A Study of Bank Design Considering Emotional Elements  
- Case Study: Fukuoka Bank in Japan -

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Abstract: The goal of this study is to consider aspects of both emotion and usability for designing a pleasurable bank space and environment for as many people as possible. We looked at how pleasure experienced by the user could be maximized in such an environment. Fukuoka Bank based in Kyushu Island, Japan, was selected as a case study. The methodology employed was in the form of individual consultations of a cross-section of 100 users. Interviews were undertaken with several diverse groups of Japanese society, including disabled people, able-bodied people and the elderly. Foreign users were also consulted. Based on this feedback, we looked at how best to combine user-requirements with aspects of “pleasure”. In the practical design of the case study, two aspects of emotion were focused upon; color and sound. Concentrating on these two points, we introduced them into two aspects of the design of Fukuoka Bank. The ultimate aim is to introduce concepts of emotional design, specifically “pleasure”, into two areas of the design of Fukuoka Bank: Space planning/layout and sign systems. Based on users’ needs and requirements, the following objectives were achieved: A) Space planning/layout was optimized in respect to the movement line of the user within the bank space. This is in contrast to the random nature of floor space layout that was difficult to use in the previous design. B) Interior signs were redesigned into a consistent and coherent system, to be easily understood by all users. This is in contrast to the previous design, where users often found signage to be confusing and members of staff were regularly asked for assistance. C) Two emotional elements were considered in the new design; color and sound. In the previous design of this bank, both color and sound was used to an extent for usability issues. However, in this research, color and sound were integrated into aspects of both usability and the emotional experience of the user. This research will be of interest to design students, educators and decision-making in general.

Key words: emotional design, usability, bank design.
1. Introduction

Emotion is a necessary part of life, affecting how we feel, how we behave and how we think. Indeed, human evolution has given us tools with which to interpret and interact effectively with our environment; affect, emotion and cognition. Emotion makes us intelligent. Affect, which includes emotion, is a system of judgment: good or bad, safe or dangerous. Correct judgment is the basis of survival. Cognition and affect - understanding and evaluation - together form a powerful team [1]. In addition, an attractive design is not necessarily the most efficient. But must these attributes be in conflict? Along with emotions, there is another issue: aesthetics, attractiveness and beauty. Beauty is important for our lives: beauty in our environment, in our surroundings, in our actions and in the products we buy and use. Of course utility and usability are important, but without fun and pleasure, joy and excitement, anxiety and anger, fear and rage, our lives would be incomplete. Beauty and brains, pleasure and usability -- they should go hand in hand. That’s the message of “Emotional Design” [1]. Pleasure is defined as "the condition of consciousness or sensation induced by the enjoyment or anticipation of what is felt or viewed as good or desirable, enjoyment, delight, gratification"[2].

In this study the redesign of various aspects of Fukuoka Bank was selected as a successful case study. Fukuoka Bank is a financial institution based in the Kyushu district of Japan. From 2007, over the course of three years, we are re-designing all of its 158 nationwide branches. The aim is to create a powerful, coherent and strongly emotional corporate image that is received positively by users, leaving a lasting impression. The goal of this study is to consider aspects of both emotion and usability for designing a pleasurable bank space and environment for as many people as possible. Therefore, in Fukuoka Bank, the mentioned aspects were considered in the redesign of the layout of the bank so as to optimize ease-of-use (regarding space planning and accessibility) and comprehension (sign systems) for the user. An attempt to encourage a pleasurable experience for the user was also a key motivation alongside more traditional notions of usability in the design of floor space layout and signage.

2. Methods

A series of interviews with 100 people has been conducted since 2007 in Kyushu Island. We selected different community groups including 7 disabled people, 10 elderly people (above 60 years old), 3 foreign people and 80 able-bodied people (ranging from the ages of 20 to 60 years old). In addition, we also drew from our own experience in the field of public design.

