Proposing A Model for the Formulation of Design Strategy

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Abstract: As more business organizations and governments are striving for enhancing their competitiveness in recent years, design innovation is also becoming a hot topic. Borrowed from the concept of business strategies, there were increasing discussions on the importance of design strategy and its impact on design innovation. However, we could barely found a few publications on the formulation of design strategy. Although many advanced companies must have their methods developed, these methods always remain inaccessible for outsiders out of confidentiality. It is obvious that excellent design strategy can lead to sustainable innovations and business success, thus the aim of this research is to propose a model for design strategy formulation, for the reference of business organizations that are still in lack of this experience. The literature on corporate strategy and its formulation will be examined for reference. Since the whole issue of corporate design strategy is too big to discuss in this paper, thus only the proposal of a model for strategy formulation will be touched. The implementation of strategy will be discussed in another paper, while this model can only be the validated later until it was adopted and the researcher was allowed to participate in the implementation process.

Key words: design strategy, strategy formulation, design innovations, scenario analysis, product life cycle analysis, image scale analysis.

1. Introduction

The fierce market competition in recent years had forced more and more business organizations to put design innovations higher in their corporate agenda. In a research result published in McKinsey Quarterly [4], they reported that more than 70 percent of senior executives globally rated innovation as one of the top three drivers of growth for their companies within three to five years, which indicated a pervasive awareness of the importance of innovation. Even European Commission also issued the "European design innovation initiative" [14], which is aiming at raising design awareness among European countries and driving design innovations to enhance the degree of customer satisfaction towards European products. Furthermore, famous economists Atkinson and Ezell [3] also published a book that call for a nation-wide awareness of innovations in the United States, which they pointed out to be the required driver for upgrading national competitiveness in economy.

In the field of business strategies, the well-known classics such as Porter's "Competitive Strategy" [27] had set tone for the importance and methodologies of business strategy for decades; followed by Kim and Mauborgne's "Blue Ocean Strategy" [17], which had brought some fresh perspectives up to this subject. Under such a well-established awareness and knowledge on the importance and methodology of business strategies, people in the business field not surprisingly can see the link between strategy and design innovation. In a more recent McKinsey Quarterly [10], they concluded that 42 percent of executives rated the integration between strategic objectives of design innovation with the core business strategy as one of their significant challenges,

which implies that there are yet more to be improved. In addition, there were but a few publications that provided guidelines for the formulation of design strategy. Although many advanced companies must have developed their own methods of design strategy formulation, these results surely have been seen as invaluable corporate intellectual properties and well kept inaccessible for outsiders. Therefore, this paper was set out to propose a model for design strategy formulation, mainly for the reference of those business organizations that are still looking for this kind of experience and could not get access to those existing and advanced ones.

Since corporate design strategy is such a big issue that cannot be discussed thoroughly in a paper like this, hence only a proposal of the model for strategy formulation will be touched herein. The implementation of formulated strategy will be discussed in another paper, while this model could only be validated yet later until it was adopted, and those who adopted it will allow the researcher to participate in their implementation process.

2. Design Strategy

In the special report "Get Creative!" on the August 2005 issue of BusinessWeek, Nussbaum [23] strikingly claimed that the "Knowledge Economy" was being eclipsed by the new "Creativity Economy", and he went on to point out that "Design Strategy" has began to replace "Six Sigma", and became the "Next Big Thing" of key business principle! In this report, stories of design strategy that led to successful innovations from "top 20 innovative companies in the world" were also presented to validate his view. In addition, Tim Brawn [7] of IDEO also echoed Nussbaum's view in raising a new hot topic called "Design Thinking", by pointing out that the way of thinking used in design can effectively transform not only products, but also services, processes, and even business strategies into their innovative evolutions!

