

# Research on the Latest Decision-Making Style in Automobile Design Development

Noboru Koyama<sup>1</sup>, Mikio Yamashita<sup>2</sup>, Satoshi Yoshida<sup>3</sup>

<sup>1</sup> *Advanced Institute of Industrial Technology, Japan, n-koyama@aiit.ac.jp*

<sup>2</sup> *Kyoto Seika University, Japan, m-yamashita@maia.eonet.ne.jp*

<sup>3</sup> *Advanced Institute of Industrial Technology, Japan, yoshida-satoshi@aiit.ac.jp*

**Abstract:** Prior research has looked at the relationship between decision-making style and design strategy in the automotive industry. Table 1 shows the features derived from the prior research of automobile manufacturer's decision-making styles in Japan, Europe, and the U.S. The decision-making style of Japanese companies differs from that of European and American companies, in that (1) the frequency of decision-making is higher, (2) there is a greater diversity of members in the decision-making process, (3) the number of members involved in decision-making is larger, and (4) group consensus and guidelines are used as decision-making criteria. However, there have been changes in recent years in so called 'panel evaluation' methodology, with moves to include the best features of the Japanese and European/US models. This paper also contains the results of analysis comparing these to Korean manufacturers, which have been creating an increased presence in global markets in recent years.

**Keywords:** Design management, design decision-making, panel evaluation, design screening

## 1. RESEARCH BACKGROUND (OVERVIEW OF PRIOR AND LATEST RESEARCHES)

Prior research (Reference 1) focused on the decision-making styles of the automotive industry, and examined the differences between Japan, Europe and the U.S. In particular, it used "1. Frequency of decision-making", "2. Diversity of members", "3. Number of members" and "4. Criteria for decision-making" as common indicators in identifying regional differences (see Table 1). An overview of this research is provided as below.

With regards to the first indicator, "frequency of decision-making", Japan is the highest, with the

U.S., the second, and Europe, the least. One characteristic of Japanese automotive companies is that the frequency of decision-making in formal situations is low, but that of decision-making in informal, deliberation situations is high. European automobile companies have the highest frequency of formal decision-making, because their development periods are longer than those of the other two regions.

With regards to the second indicator, “diversity of members”, too, Japan is the most diversified, followed by the U.S., and then, Europe. In Japanese automobile companies, many departments participate in decision-making, such as Engineering, Planning, Sales, and Accounting. Furthermore, the members participating in decision-making are not limited to the leaders responsible for those departments. In contrast, in U.S. automobile companies, several design executives and top management, as well as representatives from sales and several other departments, participate in the decision-making. The decision-making members represent a relatively wide variety of organizations, but they hail from a notably narrow section of company hierarchy. Only managers responsible for each department participate in meetings. In contrast to Japan and the U.S., in European automobile companies, decisions are made mainly by directors in charge of design and development-related top executives, while sales personnel seldom participate in meetings.

**Table 1:** Features of Decision-Making Styles of Automobile Companies in Individual Regions

Title 1	Japan	Europe	US
1. Frequency of decision-making (meetings / clinics)	Formally 2-3 times (however, there are approximately 10 informal deliberation meetings and preliminary study meetings). Clinics are divided into in-house and external, and are performed for each screening (with sample sizes of approximately 100 members).	There are 3 or 4 decision-making sessions (due to long development periods). Clinics are performed routinely, roughly twice.	There are 3 or 4 decision-making sessions by top executives. 4 or 5 clinics are also always held, with large sample sizes (1,000 or more members).
2. Diversity of decision-makers	Related personnel from many departments, such as Engineering, Planning, Sales, and Accounting participate (not all participants are top department personnel).	Limited to design executives and top management and development executives, with almost no participation by sales personnel.	Design executives, several top management executives, and sales and other certain personnel.
3. Number of decision-makers	Many (several dozens)	Few (only a few people)	Moderate number (approx. 10 people)
4. Decision-making criteria	Consensus by many top management executives and related executives (guidelines are also used).	Reviewed by top executives at last stage (Planning / Design / Brand executives are influential).	Chosen based on clinic results. Design executives have broad decision-making authority, while top executives only confirm decisions.