From the interview feedback, it was established that the most important requirement was usability and ease-of-use, as well as an enjoyable space and environment. Taking this feedback into the development of space planning/layout, we addressed both space planning and accessibility, and attempted to provide all users and visitors with an easy and friendly environment in all areas of the bank. This included the entrance, ATM corner, and lobby, among others. In regards to the sign systems, we attempted to convey bank information in pictograms that could be easily understood by everyone. The redesign of sign systems included individual pictograms representing the various facilities available, as well as direction guides.
3. Results and Discussions

According to the literature survey, there are four types of pleasure defined by Patrick Jordan [3]: Physio pleasure, Psycho pleasure, Socio pleasure, and Ideo pleasure (Figure 1).

a. Physio-pleasure: This to do with the body-pleasure derived from the senses. In the context of products physio-pleasure would cover, for example, tactile and olfactory properties.

b. Psycho-pleasure: This type of pleasure pertains to people’s cognitive and emotional reactions – including the reactions to products.

c. Socio-pleasure: This is the enjoyment derived from relationships with others. Products may confer for sex, social status or identity or may play a role in social situations.

d. Ideo-pleasure: This concerns people’s values, in the context of products, this might related to for example, the aesthetics of a product and the values that the product embodies.

According to the users’ requirements we recognized that psycho-pleasure can be associated with their desires to optimize the usability of the movement lines and spatial arrangement, and thereby enhancing the “pleasure” with which the space is used. In addition, psycho-pleasure pertains to people’s cognitive and emotional reactions. In the case study of Fukuoka Bank, this might include issues relating to the emotional reactions engendered through experiencing the emotion of design. As a consequence, two important elements in particular were addressed in respect to the emotional character that we intended to impart to the user in our design: Color and sound.

Concerning the first element, color has the ability to impact on the emotional wellbeing of human beings, either by stimulating or tranquilizing, exciting or depressing, or in provoking and antagonizing [4]. In our design, color is not only used as a sign and indicator, but it is also used for adding “joy, beauty and comfort”, whether it is space, product or signage.

As for the second element, sound has one function as an announcement, and that is to send information to people. This can be in the form of guide information, but also for effect functions, such as music sounds. In the previous design of Fukuoka bank, the use of the sound system was limited and not considered sufficient to guide users easily. For example, the sound system was restricted to only the lobby and the ATM corner, with no sound used as guidance in the entrance or elevator. According to the user’s needs, in the new design of Fukuoka Bank we use four types of sound system. Each type will be briefly explained as follows. The first one is new and it relates to the audio machine guide we call “oto-navi”, in Japanese. This audio machine is used in the entrance to give information to the user relating to the main facilities, such as the ATM corner, restroom, service counter, elevator etc. The second sound is the ATM audio guide, assisting the visually impaired user to withdraw or transfer cash to and from their bank account. The third sound is the customer notification sound in the lobby, announcing to the customer when it is their turn to approach the service counter. The fourth sound is the background music.
played in the lobby area. The biggest alteration made to the previous sound system of Fukuoka Bank was to the previously mentioned 1st sound. This audio machine guide can provide information not only to the able-bodied, but also to people with visual disabilities. This is a new challenge in how to improve usability by sound.

The next part will focus on redesigning the space and sign systems for creating a pleasant bank environment. As is shown in Table 1, both color and sound are considered for redesigning entrance, ATM corner, elevator, stairs and lobby. Both of the previously mentioned elements (color and sound) are used for improving two aspects; usability and emotion.

Table. 1  Relationship between Areas of the Movement Line with the 2 Emotional Elements

<table>
<thead>
<tr>
<th>Elements</th>
<th>Space-planning/Layout</th>
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<tbody>
<tr>
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<td>Entrance</td>
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<td>Color</td>
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<td>usability</td>
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<td>emotion</td>
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<td>Sound</td>
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<td>usability</td>
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<td>emotion</td>
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○ used  × not used