2.1 Basic Concepts

2.1.1 Defining Design Strategy

In terms of basic concepts, the word "strategy" may be perceive through the following descriptions:

1. **Strategy is the comprehensive direction of power** [16] used for controlling situations to reach objectives.
2. **Strategy is a paradigm** [15], which provides clear and comprehensive principle to guide implementations.
3. **Strategy is a map to the future** [15] with present location, chosen destination, and beneficial routes to go.
4. **Strategy is a marriage of ends and means** [15] that shows the favorable way to reach the expected result.

To sum them up, design strategy is the vision, objectives, and policies that directing all design activities.

2.1.2 The Importance of Design Strategy

According to Mark Oakley [24], the correct choice of design strategy and its relevance to the business strategy is the most important issue. Companies without policy or direction often ended up with wrong directions. To reduce that risk, companies must identify their advantages and vulnerabilities through strategic formulation, that lead to the focus of efforts on the best opportunity and greatest likelihood of success.

2.2 Design Strategies and Corporate Strategy

2.2.1 Defining Corporate Strategy

A very popular definition of corporate strategy is "the determination of long term goals and objectives, the adoption of actions, and the allocation of resources" [11]. Another definition proposed by Andrews [1] was

that "Corporate Strategy" is the pattern of decisions that determines and reveals the business objectives, purposes or goals; that derives the principal policies and action plans, defines the range of business the company is pursuing, the kind of organization it intends to become, and the economic or noneconomic contributions the company intends to make. This is certainly the most comprehensive definition of all.

2.2.2 Relationship Between Corporate Strategy and Design Strategy

From the above definitions, corporate strategy is surely the guideline of activities in a company, whereas design strategy is a functional strategy under its guidance. In other words, corporate strategy is composed of many functional strategies, and defines the directions of these functional strategies including design strategy. This is the basic principle that regulates the relationship between corporate strategy and design strategy [13]. In the McKinsey Global Survey results of 2012 [10], they reported 42 percentage of surveyed executives said that integrating the strategic objectives of design innovation with the core business strategy is a significant challenge, which implies that this is an important issue and there were yet a lot to be improved.

Moreover, customer experience and interdisciplinary team had become hot topics in recent years. Product development teams are comprised of people from different backgrounds. Since successful product has to balance needs of various stakeholders inside and outside of the company, thus interdisciplinary team is the best solution for better designs. Therefore, product development teams may have to involve sales people, retailers, and customers. Also, it is helpful to make direct observations or conversations to end-users [8].

2.3 Examples of Design Strategy

2.3.1 Seven Narrow Strategy Windows

Kristensen [19] pointed out that there are seven narrow strategy windows that are not easy to pinpoint accurately, but once we can catch them, they will be able to help a lot in making products successful:

1. ***The User Interface:*** Design strategies have a lot to learn and gain from our users; we can well derive our design strategies from both ergonomic and psychological side of the users' interactions with our products.

    (1) ***Ergonomic User Interface:*** In searching for improving the easy-to-use aspect of design, there will be plenty of design strategies to be deduced. In the case of the Danish dental equipment producer Lennart Goof, they conducted an observation on dentists and came up with many startling design improvements.

    (2) ***Psychological User Interface:*** The psychological interactions between users and products can also be full of strategic opportunities. For instance, many users reveal their status, personal characteristics, or sense of belonging by the products they use, and thus seek for a unity among these products. This psychology was used by the lifestyle industry where the purchase of an exclusive cigarette lighter also becomes the motivation to buy a pen, briefcase, shirt or other high-status personal accessories.

2. ***Ready, Fire, Aim!*** With this strategic consideration, companies can cope with the uncertainty involved in innovations by testing the market with sequential products. For example, Swatch had won vast market segments by launching a variety of fashionable watches that positioned as "personal fashion accessories".

3. ***Lead Time and Degree of Innovation Trade-off:*** A similar strategy with the former one is to bring products to market as soon as possible at the expense of minimizing the degree of innovation, but mounting a more significant one by accumulation. Japanese are more inclined to adopt this strategy, whereas traditional Western method is to seek for significant changes between generations of a product with longer lead-time.

