

Research on Panel Evaluation Methodology in Product Design Development

- Key Differences among U.S., European, and Japanese Automakers -

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1. Research Background

Today, it is widely accepted that product design plays a vital role in creating product value. Because design factors can significantly affect product sales, they carry considerable weight in the determination of corporate performance and brand value. Consequently, approaches to both improvement in the value of product designs and assurance of their ability to satisfy customer needs are increasingly regarded by manufacturers as major challenges. In effect, failure to properly conduct evaluations or decision-making on their deliverables during design development could lead to erosion of not only product value but also brand value and, ultimately, business performances. Leading manufacturers have been aggressive in seeking to eliminate the potential for such failure by modifying their methods or processes for evaluation and decision-making. However, universal methodologies or processes for eliminating this failure potential and increasing success rates have yet to be established, mainly because business confidentiality concerns dictate that product development is rarely disclosed in detail to the public, thereby restricting opportunities for open discussion as to the validity of these methodologies or processes.

2. Purpose of the Present Research

As shown in the figure below, panel evaluations and clinics are conducted, internally or externally, several times in each development phase, as part of common corporate practice. However, as stated earlier, evaluation criteria and implementation methods differ among corporations. Whether panel evaluation results are incorporated into decision-making or merely used as reference information draws a management demarcation line – the decision as to whether or not to eliminate the risk of error in processes of evaluation and decision-making. Looking closely into this factor, this paper further examines and analyzes the real picture of panel evaluations in order to categorize the purposes of panel evaluations and methods for satisfying these purposes. It is also designed to

identify the respective strengths and weaknesses of each implementation method, and to identify problems in these methods and their causes. It is our hope that the findings of this research will contribute to the establishment of hypotheses for more advanced methodologies, or a standard methodology, which will be discussed as the subject of a proposed future comprehensive study.

In this study, we have conducted comparison research on panel evaluations made by major corporations in the United States, Europe, and Japan with the aim of providing research materials for the hypotheses as a first step toward subsequent research activity.

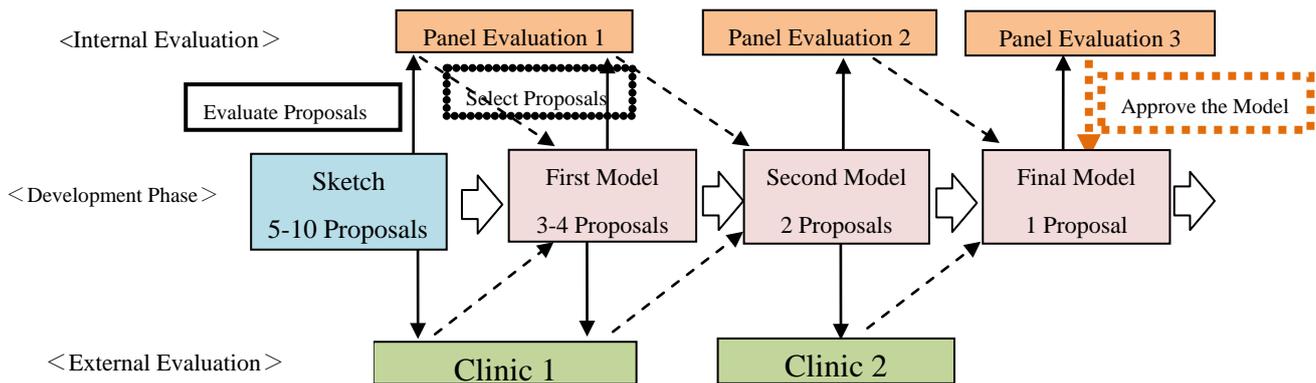


Figure 1: Evaluation Flowchart

3. Types of Panel Evaluation in Japanese Corporations and their Roles and Effects

Decision-making process in product design development can be generally divided into “Concept Decision,” “Proposal Selection (two- and three-dimensional product designs),” and “Final Design Decision,” although the process varies by country and corporation. This decision-making involves a number of persons in different positions, ranging from top management to product design managers. In the United States and Europe, decisions are generally made by a relatively limited number of managers.

3.1 Panel Evaluation’s Roles in Decision-making in Concept Decision

In Japanese corporations, panel evaluations in Concept Decision typically use sketches, scale models, and/or full-size models to elicit panelists’ responses concerning future directions for product styles and designs, with as many as four to five design proposals being presented. Additional evaluation items may be added to basic evaluation items as needed, or they may be changed depending on the type of vehicle. Concept Decision provides opportunities to obtain information for proposal selection from panelists, and plays an important role in deciding the future directions of product styles and designs.

3.2 Panel Evaluation’s Roles in Decision-making in Proposal Selection

During Proposal Selection, two full-size models are usually proposed, with the expectation that a single preferred design will emerge based on the panel evaluation results. As this evaluation process incorporates a perspective on whether or not a model is marketable, questions to panelists include evaluation grades and the reasons for model grading, in order to use the data obtained for proposal selection. This development phase is regarded as an important step in selection of a final design.

