow this design strategy: "do not change designs according to destinations and maintain design consistency."

One of the reasons for their development of consistent design is the fact that many automotive companies have a slice of market share (no company has more than 10% of market share) in Europe, asserting their existence. In short, in order to appeal their presence, they need design consistency to demonstrate strong corporate identity. Another reason can be attributed to the strong influence by their founding families. Today's major automotive companies started off as medium-sized local companies, where in Europe, final decision on design was mostly at the hands of the manager (founder or owner), thus traditionally design has been positioned as one of the element of business decisions (Okuyama, 2007). Since the decision is at their discretion, managers study design, resulting in their stronger commitment to design and special feelings for their brand. Such traditions have been observed from generation to generation.

There exists yet another reason for their development of consistent design—European consumers. Not only do they have a strong tendency to prefer tradition to change, but there lies strict and settled hierarchy in their society. This is why 'no change' is more valued than 'change.' On another note, they have a strong feeling for their own identity and tendency to value them due to the series of repeated wars in the past. Therefore it can be observed that the geographical factor-sharing borders with many countries-is related to the development of their identity.

③ Logic of Design Strategy Development in the U.S. Automotive Companies

The final discussion is on why the U.S. automotive companies follow this design strategy: "do not change designs according to destinations and do not place importance on their consistency."

Firstly, they do not change designs according to destinations because their large domestic market leads to their strong tendency to become ethnocentric in looking at globalization (Vernon, 1966). Therefore they do not take much interest in other countries, where in many cases products developed for domestic market were exported without any adjustment. In addition, the U.S. automotive companies do not place importance on design consistency even for domestic markets, as they are more likely to rely on marketing research. As a result, designs tend to be inconsistent even in their own country.

Since the success of the GM's Lasalle in 1927 (Sloan, 1963), or the failure of Ford's Edsel in 1958, the U.S. developed its strong tendency to rely on marketing research for the design development from an early stage. Their emphasis on marketing research more than on technology innovation grew larger even since then, as the U. S. automotive industry matured earlier than its overseas counterparts. This emphasis also has worked when new products failed, as an excuse against powerful the U.S. shareholders. Furthermore, such strong shareholders' presence drove the industry to become short-term profit oriented, which was why long brand stories were not developed.

Through these developments, the U.S. automotive companies began to follow the adaptation strategy (designs according to market trends) for domestic markets, while following the standardization strategy as a basis for their extruding approach for overseas markets.

2.2.2 Electric industry

① Logic of Design Strategy Development in Japanese Electric Companies

This segment discusses why design strategies of Japanese electric companies are positioned between the areas of "not seeking design consistency within product categories yet each design is to be non-distinctive" and "seeking design consistency within product categories yet each is to be non-distinctive."

One of the reasons for Japanese electric manufacturers' non-distinctive designs (e.g. slender figure, extremely free of mannerisms, neutral and transparent yet high-quality design) in relation to European counterparts is because both consumers and developers possess the sensibility to acknowledge subtle difference as "difference." Their sensibility can be attributed to their small land and houses, providing them with opportunities to look at products from a short distance. Another reason for their non-distinctive designs is in connection with the business strategies aiming at market share gain. It is assumed that mannerism-free and safe designs are more likely to be accepted in the market, which will lead to the commercial success.

Secondly, reasons for their not ensuring design constancy are similar to the case of automotive companies. As noted earlier, Japanese automotive companies have not

ensured design consistency in order to gain global market share, respond to 'easy-to-become bored' characteristics of domestic consumers, as well as valuing technology for product quality stability. The same reasons apply to Japanese electric companies. However, while automotive companies began to steer ensuring the consistency at relatively early stage, electric companies were unable to do so due to the different business environment. They shared the same features as automotive industry-catching up of Chinese and South Korean competitors and structural change of the stock market-, yet their response speed was slow. As a result, design consistency of Japanese electric manufacturers today has finally begun to be partially ensured, becoming of a patchy pattern.

Specifically speaking, firstly the development speed and frequency differ among automotives and electrics. With automotives, even a fast development speed requires 3 years or longer development period. On the contrary, new electric products are developed every few months, which provides a ground for many designs on the premise that they would be of product obsolescence, jumping on to the market trend. In addition, some electric companies may handle more than 10,000 types of products, while product lineup of automotive companies is limited-even Toyota with merely 100 car models. As electric companies handle excessive number of products, it has proved difficult to ensure consistency for all designs, making it difficult for them to develop mindset and motivation to grow their brand.

In addition, the past strategy success to focus on technology, managers' lack of understanding about design, as well as not having trained designers who can take roles in business strategy in many companies, have still stopped them from taking a bold approach toward brand strategies. In Japan, designers are "in-house designers" who belong to the design department of a company, who have not been trained enough to produce projects with business strategies in mind, nor to manage the overall manufacturing and service areas (Okuide, 2007). This is because the focus of Japanese companies has been on increased frequency of development and efficient product development. Therefore in such development structure, priority has gone to design works to make slight changes to identical figures and colors, thus training them on strategic thinking have tended to be neglected.