4. ***Think Different:*** Having a persuasive and well articulated vision on product design could be a powerful design strategy too. Since such an explicit vision can exert a strong guidance, and lead to a firm integrity of image. A famous example was Apple's "Think Different" vision that clearly exhibited in their product line.

5. ***Ecology and Back to Basics:*** The consumers' interest in environmental protection is so strong that being environmental friendly means positive image, and thus there are full of strategic opportunities. For instance, the hybrid powered Prius of Toyota had won significant appreciation in image for effective energy saving.

6. ***Sophisticated Eclecticism:*** Sometimes the eclecticism between different design principles can be a good strategy. For example, the post-modern designs were successful combinations between traditional aesthetics and new contexts that created a whole new wave in design. They seemingly had turned tradition upside down in terms of shape and color, but actually they had never abandoned the key traditional references.

7. ***Compatibility Drive:*** Maximizing the compatibility of product design can actually be an equivalent as maximizing market opportunities, whether in software, hardware, or even feeling. For instance, when we are shopping for household products, we always bare the holistic picture in mind, trying to pick up something that well fit into the whole. Under such a criterion, some product that designed to stand out from others might ended up with such criticism as 'looks good individually, but cannot fit into the interior of my house'.

2.3.2 Four User-Centered Product Design Strategies

Woudhuysen also listed four user-centered product design strategies as follows [33]:

1. ***Design Collaboration:*** The first strategy is to develop design collaboration with users. The collaboration here means quite differently from questionnaire survey, focus groups, etc. It means:

    (1) ***Direct Expressions:*** Users are not just joining passively but asked to write their future expectations.

    (2) ***Memory Associations:*** Asking users to give some metaphorical associations of their expectations.

    (3) ***Impression Drawings:*** Encouraging users to draw existing products according to their impressions.

    (4) ***Close Observations:*** Observe and record users' behavior in working, shopping, relaxing, or learning.

    (5) ***Narrative Stories:*** Asking users to tell narrative stories of the best and worst experiences they had.

2. ***National Historical Analysis:*** It is important to abandon stereotype images of foreign customers and seriously search for cultural values of the target country, remain open-minded in doing market research.

3. ***Future Perceptual Milestones:*** We need to go beyond common sense knowledge to identify people's perceptual highlights that will be able to catch their attention and affect their buying behaviors.

4. ***Time-Use Trends:*** Discovering customers' pattern of using their time can be a valuable asset in capturing the dynamics of their lifestyle and product opportunities in it. For example, for people with longer working hours, any product features suggest the ease of carrying and use at anytime will be appreciated.

2.3.3 Design Strategy of Bang & Olufsen

According to Palshoj, the design strategy of Bang & Olufsen has the following seven features [24]:

1. ***Authenticity:*** A faithful reproduction of the best sound and image.

2. ***Harmony:*** A good balance between functions, mode of operations and materials used.

3. ***Credibility:*** Every contact the company makes with customers has to demonstrate the highest credibility.

4. ***Relevance:*** Technology is for the benefit of people instead of taking itself as an end.

5. ***Essentiality:*** Design must be based upon a respect for man-machine relations.

6. ***Selectivity:*** Bang & Olufsen is destined to produce exceptional high quality and scarce products.

7. *Inventiveness:* Be the first to adopt the newest technology in creative and inventive ways.

2.3.4 Five Factors for Upgrading Design Quality

In the strategy of upgrading design quality, Clipson [24] pointed out that there are five factors to look after:

1. *Appropriateness of purpose, arrangement and materials:* Good design should fit for its original purpose.

2. *Integration of design:* Strategies to ensure smooth collaboration between departments are prerequisites.

3. *Quality, value and design:* Good design quality must present perceivable and superior value.