3.1 Space Planning

3.1.1 Entrance

In the original design of the Fukuoka bank, the entrance did not match with the needs of as many people as possible. For example, the entrance door was too narrow (about 80cm) for the movements of two different people abilities and status (such as wheelchair and baby car) (Figure 2). Furthermore, although some branches used automatic doors at the entrance, this was not the case for every branch. These branches used manual doors that were heavy and often difficult to use. This was a particular problem for the disabled and elderly. Therefore, two important points are considered for redesigning the entrance. All entrance doors are required to be automatic, in order to make it more accessible for disabled users, or those with baggage. In addition, the redesign of doors ensured that they were wide enough to accommodate both a wheelchair-user and baby car at the same time; the new entrance width increasing to a size of 180 cm (Figure 3). Designers also considered color and sound for improving the previous design of the entrance as follows:

![Figure. 2  Entrance (Before)](image)

![Figure. 3  Entrance (After)](image)
A. Color

- Color and Usability: The blue color for the bank’s official logo is selected. This blue color is called “FUKUGIN BLUE” in Japanese, and is the pre-existing corporate color used on all Fukuoka Bank branches. Research by the Japan Color Research Institute has shown that blue is very popular with the Japanese public (Digital Color Manual). In the case of FUKUGIN BLUE (color code is C90%+Y10% ,TOYO INK CS10376 ) users associate this color with the sky, the sea and water in general. The letter characters used on the sign and logo are in white, which can be seen clearly from a distance of 100 meters [5].

B. Sound

- Sound and Usability: As was previously mentioned, the sound system was not used in the original design of Fukuoka Bank’s entrance. In the present design the “oto-navi” machine is used for many benefits (Figure 4). For blind users, a Braille map was positioned at the top of the normal graphic map, representing an image of the floor space. However, for those customers who are unable to read Braille, a short audio message guide is also available. In order to notify the visually-impaired customer as to the presence of the audio guide machine, a soft melody is played, followed by the message “welcome, this is an audio machine guide, please push the left ‘up’ button”.

There are four buttons in the middle of the machine. The left ‘up’ button instructs how to use the machine, as well as bank information such as opening and closing times. The right ‘up’ button instructs the user where the ATM machines are located and the left ‘down’ button instructs how a member of staff can be found if needed. The right ‘down’ button informs the user where the restrooms are located with messages such as “to go to the restroom please go back 10 meters, turn left and proceed 5 meters”.

Figure. 4  Audio guide machine “oto-navi” in the Entrance
After conducting research concerning the usability of the audible machine guide after the bank was designed, it is shown that it is of most benefit to the semi-visually impaired. This is because they could use both the graphic map and the audio guide in tandem, whilst the fully blind users had to rely solely on the audio guide for the right direction.

3.1.2 ATM Area

C. Color

- Color and Usability: The interior color was divided into background color (the color of ceiling walls and floors) and foreground color (the color of furniture and signs).

Before the redesign, as the Figure 5 shows, there was little consistency in the color schemes chosen for this area. However, in some branches, the color system was not clear in the ATM corner; ceilings and walls used a white color, floor used a dark grey color, resulting in an undefined dull space. Because the ATM machines were also grey, it meant that customers found locating this area difficult.

As Figure 6 demonstrates, after the redesign of this space, the ceiling color in the ATM corner is white, of a similar shade to the floor. The wall color is also white. Two types of wood color are used for the furniture (Figure 7), in order to emphasize them against the pale background color. The dominant wood color is light and the other is a little darker.

- Color and Emotion: In the previous design, a lack of consistency was again in evidence, with many colors used in an incoherent fashion, disorientating the user. In the new design, attention was paid to encouraging the user to experience a sense of pleasure, with light, clean colors used on the floors and walls. Natural wood colors were used for the ATM dividers, helping to convey a soft feeling.

D. Sound

- Sound and Usability: In the previous design, one of the most important problems regarding the sound system was that there was no audio phone to help guide people with visual disabilities.

In the present design, The ATM is equipped with an audio phone guide to assist visually impaired users. Using a button activated system, this audio guide allows the user to hear directions and instructions. The audio guide is designed to be easy to understand and includes features such as volume control and pause buttons.