② Logic of Design Strategy Development in European Electric Companies

This segment discusses reasons for the following design strategy of European electric companies: "seeking design consistency within product categories and each design to be distinctive."

Firstly, reasons for their seeking design consistency are similar to that of automotive companies. As noted earlier, European automotive manufacturers have ensured design consistency due to the strong influence by founding families, consumers' preference of tradition to change, as well as their strong feelings for own identity, which electric companies share in common. In addition to these factors, another reason for their consistency is the fact that compe-

tition tends to be based on the design and brand of commoditized products, rather than on leading-edge technologies. This emphasis on brand and design is because of the assumption that product functions have almost become matured. Another issue to be mentioned is that their series of past M & A practices have resulted in a collection of a few corporate groups with several brands, thus fundamentally European electric companies have progressive concept and approach toward brand management.

Secondly, one of the reasons for their distinctive design is the deep-rooted traditional craftsmanship in Europe. Designers take pride in their job, are assertive and have strong commitment to originality. In addition, respect for craftsmen-including designers-provides the environment to acknowledge and accept designers' say. In particular, Italy respects individuals, thus designers' ways of thinking are likely to be seen in products (Okuyama, 2007).

Unlike automotive companies, European electric companies have been much less successful in its globalization, as product characteristics differ among them. In particular, white goods tend to remain domestic. Generally speaking, automotives can be considered to be "civilizational products (=products not closely linked with lifestyles)" and white goods to be "cultural products (=products closely linked with lifestyles)," which is why the former is easy to be distributed beyond national and regional borders, while the latter is not beyond national and regional (cultural) borders. For example, let us look at one of the factors why European white goods are difficult to enter the Japanese market. While European consumers do not expect all tasks to be mechanized and automated thus products can be of single function, Japanese consumers are highly machine-dependent thus products are expected to be multi-and highly functional. Yet instead of becoming global, European manufacturers exercise ingenuity to generate profit from small market share by narrowing down the scope of products (product range and hierarchy). At the same time as narrowing down product functions, they have developed numerous mono-functional machines handling certain specific tasks (concept of multi-functional machines are found rare). This can be attributed to their large land and houses, unlike cases in Japan.

③ Logic of Design Strategy Development in South Korean Electric Companies

Finally we discuss factors of why South Korean electric companies' design strategies span from "seeking design consistency within product categories yet each design is to be non-distinctive" to "not seeking design consistency within product categories yet each design is to be distinctive."

First, their design consistency is not necessarily ensured due to the similar reasons observed in their Japanese counterparts. This is because in essence, they have copied Japanese electric companies' management strategies, and Japan and South Korea have the similar market characteristics-consumers tend to become bored easily, ethnic homogeneity leads them to be affected by trends-. Yet when compared to Japan, South Korean electric

companies are more likely to value design consistency. The reason comes from the fact that they have relatively fallen behind their competitors-technology behind Japanese companies, cost behind Chinese companies. In order to differentiate themselves (as differentiation strategy), they have adopted European-style brand strategies and began to place importance on design consistency.

Such trends began to intensify after 1997. South Korea became financially bankrupt that year and was put under IMF control, which heightened their sense of crisis about their economy, driving them to focus on the full-fledged globalization. From the start, their small domestic markets have led South Korean companies to develop a strong incentive to compete in global markets, thus it simply began to take full effect from 1997. In driving globalization, they have adopted the "selection & concentration strategy" and "brand strategy," allowing them to produce competitive products through substantial investments to certain areas by narrowing down products and business areas for global markets, as well as improving their brand image. As a result of these strategies, design consistency began to be ensured for products for global markets, especially mobile phones and flat-panel TVs.

Second, we discuss factors for their designs to be placed between distinctive and non-distinctive. Originally, designs of South Korean electric products tended to be distinctive (e.g. mannerisms, strong characteristics), as design was considered to be a differentiating factor merely for their appearance. At that time South Korean consumers placed importance on product appearance, thus manufacturers simply needed to demonstrate the product difference from that of their competitors. Yet, as noted earlier, their expansion to global markets and high-end (luxury and premium) markets have led some products to have less characteristics. In particular, designs of products for global markets-e.g. mobile phones and flat-panel TVs-began to be less bold, becoming non-distinctive. In high-end market, there exists a certain degree of established design formula, with many conservative consumers.

3. Decision-Making Style

Typifying of design strategy and logic of strategy development were clarified in the previous chapters. Now, we are going to unfold the decision-making style by industry in each country/region. Specifically, we are going to clarify the difference in decision-making style among Japan, the U. S., Europe and South Korea (Comparison of Japan, the U.S. and Europe for Automotive companies, and Japan, Europe and South Korea for Electric companies).