With regard to the third indicator, “the number of members”, again, Japan is the largest, followed by the U.S. and Europe. In Japanese automobile companies, a large number of members

participate in meetings (for example, more than 40 personnel participate in the meeting in case of Toyota). In contrast, the number is moderate (approx. 10 members) in U.S. automobile companies, and small (only a few members) in European companies.

With regards to the fourth indicator, “decision-making criteria”, Japanese automotive manufacturers use a collegial system (including use of guidelines), while U.S. automotive manufacturers place more importance on the results of *clinic* surveys (targeted potential user-focus groups testing of designs currently under development, gathering their impressions and opinions) conducted in advance. The U.S. is home to many immigrants, with a diversity of races, values, and cultures, so American companies create manuals and promote transparency in their design decision-making systems, ensuring that they are not dependent on individual skills. More specifically, they conduct preliminary marketing research before making design decisions, and make their choices based on the results of this research, enhancing transparency in decision-making transparency. Unlike Japanese and U.S. companies, European automotive manufacturers strongly tend to first focus on brand consistency and continuity, so design managers and design directors lead discussions and make decisions on the quality of designs, based on guidelines established to ensure this consistency and continuity.

After summarizing the above research results, we also carried out interviews and investigated the design decision-making processes of Korean automobile manufacturers, whose presence has rapidly grown. An overview of this research is provided as below. (See Table 2)

**Table 2:** Features of Decision-Making Styles of Korean Automotive Companies

Frequency of decision-making (meetings / clinics)	As with European and U.S. manufacturers, roughly 3 to 4 times, with approximately 10 design screenings.
Diversity of decision-makers	After sufficiently narrowing down at design centers, decisions are made primarily by design executives invited from Europe and the U.S.
Number of decision-makers	Small number to moderate number
Decision-making criteria	Ultimately decided by the authority of the president, based on design executive criteria
Other (strategy, features, etc.)	<ul style="list-style-type: none"> <li>* Korean manufacturers are refining development strategies with Toyota as their largest target</li> <li>* The decision-making process is not as simple as that of European and U.S. companies, but compared to Japanese companies it seems to be less swayed by informal discussions and interpersonal relationships</li> <li>* The Korean people’s mentality of respecting swift action and individuality forms, for better or for worse, the foundation for speedy decision-making</li> </ul>

Based on these study results, it would be fair to characterize Korea automobile manufacturers’ design decision-making style as lying somewhere between Western and Japanese styles, a new approach to decision-making which takes the good points of both styles. This approach can be said to come from the fact that as the industry developed, it actively adopted technology and know-how from both Japanese and Western manufacturers, resulting in the establishment of a style which kept the strengths of both.

## **2. RECENT TRENDS IN DESIGN DECISION-MAKING**

### **2.1. Trends in the Design World**

Ever since the collapse of Lehman Brothers, which had a tremendous economic impact, many companies in Japan and around the world have been forced to streamline and reorganize their companies. The development of distinctive and original products has become an urgent challenge for manufacturers. In particular, competitive superiority in design is an important key to increasing product value, together with the increased competitiveness created by reducing costs.

As companies around the world struggle in their efforts to survive, Toyota, leader of Japanese automotive industry, launched a new regime in 2012. This was realized based on the company's desire to make even more sweeping design changes and create original designs that would stand at the forefront of the global automotive world. The company has overhauled its organizations and the holders of design executive positions, actively appointing young designers, and started to adopt a new decision-making style, shifting to a model in which design decisions are made by a small number of decision-makers. As shown in the survey results table above, these efforts of Toyota can be called reforms aimed at achieving the strengths of European, U.S., and Korea companies, such as their rapid decision-making.

### **2.2. New Approaches to Conventional *Panel Evaluations***

The *panel evaluation* system has become an essential part of Toyota's decision-making process, with the system being repeatedly improved, but this has also had negative effects. One, for example, is that the company has shown a tendency to aim for the *neutral*. One aspect that has been pointed out is that there is a tacit panel evaluation 'pass' score for approval, and committee members (executives) participating in the design decision-making discussions are influenced by such scores. Driven by the desire to change this approach, it was decided as the inaugural project of the new system to change the panel evaluation approach used in the development of the new Model 86, which held a special place in the heart of the new president.