Figure 5 ATM corner (Before)

Figure 6 ATM Area (After)

Figure 7 Color System of “ATM” Area
user to perform actions such as withdrawing or depositing cash.

3.1.3 Lobby
In further consideration of the user’s needs, we designed a space such as that seen in Figure 8. Entitled “the hospitality booth”, we want to provide a hospitality space that allows users to relax. There are four kinds of design adapted specifically for the elderly, ladies, businessmen and for families. The common element in each is the use of the curved line, making for a softer use of space. This innovation also allows for some degree of privacy. As the diagram shows, for the elderly the chairs are more comfortable, and a little higher than normal chairs to aid standing up. For ladies we provided a high desk chair, similar to a bar chair, to give the user the feel of a more modern image. Users are able to kill time here reading a magazine. For businessmen we provide a desk with Internet LAN, in order for the user to check emails or do some work while waiting. For families a circular desk was considered most appropriate, so that they can talk and interact with each other.

![Figure 8 Interior Design of the Lobby](image-url)
Multiple window counters were employed in the lobby for customers to talk with staff and receive service from the bank. This is the most widely used area in the bank. Figure 9 shows the service counter in its previous state. In the redevelopment, the counter was separated into two height levels, as shown in Figure 10: The higher level (950–1000mm) being for able-bodied people and the lower counter (700–750mm) for wheelchair people, or those whom require special services. In the lobby, sofas are positioned so that users can sit and wait before approaching the counter. In the previous design, long sofas allowing up to seven users at a time were used (Figure 11). However, during our research it was found that usually only three or four people would sit on it at any one time, due to issues of personal space. As a consequence, in the redesign of the bank space we chose sofas with arm dividers, separating each individual space and making it possible for all seven seats to be occupied at one time (Figure 12).

E. Color

- Color and Usability: In the previous design, color was used in an incoherent fashion in the wide spaces. However, in the present design, a level of consistency in the use of color schemes was considered essential for increasing the efficiency of the space for the user. With this mind, the lobby connects to the ATM corner, so the same ceiling and wall colors are extended into both areas to keep uniformity. However the floor color is different,
helping to define the two separate spaces. Users spend more time in the lobby than the ATM corner; therefore it is important that this space provides a more comfortable environment. The results of the interviews with 100 people revealed that using color management is important for usability. As a consequence, carpets (dark grey) and sofas (brown) are placed here with the furniture and sign colors highlighted in yellow and brown colors, in contrast to the darker background colors. This helped improve usability in terms of space planning.

• Color and Emotion: In the previous design, the incoherent use of artificial colors contributed to a feeling of messiness and disorder. Therefore, in these spacious areas, complimentary natural earth tones were selected to help convey calmness and order. This, in turn, was hoped to encourage feelings of pleasure, in the way the user responded to the concepts of calmness and peace.

F. Sound
Regarding the sound system in the lobby, no change was made to the previous system. Two sounds that were employed in the lobby area are common to most institutions such as banks. The following are the brief explanation of the sound system in this area.

• Sound and Usability: A recorded speech is also played to inform the user when to approach the counter.
• Sound and Emotion: Background music is played to help contribute to a peaceful atmosphere, essential for an area where people are waiting to be served.

3.2 Sign Systems
In Fukuoka Bank, sign systems were designed to provide users with both psycho-pleasure and physio-pleasure. Signs are ideally supposed to convey information to the user in a simple and clear way, such as directing the user within the surrounding space, or how to use the equipment or services on offer.

3.2.1 Visual Sign Systems
One of the tasks issued to us in the redesign of Fukuoka Bank was the redevelopment of the existing sign color scheme. Originally, no consistent color system was in use for the interior signs, thus a comprehensive overhaul was necessary. The color scheme that was selected for the new sign system (including entrance, lobby, ATM corner, and elevator, etc.) has two purposes, with the first being to optimize the speed and ease in which the information can be understood. Typically, white letter characters on a light grey background would prove difficult to read for the customer [6]. As such we chose colors that would provide a clear contrast; in this case a dark brown and dark grey background with white letter characters.