The term "Decision-making style" is used to refer to the composition of members, the size and the processes (ex. the frequency of decision-making, criteria for decision-making), etc. when they make a decision on design. Therefore, this research will not discuss "When and what decision to be made?", and "What model to be used to make a right decision" as in a decision making study (especially, management science approach, represented by allocation model and inventory model).

Rather, we will focus on "a framework of decision-making", instead of "search for a solution for decision-making". In this respect, this research has a closer concept to TMT (top management team) study than to decision-making study.

TMT study normally focuses on mainly "Component" and "Processes", to clarify which factor affects the quality of decision-making and corporate performance (Smith, et al. 1994). "Component" includes the size of TMT, the average age, year of service and disciplinary heterogeneity, whereas "Processes" include frequency of communication, social integration (consensus and conflict) and informal communication. TMT study aims to unfold relations (mainly correlations) among elements, focusing on the factor (decision-making style in this research) that affects the quality of decision-making.

However, in TMT study, target of analysis is limited to the decision-making by top management team, and the performance variable is different from that of this study. Therefore, the result of TMT study can not be simply applied. We need an arrangement to a certain extent. Referring to TMT study, we decided to adopt the following four indicators. The first indicator is "frequency of decision-making (not only formal decision-making, but also informal one)", which can be read as "frequency of (formal/informal) communication" in TMT study. Design is usually not decided by one-time decision-making, but through multiple-time decision-making. Therefore, it is considered that how frequently decision-making takes place determines the frequency of communication. The second indicator is "diversity of decision-making members", which can be read as "attributes of TMT" in TMT study. The third indicator is "number of members", which can be read as "size of TMT" in TMT study. The fourth indicator is "criteria for decision-making", which can be read as "social integration (consensus focus or conflict focus)".

In this research, two types of variable, the one related to decision-making processes and the one related to component, are both used. However, it does not mean that we adopt an intermediate model. Also, performance variables adopted in existing study and in this study are not completely consistent, but these studies have a similarity in a sense that both focus on the factors affecting "nature of strategy". This is because the performance variable (type of design strategy) in this study is also sort of nature of strategy. Therefore, we considered that the variables which are already known to affect nature of strategy in existing study can be also used in this study.

3.1 Comparison of Decision-Making Styles among Automotive Companies

In this chapter, we will focus on the decision-making styles of automotive companies to clarify the difference among Japan, the U.S. and Europe. We will find out what kind of differences exists among the regions on aforementioned "1. Frequency of decision-making", "2. Diversity of members", "3. Number of members" and "4. Criteria for decision-making" (See Chart 5).

As for the first indicator, "frequency of

Chart 5 Characteristics of Decision-Making Style of Automotive Companies in Each Region

	Japan	Europe	The U.S.
1. Frequency of decision-making (Meeting/Clinic)	Formally 2-3 times (However, around 10 times informal and preliminary discussions are held). Clinic surveys are conducted in-house and externally. But both are conducted upon each review (approx. n=100).	Decision-making takes place 3-4 times (because of a longer period for development). Clinic survey is conducted as a routine approximately twice.	Decision is made by 3 to 4-times top executive reviews. Clinic is always held 4-5 times with a large number of samples (n=over 1000).
2. Diversity of decision-making members	A lot of related-parties such as Engineering, Planning, Sales and Accounting participate in (members are not limited to top-executives).	Director in charge of design and development-related top executives constitute the meeting with no participation from Sales.	Director in charge of design and a few top executives (with participation of Sales).
3. The number of decision-making members	Large number (several tens of members)	Small number (a few members)	Intermediate number (Approx. 10 members)
4. Criteria for decision-making	Collegial system by many top executives (guidelines are also used).	Top executives approve at the final stage (personnel in charge of planning/design/brand have more influence).	Decided according to the result of clinic survey. Director in charge of design have more authority on decision-making. Influence of top executives is like just confirming the decision.

decision-making", Japan is the highest, followed by the U.S. and Europe. It is characteristic that in Japanese automotive companies frequency of formal decision-making is low but that of informal decision-making is high. Also, in European automotive companies, the number of formal decision-making is the highest. This is because they take a longer period for development, compared to two other regions.

As for the second indicator "diversity of members", too, Japan is the most diversified, followed by the U.S. and Europe. In Japanese automotive companies, a lot of departments participate in decision-making, such as Engineering, Planning, Sales and Accounting. Also the members participate in decision-making are not limited to top executives. In contrary, in the U.S. automotive companies, representatives of Sales department as well as director in charge of design and a few of top executives participate in the decision-making. The members represent a wide variety of groups same as Japan, but what is characteristic is a small variety of their ranks. Those who participate in the meeting are limited to top executives. On the other hand, in European automotive companies, directors in charge of design and development-related top executives constitute the members and personnel related to sales do not participate in the meeting in

many cases.

As for the third indicator "the number of members", too, Japan is the largest, followed by the U.S. and Europe. In Japanese automotive companies, a large number of members participate in the meeting (for example, more than 40 personnel participate in the meeting in case of TOYOTA). In contrary, the number is intermediate (approx. 10 members) in the U.S. automotive companies, and small (a few) in European companies.