### **2.3. The Project 86**

We verified the new decision-making method used in the development of the new Model 86, Toyota's first sports car in a long while.

The background behind the development, and thoughts of the chief engineer (the person responsible for overall management of development) are described as below.

As Japan's automobile industry has matured and diversified, sports car model has been discontinued one after another. The same has been true for Toyota. Lagging sales of the MR-S and Supra resulted in the models no longer being profitable, and, spurred by the recession, production was discontinued. For a time, Toyota had no sports car models. However, sports cars have ardent fans, and popularity remained high for rare used sports cars and foreign cars. Young people are losing their interest in cars, and Toyota, in order to restore the allure and dream of cars, believed that it was important to propose new styles, which would pursue the "fun to drive" attraction of cars to its ultimate extreme, while at the same time responding to environmental and other demands of the day. They also believed that the key to the success of the sports car would be in creating new added value, such as by creating environments and opportunities that would provide greater joy to users. Toyota also had a history of famous FR sports cars that even today maintain an overwhelming level of popularity, such as the S800, the 2000GT, and the 86 (original model), and it heard the voices of those calling for these cars to be rolled out again.



**Figure 1** Previous Model 86



**Figure 2** New Model 86

In particular, since the launch of the original 86, users and various tuning vendors have been developing tuning parts. Their efforts helped make the model a classic, and one of the few sports cars that is truly user-centric. The chief engineer decided to bestow the name of "86" on the newly developed sports car model, carrying on the spirit and history of the sports car.

The chief engineer, wanting to develop a sports car with the spirit of the good old days, but meeting modern needs through cutting-edge technologies, decided to go back to basics and change the car design process from the ground up. His goals were twofold. "Creation of a car based not on numbers, but on pursuing the ultimate in fun," and "a level of individuality that creates strong opinions, both pro and con, instead of an automobile project based on internal consensus."

#### **2.4. New Movement in the Design Division**

The design division followed the chief engineer's lead, deciding to greatly overhaul their own design decision-making process. They were led by a conviction that when developing a sports car, the standard consensus-driven decision-making process, in which the tastes and opinions of many people are reflected, would prevent the creation of individualistic designs, the achievement of the designers' ideals, and the production of a design that would surprise people at a visceral level. They decided to select "sports car *panelists*" for their internal *panel evaluation* (a system that engages employees who were not involved in development but matched to customer characteristics to evaluate designs of vehicles still in the development phase), get feedback that closely reflected the opinions and tastes of potential customers, and make design decisions with a very limited members. They created a list of sports car drivers inside the company, had them give their evaluations of and comments regarding sketches and design prototypes added them to the *general panel evaluation* results, and reported the results to the design deliberation committee. The model positively evaluated by this special panel differed completely from that selected by the general panelist evaluation, and the scores of the two groups clearly diverged. In the end, the model (design) which was positively evaluated by the sports car panelists was selected as the production model, and, as hoped for, the car received a lot of buzz for its unique design.

### **3. BIRTH OF A NEW PANEL EVALUATION SYSTEM**

Amidst the challenges for recovery from the collapse of Lehman Brothers and the struggles of the automotive industry for survival, Toyota also faced design-related difficulties. When the company introduced the Lexus brand, the brand's designs had a tremendous impact worldwide, but in recent years, it had been chased closely by the designs of European and Korean manufacturers, and its superior position had become precarious. The engineering division found

itself in the same predicament as the design division. In particular, the novelty and originality that had been so pronounced when the Lexus brand was launched had weakened. The top executives turned the Lexus brand into an internal split-up company, and decided to clearly separate it from the Toyota brand, in order to ensure its position of superiority, and exclusively work on developing designs and technologies that would be at the forefront of the global automotive industry.