4. *Efficiency and durability:* Trouble-free use and reasonable life of products are generally expected.

5. *Symbolic or stylistic value:* Design has to fill products with symbolic and emotional contents.

2.3.5 Human-ware Age

According to Evans, the Japanese approach of design strategy has the following characteristics [24]:

1. There is a significant trend of user-consciousness, which leads design to enter into a "Human-ware Age".

2. "Human-ware Age" means that any market player has no choice but listening carefully to customers.

3. Many companies put heavy efforts in lifestyle research and use these results to guide design strategy.

2.3.6 Design Strategy of Philips

Blaich reported that the design strategies of Philips are as follows [5]:

1. The criteria for evaluating design quality including: (1) Ergonomically designed and also comprehensible for users. (2) Meeting minimum safety standards. (3) Satisfy user needs and also environmental friendly. (4) Utilize materials, production facilities and energy efficiently. (5) Aesthetically well designed.

2. Established the "Professional Harmonization Program" which enhances a consistent brand image that can: (1) Achieve harmonization among all appearance elements. (2) Integrating design as a strategic element.

3. Design was accepted as an influential aspect of product creation process and strategic planning in Philips.

4. Moved away from an emphasis on single object and aesthetics to a holistic awareness of the environment.

5. Collaborations between engineering and design departments were encouraged.

6. Designers were seen as the connector between commercial and technical disciplines.

2.4 Existing Models for Design Strategy Formulation

From literature research, there were a few existing models for formulating design strategies published. As they are important reference for proposing a suitable model in this paper, thus they were listed in this section:

2.4.1 Wasserman's Six-Step Approach to Design Strategy

As Cadenhead quoted [9], the six-steps of design strategy formulation by Wasserman are as follows:

1. Understand the company's strategies in business, marketing, product, and their fit in the market trends.

2. Observe users and customers in their living context to look for latent and emerging needs.

3. Predict society changes with script or scenario writing that helps to uncover opportunities for innovation.

4. Visualize the company's entire product line by projecting them into the future living context.

5. Communicate the above concepts in the company and also to key users, customers, or dealers.

6. Implement the vision by translating concepts and scenarios into product descriptions and specifications.

2.4.2 The Model of Structured Planning

The "model of structured planning" proposed by Owen of the IIT [25] has five phases:

1. ***Project Definition***: A statement that defines the product by describing issues, positions and goals.

2. ***Action Analysis***: Identifying problems and opportunities through observations to construct product benefits.

3. ***Structuring***: Organizing the structure of functional information into "Design Factor Document" that contains observed problems and strategies or possible directions of finding solutions to stimulate creativity.

4. ***Synthesis***: Combining information to generate ideas in doing selection, refining, modifying, and invention.

5. ***Communication***: Ideas must be well communicated to facilitate decision-making and implementations.

2.4.3 The Five-Point Model for Design Strategy of IDEO

According to Brown, the IDEO's approach for design strategy is to leverage the merit of design thinking in strategic planning. He described it as a "five-point model" as follows [6]:

1. ***Hit the Streets:*** Start with fresh and original insights obtained through direct observations to the real world.

2. ***Recruit T-Shaped People:*** Good insights can only be acquired through an observant and empathetic view, which is the characteristic of "T-shaped people" who are better capable of recognizing behavior patterns.

3. ***Build to Think:*** The flexible use of prototyping in various steps of product development can facilitate faster problem solving; even visualizing a concept with video scenario can be a way of prototyping.

4. ***The Prototype Tells a Story:*** A conceptual prototype can be combined with a storyline to construct vivid scenarios that the futuristic scene can be well perceived by all stakeholders including investors.

5. ***Design Is Never Done:*** Design requires constant improvements since it is never done. The same goes for strategy since the market and users are always changing, thus strategies also have to change with them.