As for the forth indicator "criteria for decision-making", Japanese automotive companies adopt collegial system (including use of guidelines). Meanwhile, the U. S. companies choose design, placing more importance on the result of clinic survey (marketing research) conducted in advance. As the U.S. hold a lot of immigrants, their system became not dependent on individuals by developing manuals and promoting the transparency of the decision-making system on design. More specifically, they conduct marketing researches and make choices according to the results when they decide design. In this way, they intended to enhance transparency of decision-making. In contrary, European automotive companies first focus on brand guidelines, and then personnel and directors in charge of design lead the decision-making on whether the design is good or not.

3.2 Comparison of Decision-Making Style among Electric Companies

In this chapter, we will focus on the decision-making styles of electric companies to clarify the difference among Japan, the U.S. and South Korea. As in case of automotive companies, we will find out what kind of differences exists among the regions on "1. Frequency of decision-making", "2. Diversity of members", "3. Number of members" and "4. Criteria for decision-making" (See Chart 6).

As for the first indicator "frequency of decision-making", a slight difference is seen depending on whether the product under development is a strategic product or non-strategic product, in addition to whether it is informal decision-making or not. Firstly, formal decision-making takes place in Europe most frequently, followed by Japan and South Korea with similar frequency. In Japanese electric companies, there are not so many decision-making meetings which only cover design. Rather, in many case, meetings on design are included in meetings held in each step of product development processes or regular (monthly) meetings for related-parties. This is related to the fact that product development is taking place concurrently. On the other hand, European electric companies normally hold decision-making meeting 4 to 5 times. The higher frequency of decision-making is because they take a longer period for development, compared to two other regions (ex. in case of white goods such as refrigerator or washing machine, development of a product takes sometimes 1 to 2 years in Europe, whereas 10–12 months in Japan and South Korea). Also, in South Korean Electric Companies, decisions are made in twice-a-year strategy meeting by reviewing the superiority of the design through comparison with competitor's products, etc.

On the other hand, as for informal

Chart 6　Characteristics of Decision-Making Style of Electric Companies in Each Region

	Japan	Europe	South Korea
1. Frequency of decision-making (Meeting/Clinic)	Formally 2–3 times (per project), but the number of informal decision making is large. There are not many decision-making meeting only covers design. Decision is made in meetings at each step of product development processes or regular (monthly) meetings for related-parties (Basically, no large-scale clinic survey is conducted). Before design department proposes a draft design, decision is made within design department and approval is issued by head of design department at each step of design processes.	Formally 4–5 times (per project). The number of informal decision-making is small. Usually 4–5 decision-makings on design per product (Basically, no large-scale clinic survey is conducted). Between the steps of draft design and proposed model, decision is made within the design department. However, product manager approves the design proposed as a design brief, and has the authority for realization.	Formally 1–2 times (per project). The number of informal decision-making is middle of Japan and Europe. Decisions are made in twice-a-year strategy meeting by reviewing the superiority of the design of strategic products through comparison with competitor's products, etc. (Basically, no large-scale clinic survey is conducted).
2. Diversity of decision-making members	Diversified (Related-parties such as Head of the Division, Planning, Sales and Engineering of each Division, Group manager of Design department and Chief Designer.	Low diversity	Low diversity
3. The number of decision-making members	Large number (Several tens)	Small number (a few)	Small number (a few)
4. Criteria for decision-making	Basically decision is made by division (decision is made as a consensus, but relatively sales-related departments have more influences). However, decision on design of strategic products is led by CEO instead of by division. Guidelines related to design are well developed but not utilized very much.	Decision is made by project (product manager and brand manager lead the decision). Guidelines related to design are well developed and utilized well.	Basically, decision is made by division (head of division lead the decision. Also, designers have strong influence). However, decision on design of strategic product is led by CEO instead of by division. Guidelines related to design are well developed and utilized well.

decision-making, Japan is the most frequent, followed by South Korea and Europe. Also, the number of formal decision-making tends to increase when the product under development is a strategic product (= product with high importance for the company) compared to non-strategic product. This is because, in case of strategic

product, decision-making meetings with direct involvement of CEO are taken place in addition to usual decision-making. When Japanese and South Korean electric companies develop a strategic product, they tend to conduct decision-making meetings with direct involvement of CEO at relatively early stages of product development processes. This is because they can fix the direction of design at early stages, which we will mention also in "4. Criteria for decision-making". Unlike automotive companies, basically large-scale clinic surveys are not conducted in any electric companies.

As for second indicator "diversity of decision-making members", Japan is the highest, followed by Europe and South Korea with similar degree. In Japanese electric companies, a lot of related-parties such as engineering, planning, sales and accounting participate in decision on design. In contrary, in European and South Korean electric companies, director in charge of design and development-related top executives constitute the decision-making members. Because of the same reason, Japan was the largest on the number of members, followed by Europe and South Korea with similar number.