The design decision-making processes used by Japanese automotive manufacturers such as Toyota was to present the results of panel evaluations using a seven point scale to executives at deliberation committee meetings, using the results as reference data for decision making. Interviews with Toyota showed that although these evaluations were called 'references', in reality, depending on the model and type, there were required threshold scores which had to be met for the vehicles to be approved. In other words, the panel evaluation results, which were supposed to be nothing more than reference data, were functioning as an implicit consensus criterion.

Our latest interviews found that scores have not been reported in design deliberation committee meetings in the past few years (especially since the head of the design division changed). However, the panel evaluations themselves are still carried out, and related divisions analyze the panel evaluation results, using them for reference, and the results are used in opinion summaries by each division. Nonetheless, panel evaluation results are no longer reported as scores in official design deliberation committee meetings, instead, only opinions and comments from the evaluations are presented. Also, with the conversion of Lexus into an internal split-up company (as Lexus International), deliberations are held independently, and decisions are made by small groups, with 10 or fewer executives in attendance. Compared to the past, when almost 50 related executives would attend, as well as the respective managers, and consensus would be sought within this large group, the current Japanese decision-making style has clearly shifted to a more Western one. Because the vehicles designed using this new approach have yet to be launched, time has yet to tell whether this approach is appropriate, but looking at the distinctive Toyota designs shown at recent motor shows, it is clear that tremendous changes are taking place.

#### **4. CONCLUSIONS**

Research performed since 2009 into design decision-making has found that (1) Japanese decision-making in design development is changing from a model in which consensus is reached by members from a large number of related divisions to a more European and American model in which decisions are made by a small number of top management, and (2) because of its effectiveness, the panel evaluation system is still being used, but the reporting of scores is seen as having a negative impact on decision-making, and is being phased out. The method of reporting scores can appear to be a method of providing what seems to be objective data, but it lacks rigor with regards to the meanings of scores and the potential for score manipulation, and indicates that concerns about the reliability of score results have not been dispelled.

The car models developed with Toyota's new method have not yet been launched, so the efficacy of the method cannot be verified, but once models featuring designs decided on with this new decision-making style are released into the market and when it becomes possible to confirm how they have been evaluated, we would like to compare and verify Japanese, European, American, and Korean decision-making styles again, including the verification of this new evaluation system.

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## BIOGRAPHY

### 【Noboru KOYAMA】

Noboru Koyama is a professor, Master Program of Innovation for Design and Engineering, Advanced Institute of Industrial Technology, Tokyo Japan. He was a Specially Appointed Professor, International Design Management Research Center (IDMRC), Kyoto Institute of Technology(KIT) in 2009-2010. He received M.I.D. from Pratt Institute, New York. He was an Assistant Director of Toyota Commemorative Museum of Industry and Technology, and was an Executive Manager of Caltex Design Research, USA. He was engaged in designing automobile design at Toyota Motor Corporation after he graduated from Chiba University. He is a member of Japan Society of KANSEI Engineering (JSKE), Japanese Society for the Science of Design(JSSD) and Japan Industrial Designers' Association(JIDA). His current interests are Design Management and Communication Design.

### 【Mikio YAMASHITA】

Mikio Yamashita graduated from Chiba University in the faculty of engineering. Following his graduation in 1973, he had built his career in SEIKO, a leading watch/clock vender, and SHARP, one of the global electronics manufacturers, as a product designer, design manager or strategic marketing research manager for some 30 years. After leaving SHARP, he established a consulting firm to provide design and marketing services to Japanese and foreign companies. At the same time, he has also been teaching design management at several universities including Takarazuka University, Kyoto Institute of Technology and Kyoto Seika University as a professor or lecturer up to today. He is a member of Japan Society of KANSEI Engineering, Japanese Society for the Science of Design and Japan Academy of Business Administration.

### 【Satoshi YOSHIDA】

Received the PhD in 2005 from the University of Tokyo and afterward, He worked for Obayashi Corporation as an architect from 1990 to 2001. After that, he studied Architecture and Management of Technology and received MS at Columbia University in 2002, and PhD at the University of Tokyo in 2005. Then, he had been an associate professor at the University of Tokyo until 2008, and has been a professor at Advanced Institute of Industrial Technology. He is a member of JSKE, AIJ, JSSD, and so on.