2.4.4 Strategy of Design-Driven Innovation

According to Verganti [31], besides traditional technology pushed innovations and market pulled innovations, the new "design-driven innovation" is emerging. He pointed out that it consists of three actions:

1. ***Listening:*** The most effective way to acquire knowledge on new product meanings is by listening.

2. ***Interpreting:*** Recombining listened knowledge with insights can get proprietary interpretations.

3. ***Addressing:*** Leveraging the seductive power of effective interpretations can merge the new product meaning into real life context, to make it more understandable and attractive for people.

3. The Proposed Model for Design Strategy Formulation

Combining the literatures mentioned in Chapter one and Chapter two, a model for design strategy formulation was proposed as shown in Figure 1. In the flowchart of the proposed model, we can see that there are four major stages including (1) Reviewing corporate strategy, (2) Environmental scanning, (3) Design strategy formulation, and (4) Strategy Implementation. As this paper is not going to touch the part of strategy implementation, thus only the first three of these four stages will be introduced in the subsequent chapters.

4. Reviewing Corporate Strategy

4.1 Conforming to the Corporate Philosophy

Corporate philosophy is the articulated value system under corporate culture; it takes a considerable length of time to establish corporate culture and people in the company will more or less be influenced in terms of their behavior, thinking, value, attitude, etc. Therefore, before setting out to formulate design strategy, we

should carefully examine the corporate culture and philosophy, and conform to them as far as possible. Otherwise, there will be plenty of obstacles in its implementations [32]. According to Shrivastava [30], it will be useful to conduct observations in areas such as myths, legends, language systems, metaphors, symbolism, rituals, ceremonies, and value systems of the company in examining its corporate culture and philosophy.
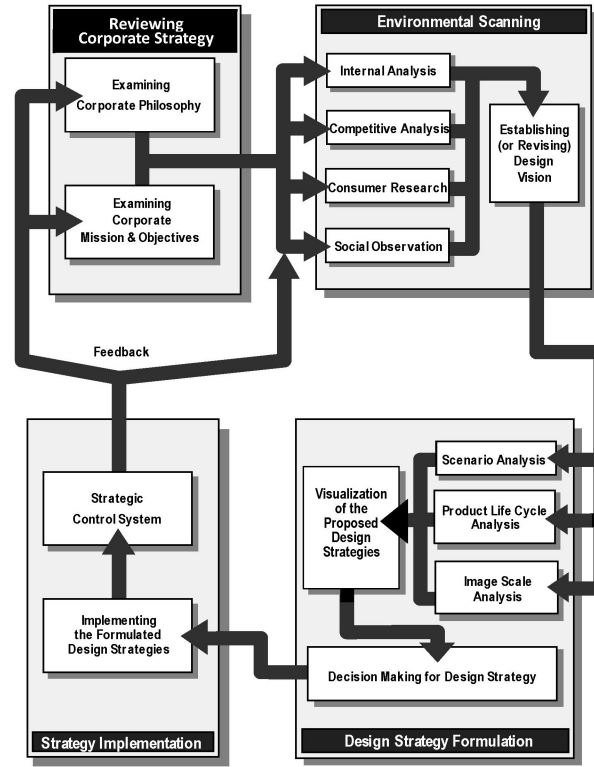

Figure 1   The Proposed Model for Design Strategy Formulation

4.2 Adhering to the Corporate Mission & Objectives

In established companies, they mostly have well-articulated missions. Obviously, it is the responsibility of every department to make contribution to its realization, and there is no exception for design department too [30]. By adhering to the corporate mission and corporate objectives, it means that the design vision will have to be consistent with them, and look for real contributions in their achievement.

5. Environmental Scanning

In this stage, we have five steps to go, they are: (1) Internal Analysis, (2) Competitive Analysis, (3) Consumer Research, (4) Social Observation, and (5) Establishing (or Revising) Design Vision. One thing we must make it clear here is that although we put environmental scanning as part of this process, we will have to operate an environmental data collection system on a regular basis. We must retrieve proper data, organize them sensibly, interpret them creatively, and conduct specific surveys on specific topics that are not in the data bank.