As for the forth indicator "criteria for decision-making", Japanese and South Korean electric companies basically make decisions by division, whereas European companies make decisions by project. This is because Japanese and South Korean electric companies launch products in a short cycle and deal in a great number of products. However, as mentioned above, in Japanese and South Korean electric companies, many decisions are made with direct involvement of CEO on design of strategic products. Also, in Japanese companies, a decision is made as a consensus and relatively sales-related departments have more influence. In contrary, decision on design is led by product manager (or brand manager) in European companies (design is decided with top-down approach). On the other hand, in South Korean electric companies, designers have more influence and also head of divisions or CEO have a centralized authority for decision on design (design is decided with top-down approach).

As criteria for decision making, guidelines on design and brand are used in many cases in European and South Korean electric companies. In Europe, guidelines including Design Standard Book, Brand Value Book, CI Manual have been developed. Also in South Korea, manuals related to design policy and design identity have been developed, and also design identity has been evaluated periodically. On the other hand, although similar type of guidelines is available, those guidelines became dead letters without being utilized by majority of Japanese electric companies.

4. Relation between Type of Design Strategy and Decision-Making Style

In the previous chapter, we have looked at type of design strategy and decision-making style separately, but now we will clarify how these are related each other. This chapter unfolds what kind of linkage there is between each decision-making style and design strategy, focusing on merit

(or demerit) of decision-making style of each automotive companies in Japan, the U.S. and Europe and electric companies in Japan, Europe and South Korea.

4.1 Automotive Companies

In this chapter, we will look at the relations between decision-making style and design strategy in automotive companies.

The following is the summary for characteristics of decision-making style of automotive companies in each region. As for Japanese companies, characteristics of decision-making style are 1. Frequent decision-making, 2. Diversified decision-making members, 3. Large number of decision-making members, and 4. Criteria for decision-making are consensus and guidelines. In contrary, characteristics of decision-making style of European companies are 1. Low frequency of decision-making, 2. High homogeneity of decision-making members, 3. Limited number of decision-making members, and 4. Criteria for decision-making are top-down approach and guidelines. As for the U.S. companies, characteristics of decision-making style are 1. Intermediate frequency of decision-making, 2. Intermediate diversity of decision-making members, 3. Intermediate number of decision-making members and 4. Criteria for decision-making is the results of clinic survey.

Meanwhile, design strategy of automotive companies in each region is as follows: Japanese companies—"change designs according to destinations but place importance on their consistency in the destination (in short, positively making use of design as a weapon for design identification yet pursues Adaptation strategy)"; European companies—"do not change designs according to destinations and maintain design consistency (in short, positively making use of design as a weapon for design identification and pursues Standardization strategy)"; the U.S. companies—"do not change designs according to destinations and do not place importance on their consistency (in short, pursues Standardization strategy yet do not make positive use of design as a weapon for brand identification)."

The following are the cross-tables of decision-making style and design strategy (See Chart 7 and 8). Firstly, when we focus on the relations between degree of design consistency and decision-making style, no correlation is seen between degree of design inconsistency and indicator 1, 2 and 3. On the other hand, indicator 4 seems to have a correlation with design inconsistency because the higher consistency is, the more centralized the authority for decision-making is. In Europe, where the consistency is the highest, the authority is centralized to top executive. Meanwhile, in the U.S., where the consistency is the lowest, the authority for decision-making is diversified to general public in the market (Japan is intermediate level between Europe and the U.S.). At the same time, we should not overlook that the higher consistency becomes, the more criteria for decision-making gradually changes from implicit knowledge such as human sense to formal knowledge such as guidelines.

Secondly, when we focus on the relations between standardization/adaptation strat-

Chart 7 Relations between Degree of Consistency and Decision-Making Style

	Inconsistent ◀ 〈the U.S.〉	〈Japan〉	▶ Consistent 〈Europe〉
1. Frequency of decision-making	Intermediate (formal: high, informal: intermediate)	High (formal: low, informal: high)	Low (formal: high, informal: low)
2. Diversity of decision-making members	Intermediate	High	Low
3. Number of members	Intermediate	Large	Small
4. Criteria for decision-making	Clinic survey	Consensus Guidelines	Top-down approach Guidelines

Chart 8 Relations between Standardization/Adaptation Strategy and Decision-Making Style

	Adaptation strategy ◀ 〈Japan〉	〈the U.S.〉	▶ Standardization strategy 〈Europe〉
1. Frequency of decision-making	High (formal: low, informal: high)	Intermediate (Formal: high, informal: intermediate)	Low (formal: high, informal: low)
2. Diversity of decision-making members	High	Intermediate	Low
3. Number of members	Large	Intermediate	Small
4. Criteria for decision-making	Consensus Guidelines	Clinic survey	Top-down approach Guidelines

egy and decision-making style, indicator 4 seems to have no correlation with type of strategy. On the other hand, indicator 1, 2 and 3 seem to have correlations. In the regions, where adaptation strategy is taken, frequency of decision-making, the number of decision-making members and diversity of the members generally tend to increase. In fact, in Japan and the U.S., where adaptation strategy is taken, companies intend to reflect a variety of discussions and more information in the design by involving a great number of people in decision-making processes. In contrary, in Europe, where standardization strategy is taken, companies intend to reduce risks that design is affected by opinions of others than design department by limiting frequency of decision-making, the number of members and diversity of members. This is because they think that in the end nobody but designers know designs.