3.3 Panel Evaluation's Roles in Decision-making in Final Design Decision

Generally, in this development phase, one proposal has already been selected as the final design. Panel evaluation results are, therefore, often utilized to confirm design quality, such as whether or not the proposal still maintains the concept chosen in Proposal Selection and whether or not such a product design is sufficiently marketable.

4. Use of Panel Evaluation and Clinic System and their Weight in Decision-making

In the United States and Europe, especially among U.S. and US-financed European corporations, clinics have been extensively implemented during design development phases in order to provide opportunities for collection of evaluation data and opinions from potential customers on models under development. The results of clinics play a crucial part in design selection and decision-making. In Japan, following this trend in the United States and Europe, clinics have also been internally or externally conducted in recent years. There are two major types of corporate use of clinic results in Japan: incorporation of the results into decision-making, and use of the results as reference information. There are a larger number of cases where corporations are successful with the latter type of use. Although the two types may appear to be similar, they bring significant differences to a decision-making structure.

4.1 Panel Evaluation and Clinic System among Japanese Automakers and their Weight in Decision-making

- (a) In the case of TOYOTA, the automaker has a reserve of over 100 registered panelists drawn from related departments. In response to progress in project development, these panelists make multiple evaluations of design models. The evaluation results are utilized by those in charge of design decisions as reference materials to assist in selecting models to be released to the market. These panelists are mainly from project departments, such as product project, domestic project, and overseas project. They usually have a solid understanding of vehicle concepts, and their evaluations are slightly future-oriented rather than based on current trends.

There are numerous cases where clinic results are regarded merely as reference data and the automaker does not always adopt the model with the highest evaluation score.

- (b) NISSAN owns and entrusts design evaluations to a specialist evaluation subsidiary that operates independently of the automaker. Its panelists comprise mainly outside citizens whose perspectives are more representative of Nissan vehicle owners, and they tend to make evaluations based on current trends. In most cases, the automaker takes account of the evaluation results in its design decisions from different perspectives, including cost-effectiveness.

4.2 Panel Evaluation and Clinic System among U.S. and European Automakers and their Weight in Decision-making

- (a) Since at least the early post-war period, clinic implementation has been widespread throughout the U.S. automobile industry as a routine component of the development process. Because U.S. manufacturers

set great store by evaluation results, models with high evaluation scores tend to be selected for manufacture. The upshot of use of this type of clinic system has been an increased number of models with no distinct style. There is also potential for such use to provide pretexts for reduced sales by obscuring who is really responsible for poor consumer response to a particular model. That said, it should be noted that domestic sales are top priority to U.S. automakers, whereas European and Japanese automakers also expend considerable resources on their overseas operations.

- (b) Although most European national-capital automakers have operated the US-originated Clinic System over recent years, their product development decisions are primarily based on their own development philosophies and brand values. Therefore, they tend to restrict use of clinic results to identification and/or verification of issues of which they have been unaware.

5. Summary - Comparison of Panel Evaluation Use Differences among the United States, Europe, and Japan

5.1 Japanese Style – Evaluation Results Used as Reference Data for Decision-making

Panel evaluations and clinic results are commonly regarded as reference information. It is not unusual for a proposal or model with the highest evaluation to be deliberately removed from further consideration, when making design decisions. TOYOTA regards evaluation results, especially those from external clinics, as reflective of its vehicle owners' evaluations only at the present time. Based upon the current trends revealed by the results, the automaker selects a proposal that is not the most highly evaluated but holds significant potential for high sales over a two- to three-year term. Details of this proposal are then discussed by a design assessment committee in order to make the final design decision.

5.2 European Style – Evaluation Results Used for Decision-making by US-financed Corporations

Design decisions are generally made by a limited number of executive officers. Clinic results are used to identify or confirm issues regarding their brand value and designs of which they had not been aware. Further research needs to be conducted for this area.

5.3 U.S. Style – Decisions Made Based on Evaluation Results by Most U.S. Automakers

Panel evaluations, especially clinics, are implemented every time a new vehicle is developed. Evaluation results are made to be clearly reflected in design decisions. U.S. automakers select panelists in a unique fashion; their panels comprise existing owners of the vehicle for which a new model is under development, together with owners of competitors' comparable models. In addition to evaluations, these automakers conduct Focus Group Interviews (FGIs) in order to collect a variety of questions and opinions concerning designs from participants and thereby clarify the strengths and weaknesses of the respective sketches and models presented, after which appropriate modifications are made to the designs. This method may appear totally logical but most of these panelists' comments are predicated on current trends and are not future-oriented. This preoccupation with present conditions is very expressive of US-style decision-making, and could also partly explain U.S. automakers' failure to be successful. However, further investigation of this topic is required.