5.1 Internal Analysis

To make our design strategies more realistic, we have to formulate them on the basis of both the external and the internal analyses. For analyzing the internal influences, we have to examine the following aspects:

5.1.1 Assessing Real Strength of the Company

The real strength of the company can be evaluated with questions such as: What kind of internal resources do we have? How much? What kind of specialties do we have? What kind of particular strengths and weaknesses can be identified in comparison with our competitors?

5.1.2 Assessing Real Strength of the Design Department

The real strength of the design department can be judged by asking questions such as: Do we have any superior design skills? Are we in lack of any crucial skills? What design activities have we done previously? How successful were these activities? What is our relationship with other departments? What is our relationship with customers? What kind of encouragements and supports did our company gave to designers?

5.1.3 Assessing Top Management's Attitude towards the Design Department

For assessing top management's attitude towards design department, we can ask questions such as: What are the limitations and control systems for time and cost? Who is in charge of evaluating design results? How does the company appreciate design achievements? What is design department's organizational position? What is design department's position in decision-making? What priority does our company ranked design?

5.2 Competitive Analysis

To examine the company's strategic position, it is vital to keep a firm hold on the trend of new products launched by all competitors on a regular basis. Our main areas of data collection for this will be as following:

1. Information of competing products such as launching time, nickname, features, and advertising appeals, etc.
2. The annual and total amount of sales.   3. Major marketing events and their results.
4. Competitors' design vision or philosophy, and their possible assumption on the market trends.
5. Competitors' major moves on design such as new design consultant, design prizes, and their implications.
6. Do our competitors' design departments have any strengths and weaknesses to compare with us?

5.3 Consumer Research

In order to compete well in satisfying consumer needs, we have to know consumers better than our competitors. According to Sanders [28], the most valuable knowledge on consumer will be in 'tacit needs' and 'latent needs', most consumers cannot articulate these needs or even be aware of their existence. In order to win in competition, we must dig those needs out and satisfy them, Leonard-Barton [20] called this effort as "empathic design". In order to remain up-to-date to all customer needs, we have to do the following efforts [26]:

1. Designers must know customer well enough physically, psychologically and also culturally.
2. Based on the database of consumer contacts, we should keep contact with them to maintain their loyalty.
3. Recordings, pictures, or even film recordings may be taken at real situations of customers' product usage.
4. Consumers' buying behavior and their motivations can also well be observed at the retailing fronts.
5. Be keep informed with all publications of research institutes, magazines or periodicals on market trends.
6. Consumer observations should be conducted at places where users are engaging with their living activities.

5.4 Social Observation

Many buying behaviors are driven and influenced by social needs such as self-actualization, self-esteem, belonging and companionship. The understanding on social trends can be enhanced with the following efforts:

1. Keep well informed of any social and lifestyle changes by reading intensively at all kinds of mass media.
2. Conduct regular surveys on personal and family lifestyle, as well as social values.
3. In-depth observations and further interpretations on consumers' living scenarios are also necessary.

5.5 Establishing (or Revising) Design Vision

Design is inherently futuristic and involves uncertainty, thus it is vital to have a persuasive vision to rally efforts of others [12]. Also, it needs regular revisions since the environment keeps changing. In shaping advanced vision, Morris [22] pointed out that our abilities of holistic, interactive, insightful, speculative, imaginative and contingency thinking should be enhanced with efforts. To communicate future vision effectively, scenario is the best tool since they are qualitative in nature and best suited for describing future scenes [21], Schoemaker suggested ten steps [29] for this purpose (not listed to comply with the page limit).