As seen in the above, Japanese and the U. S. automotive companies can reflect a lot of opinions in their designs (Adaptation Strategy) because decision-making takes

place frequently and the members for decision-making are diversified and many. In contrary, European companies can make decisions by their designers and for their design (Standardization Strategy), because the members for decision-making are not so many and diversified although the frequency of decision-making is high. On the other hand, when European companies make decisions, they can ensure a certain degree of design consistency because the authority for decision-making is centralized to top executives and also guidelines are used as criteria. In Japanese companies, although the authority for decision-making is not as centralized as in European companies, it is limited to a certain extent and the guidelines are used as criteria. Therefore, they can ensure a certain degree of design consistency. In contrary, in the U.S. automotive companies, the authority for decision-making is centralized but decision is made according to general public in the market (Clinic survey). Therefore, the designs tend to be inconsistent.

4.2 Electric Companies

In this chapter, we will look at the relations between decision-making style and design strategy in electric companies.

The following is the summary for characteristics of decision-making style of electric companies in each region. As for Japanese companies, characteristics of decision-making style are 1. Frequent decision-making (formal: low frequency, informal: high frequency), 2. Diversified decision-making members, 3. Large number of decision-making members, and 4. Criteria for decision-making are consensus (with stronger influence of Sales departments compared to other regions). In contrary, characteristics of decision-making style of European companies are 1. Frequent decision-making (formal: high frequency, informal: low frequency), 2. Homogeneity of decision-making members, 3. Limited number of decision-making members and 4. Criteria for decision-making are guidelines and top personnel on the front-line (product manager). As for South Korean companies, characteristics of decision-making style are 1. Low frequency of decision-making (formal: low frequency, informal: intermediate frequency), 2. Homogeneity of decision-making members, 3. Limited number of decision-making members, and 4. Criteria for decision-making are top-executives and guidelines.

Meanwhile, the design strategies of electric companies in each region are as follows: Japanese companies—spanning from "not seeking design consistency within product categories yet each design is to be non-distinctive" to "seeking design consistency within product categories yet each design is to be non-distinctive"; European companies—"seeking design consistency within product categories and each design to be distinctive"; South Korean companies—spanning from "seeking design consistency within product categories yet each design is to be non-distinctive" to "not seeking design consistency within product categories yet each design is to be distinctive" (See Chart 4).

The following are cross-tables of decision-making style and design strategy (See Chart 9 and 10). Firstly, when we focus on the relations between degree of

Chart 9 Relations between Degree of Consistency and Decision-Making Style

	Inconsistent ◀ 〈Japan〉	〈South Korea〉	▶ Consistent 〈Europe〉
1. Frequency of decision-making	High (formal: low, informal: high)	Low (formal: low, informal: intermediate)	High (formal: high, informal: low)
2. Diversity of decision-making members	High	Low	Low
3. Number of members	Large	Small	Small
4. Criteria for decision-making	Consensus	Top-down approach Guidelines	Top-down approach Guidelines

Chart 10 Relations between Degree of Design Distinctiveness and Decision-Making Style

	Non-distinctive ◀ 〈Japan〉	〈South Korea〉	▶ Distinctive 〈Europe〉
1. Frequency of decision-making	High (formal: low, informal: high)	Low (Formal: low, informal: intermediate)	Low (formal: high, informal: low)
2. Diversity of decision-making members	High	Low	Low
3. Number of members	Large	Small	Small
4. Criteria for decision-making	Consensus	Top-down approach Guidelines	Top-down approach Guidelines

design consistency and decision-making style, correlations are seen between degree of design inconsistency and all of indicators 1 to 4. As for indicator 1, the total frequency of informal and formal decision-making is not correlated with design inconsistency. However, when looking at the difference between informal and formal decision-making, we can find that the lower frequency of informal decision-making becomes, the higher degree of consistency becomes. Also, as for indicator 2, 3 and 4, in the regions where degree of consistency is high (Europe, followed by South Korea), the number of decision-making members is small, the authority for decision-making is highly centralized and the members are homogeneous. Meanwhile, in Japan, where the consistency is the lowest, the number of decision-making members is large, the members are highly diversified and the authority for decision-making is diversified to a lot of members (because of decision-making by consensus).