The second purpose of the color scheme was to utilize color psychology to affect users’ feelings. Blue colors can symbolize sea, sky, peace, harmony, trust, water etc. It was therefore a color that was deemed suitable for the ‘Universal Design’ mark. In our design lexicon, we interpret the ‘Universal Design’ (UD) mark as a symbol to direct users to areas designated for people with disabilities.
As in Figure 13, pictograms remain in common use today, serving as representational signs, instructions or statistical diagrams. Because of their graphic nature and semi-realistic style, they are widely used to indicate facilities in public places. The pictograms used for the interior of Fukuoka bank were carefully redesigned for optimum effect; for both practical use and in an emotional design context. The most familiar and commonly used signs were based on the international standard ISO7001 and Japanese Industrial Standard (JIS). As can be seen in Figure 14, the JIS sign originally employed a square border in black and white. Our new pictogram incorporated a circular border to give the user a softer image, whilst a wood color was used to impart feelings of nature.
Furthermore, our designers created a new UD mark that can be used by as many people as possible, as seen in Figure 15, which incorporated the existing corporate color of Fukuoka Bank. This sign can be used for identifying the space or product to users as UD designated. This blue color is immediately associated with the bank, and the heart shape and smile conveys the bank’s intention of satisfying every customer through good service.

3.2.2 Audio Sign System “oto-navi”

In the previous design, audio signs were not employed. On occasion, users had to go to the lobby to locate staff and ask for directions. Because of these experiences, we designed a new audio sign system, as shown in Figure 4 (page 5). This audio machine guide, the previously mentioned “auto-navi”, provided a new challenge for the concept of emotional design in the plan of the bank. It is set up inside the entrance. As a multi-purpose guide machine, it can be described as a universal design machine for those people with visual disabilities, the elderly and foreigner users, as well as non-disabled people. As can be seen in Figure 4, the UD mark has been placed prominently at the center-top of the machine. In the center there are four buttons and a simple floor map. People often feel anxious or nervous upon entering a place such as a bank for the first time. As a consequence we decided to position the audio machine guide immediately in the entrance; thus even if no staff are present in this area, customers can be swiftly directed to their desired location, or to where they can find a relevant member of staff. The information board is not completely vertical; it is tilted at a slight angle of 20 degrees, an angle that was selected on the basis of ergonomic trials that were conducted during the design process. This angle is suitable both visually and functionally. Both normal users and wheelchair users access the information board at a height of 1300mm, for ease-of-use. When designing the floor map of the bank we used pictograms representing facilities such as restrooms, stairs, elevators, and the ATM corner; in order for it to be understood easily even by the elderly. Furthermore, the information board supported a natural wood finish, again to enhance user emotion and feeling. Essentially, the overall design of this device was intended to provide users with pleasure, in regards to both usability and aesthetic appearance.

4. Conclusions

The emotional content of design is gaining more and more importance for Ergonomics and Design science. This paper shows how we paid attention to the user’s state of mind and feeling, through the use of emotional elements such as color and sound in the bank design. Fukuoka Bank is one of the most successful projects carried out in recent years. Over the course of three years, we are redesigning all 158 nation wide branches of Fukuoka Bank with two visions in mind. The first is regarding space planning/layout; how to design a bank space that is pleasurable to use and feel. We attempted to optimize the movement line of the user within the bank space, making it easier to understand and negotiate. This is in contrast to the random nature of floor space layout of the previous design, a factor that hindered user movement and was generally difficult to use. The second vision relates to sign systems; how to convey information to the user in the most effective way. With this in mind, interior signs were redesigned into a consistent and coherent system, to be easily understood by all users. This is in contrast to the previous design, where users often found signage to be confusing and members of staff were regularly asked for assistance. Overall, the redesign of Fukuoka Bank is provided with a modern corporate image that also optimizes user experience, paying particular attention to the concept of pleasure.
5. References