6. Design Strategy Formulation

So far, the preparations had finished and we are ready to set out through the five steps within this stage:

6.1 Scenario Analysis

Millette [21] pointed out that there are five insights to derive from the futuristic scenario which we constructed: (1) Will customer needs change in the future? (2) Will market conditions change significantly? In what direction? (3) Will ways of generating products or services change? (4) What are the possible moves of our competitors? (5) What uncertainty will our company face in the future?

Based on these insights, then our future design strategies can be figured out through team brainstorming.

6.2 Product Life Cycle Analysis

Combining the former result of social observation and the marketing concept of product life cycle [2], the "product life cycle analysis" was created for this step; the method here is as follows:

1. A table can be constructed as the simplified sample shown in Figure 2.
2. In the upper half are the product life cycle curves of our main products, such as product A and product B.
3. In the lower half of the table, we put major social events or the emergence of certain social trends into it.
4. After the table was finished, we then try to interpret the relationship between the product life cycle curves and the happening of major social events or trends. For instance, in Figure 2, we can see both the "social event A and B" are very favorable for "product B" but very unfavorable for "product A". Also, if we discovered that there is no player in the market reacting to the "social Event A and B", then we may see this as an opportunity for our company to take an initiative by leading the market to take this trend.

6.3 Image Scale Analysis

The aim of this step is to analyze our image positioning strategies. The "Image Scale" developed by Kobayashi [18] is a very powerful tool for this purpose. It is a coordinate system with vertical axis from 'soft' to 'hard' and horizontal axis from 'cool' to 'warm', through a survey, he located various design objects and major descriptive terms at their corresponding positions and called it "Keyword Image Scale" (Figure 3).

With these located descriptive terms as reference, we can locate any sort of image on it, which gives us a sense of strategic positioning. In addition to being a tool for perception, it is also a powerful tool for enhancing

Figure 2　The Product Life Cycle Analysis　　　Figure 3　The Keyword Image Scale

communications inter-disciplinarily. This process includes seven steps: (1) Construct a coordinates system. (2) Prepare product pictures. (3) Locate these pictures respectively. (4) Perceive and interpret the strategic implications of the allocation result. (5) Figure out our strategy. (6) Visualize the targeted image with "Image Board" that consists of pictures with the same image. (7) Compare the evolvement of our strategy with those of competitors and articulate the rationale and superiority behind this difference.

6.4 Visualization of the Proposed Design Strategies

Although our design strategy have been shaped so far to this step, the visualization skills for presenting strategic thinking are specially important here since:

1. Design strategy is too complicated and too conceptualized to communicate effectively with words only.

2. Visualization techniques can best facilitate smooth communications between decision-making participants.

3. Designers are especially rich in visualization techniques, and thus we should make good use of them.

6.5 Decision Making for Design Strategy

After all the efforts of preparing, we are now ready to present the proposed design strategy to our top management and peers. Because of the importance of design strategy, we have to organize the decision committee very carefully. Every important figure in the company must all be invited; also each of their time of convenience must all be considered as well. The final decision must be made on a basis of consensus that was achieved through thorough discussions between various viewpoints not only for better communication, but also for more holistically integrated decisions on our design strategy.

7. Conclusions

The aim of this paper is to propose a model for companies to take for reference in the formulation of their design strategy. This model will be able to provide the following contributions to companies that adopt it:

1. To establish a consistent relationship between design strategy and the corporate strategy.

2. To better leverage the power of design as a competitive advantage of the company.

3. To provide a platform for the accumulation of experiences on the enhancement of design qualities.

4. Developing persuasive rationales as vehicles of integration between design and marketing of products.

5. Facilitate the communication between producer and users, which will enhance sales and customer loyalty.

The part of implementation and the validation of this model will not be discussed in this paper due to the page constraint and the unavailability of required content at this stage. The author hopes that companies that adopted this model would make contacts through the author's e-mail address provided at the beginning of this paper, and allow the author to participate in the process of its implementations. The author will guarantee the responsibility of keeping confidentiality of the whole issue and providing free consultations to the company.

8. Acknowledgements

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