Now, we should note that "top" in "top-down approach" has different meanings between Europe and South Korea. While "top" means CEO in South Korea, it means

product manager (brand manager) in Europe. As South Korean electric companies develop variety of products, in order to maintain the consistency of the products, they have to make decisions across departments. Therefore, they need to centralize the authority for decision-making to CEO. In contrary, European electric companies do not develop so many kinds of products. Therefore, they can ensure the consistency by centralizing the authority only to top personnel on the frontline.

Secondly, when we focus on the relations between degree of design distinctiveness and decision-making style, correlations are seen between degree of design distinctiveness and all of indicators 1 to 4. As for indicator 1, the lower frequency of informal decision-making becomes, the higher degree of distinctiveness becomes. Also, as for indicator 2, 3 and 4, in the regions where degree of distinctiveness is high (Europe followed by South Korea), the number of decision-making is small, the authority for decision-making is highly centralized and the members are homogeneous. Meanwhile, in Japan, where the distinctiveness is the lowest, the number of decision-making members is large, the members are highly diversified and the authority for decision-making is diversified to a lot of members (because of decision-making by consensus).

As mentioned above, in Japanese electric companies, formal decision-making takes place less frequently. However, the design tends to lose its distinctiveness while a variety of opinions come out due to high frequency of informal decision-making, high diversity and a large number of members for decision-making. Also, there is a tendency that the design becomes non-distinctive and inconsistent, because of decision making by division, stronger influence of sales department and guidelines without substance. On the other hand, in European companies, the frequency of formal decision-making is high, but that of informal decision-making is low, and the decision-making members are neither diversified nor many. Therefore, their designs rarely lose its distinctiveness. Moreover, when they make a decision, guidelines are well-developed and utilized, and also product managers lead the decision-making. Therefore, they can ensure the distinctiveness and consistency in the design. Also, in South Korean companies, although the frequency of informal decision-making is intermediate, the number of decision-making members is small and they are homogeneous. Therefore, there is low risk that the design loses its distinctiveness. Moreover, when they make a decision, guidelines are well-developed and utilized, and also top executives lead the decision-making. Therefore, in addition that the design becomes distinctive, they can ensure the consistency in the design of particular products.

5. Conclusion

Here, we clarify the results revealed in the above analysis (5.1 outline of analysis results), describe their contributions to previous studies (5.2 significance of the analysis results), and discuss the limitations of the present study.

5.1 Outline of analysis results

In this study, we clearly demonstrated the relationship between style of decision-making and type of design strategy. In addition, we clearly showed which of the four elements that make up decision-making style are related to which type of design strategy. (See Chart 11.)

Upon reexamination of the findings, we noted, firstly, that the element related to the degree of design consistency is (4) "decision-making criteria." The results relating to (4) were the same for the automobile business and the electric company. We concluded that if the authority for making decisions is dispersed, or if the criteria for making decisions are unclear, it is easy for "noise" to enter the decision-making process, inevitably resulting in a tendency for variability in the design. On the other hand, with respect to the other three elements-(1) "frequency of decision-making," (2) "diversity of decision-making members," and (3) "number of decision-making members"—the results of the automobile business and electric company tend to differ. Consequently, the correlation between indicators (1) to (3) and degree of design consistency may only just be apparent. In this study, we could not verify a cause-effect relationship between them.

Next, we found that three elements of decision-making were related to design standardization strategy and adaptation strategy-(1) "frequency of decision-making," (2) "diversity of decision-making members," and (3) "number of decision-making members." Greater values for these elements result in greater diversity and quantity of information, thus ensuring that decisions have a better fit to the adaptation strategy. Finally, we found that all four elements relate to design distinctiveness. A lower frequency of decision-making and a smaller and more homogeneous group of decision-makers result in fewer competing opinions, thus making it more likely that the design will be distinctive. Furthermore, a clear decision-making authority decreases the likelihood that "noise" will enter the decision-making process, which also increases the chances

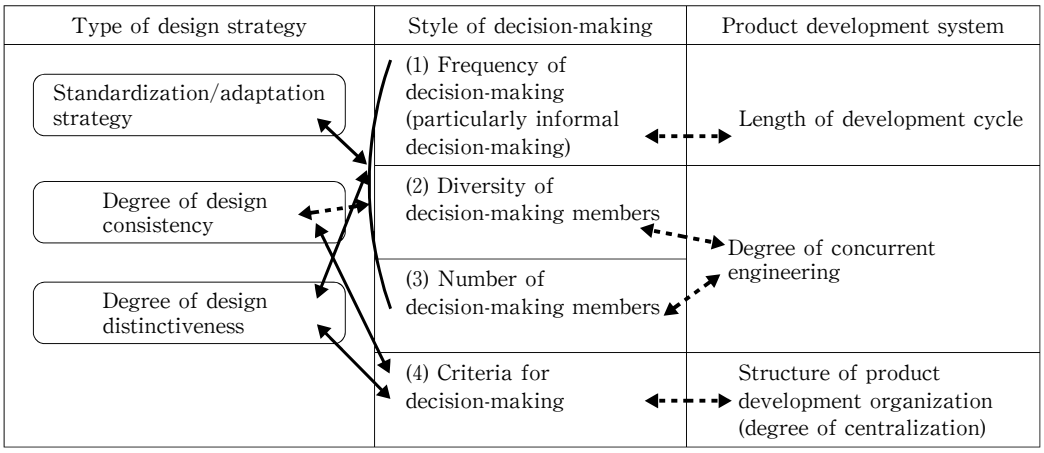

Chart 11 Summary of analysis results

of distinctiveness.

Here, we would like to briefly describe another matter noted in the course of the analysis, that is, the relationship between decision-making style and product development system. We noted from our survey that the style of decision-making may be influenced by the product development system. First, the frequency of decision-making may be related to the length of the product development cycle. In fact, we have observed, as a general trend, that the longer the development cycle of a business, the higher the frequency of decision-making. Next, we noted that the diversity and number of decision-making members may be related to the degree of concurrent engineering, and in fact observed that businesses pursuing concurrent engineering tend to have a higher number and a greater diversity of members involved in decision-making. Finally, we noted that the criteria for decision-making may be related to the structure of the product development organization (e.g., the relative standing of the design department within a company). However, since this question falls outside the main scope of our study, we only mention it as a hypothesis.

5.2 Significance of analysis results

The implications that can be drawn from our results can be broadly classified into two types—theoretical implications and practical implications. We describe these in order below.

5.2.1 Theoretical implications

One of the theoretical implications of this study concerns product development study. Until now, product development theory has mainly classified product strategies from the perspective of technology, and evaluated their effectiveness in those terms. In recent years, however, even manufacturers have started to find it difficult to explain differences in competitiveness between businesses solely in terms of technology differences. For example, if we looked only at the product development capabilities (speed, manufacturing quality, cost) of European and Japanese automakers, we would expect to see a substantial difference in the profitability of these two groups. The fact is, however, that the gap in profitability is not very large at all. The fact that the difference in product development capabilities is not reflected in profitability may well be because our traditional technology perspective has prevented us from seeing certain trends. More specifically, the reason behind this feature may lie with the factors “design” and “brand,” which have been lumped together under the label of “other” factors in previous studies. In the present study, we aimed to illuminate these hidden elements, to classify product strategy from the perspective of design, and to pursue research to verify this new approach. Although we have not analyzed the relationship between design and profitability in the present survey, we believe we have provided some solid contributions towards research that can verify this relationship.

Another theoretical implication of this study concerns TMT research. Although we clarified the relationship between type of design strategy and style of decision-making in this study, the indicators relat-

ing to style of decision-making were derived from TMT research. In view of this, no new indicators were included in the explanatory variables themselves. However, the performance variables and their unit of analysis in this study differ from those of previous TMT research. In particular, previous TMT research considered their unit of analysis to be one-time (or individual, independent) decision-making. In contrast, this study considers decision-making to be continuous, and designates the overall decision-making process as the unit of analysis. Thus, in this study, although we used the indicators of previous TMT research, our object of analysis differed from that of conventional studies. As a result, we believe that we have been able to show the applicability of TMT research. This finding can be considered the contribution of the present study to the field of TMT research.

5.2.2 Practical implications

In the present study, we compared decision-making styles of businesses in Japan, America and Europe and found an essential difference between the three regions. From this result, we conclude, for example, that refining the Japanese style of decision-making would not necessarily result in a transformation to a European style of decision-making. Since the systems are not continuous in nature, the European style of decision-making cannot be regarded as an extension of the Japanese style of decision-making. Furthermore, we clarified that these kinds of differences in decision-making style are closely related to the nature of design strategies (or management strategies). In view of this, refining the Japanese style of decision-making might result in closer adherence to the strategic goal of "creating a design that contributes to global mass-market sales," but not necessarily to the strategic goal of European businesses-"creating a design that emphasizes brand power."

Accordingly, in the future, when Japanese businesses focus on developing premium product brands, such as Toyota's Lexus, it may be necessary for them to radically change their decision-making mechanisms. When the cause of an issue that arises is superficial, it is possible to resolve the problem by a superficial means. However, when the cause of the problem is rooted in an essential element of the system, it is not possible to resolve the problem without reviewing the system in its entirety, from the ground up. In view of the fact that the decision-making style of a business is very likely to be closely related to the nature of the product development system, as described in 5.1, it is probably difficult to make any such necessary change in isolation. Therefore, to successfully develop a premium brand it is probably necessary to create a product development organization that is independent of and separate from existing development systems.

5.3 Limitations of this study

The limitations of this study lie in the fact that it only compares models used to represent the Japanese, American and European styles of decision-making, and that it does not compare the precision of decision-

making within each model. That is, the main limitation is that no analysis was performed on the conditions that distinguish between "winners" and "losers" within a particular model of decision-making style. Thus, in the future we plan to conduct a comparison within models in order to further elucidate the characteristics of an optimal decision-making style.

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