Integration of Historical Element Character in De Javasche Bank Museum Surabaya with Figma Application

Elsa Berliana Oktaviani[1], Yusfan Adeputera Yusran[2*] & Lisa Dwi Wulandari[3]

[1, 2, 3] *Master of Architecture Program, Department of Architecture, Faculty of Engineering, Universitas Brawijaya, Malang, Indonesia*
[*] *Corresponding author. Email: yusfan@ub.ac.id*

ABSTRACT
Historic buildings have an important role to educate people who seek an interest in history, especially the academic community for reference and data information. One of the applications that can fulfill the preparation of interface design is Figma. This research aims to integrate the character elements of De Javasche Bank with the Figma application. The method used is mixed with the stages of field observations, interviews, and related literature studies, followed by collecting quantitative data, namely a usability study involving respondents. From the results obtained, the integration of architectural elements into Figma shows the ease of accessing information for those who need it. The three observation units were carried out and integrated with Figma as an interface design and obtained a final score of 4.36 in the very feasible category.

Keywords: *Architectural Database, Figma application, Heritage Building, Preservation*

1. INTRODUCTION

Historic buildings in Indonesia are one of the historical tourist destinations that are protected under the Cultural Heritage Act. In Surabaya, one of the buildings for historical tourism destinations is De Javasche Bank. De Javasche Bank is a building that used to operate as a branch of the Bank Indonesia office in Surabaya. The existence of De Javasche Bank which is spread across other cities is one of the reasons for digitizing data because it has broad public access and exposure. Therefore, people who wish to study and know the history of the Indonesian economy in the 19th and early 20th centuries can be found at De Javasche Bank.

De Javasche Bank is a building that functions to educate people who have an interest in studying both history and its elements. This education can be carried out with information technology media which is believed to be an effective learning alternative and easy to access [1]. In addition, technology is able to increase absorption and ease of receiving information by utilizing interesting and interactive tools [2]. However, the existence of existing applications such as Architizer, Behance, and Architectural Digest have constraints in terms of language and convenience for people who are unfamiliar with foreign languages. Therefore, further development is needed in the design of application interfaces that discuss historical buildings, especially De Javasche Bank. One of the applications that can support this development is Figma. The Figma application is the choice of UI/UX designers because of the ease in terms of designing application prototypes [3]. Figma provides features that can translate designs into programming languages with plugins as well as access to test prototypes on potential users.

1.1. Literature Review

1.1.1. Character Defined Elements

The determining elements of character are divided into three observation criteria [4][5], including elements of building facades, elements of the building interior, and the shape of building masses. In the facade elements use observation units of roofs, dormers, and balustrades, outer walls of buildings, windows and doors, display of structural and non-structural columns; for interior space, elements use observation units for interior walls, windows and doors, ceilings and columns, as well as floors; and building mass using observation units of roofs, building walls, windows and doors, as well as building styles.

1.1.2. Cultural Heritage Law

Y. A. Yusran et al. (eds.), *Proceedings of the 2023 Brawijaya International Conference (BIC 2023)*, Advances in Economics, Business and Management Research 294,
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Law Number 11 of 2010 [6] related to Cultural Heritage which was revised previously provides additional information regarding the definition of cultural heritage, including objects, buildings, or structures that can fulfil the category of cultural heritage a.) 50 (fifty) years old or more; b.) Represents a building with a style that is at least 50 (fifty) years old; c.) Keeps special meaning in both science, history, education, religion, and culture; d.) Keeps cultural values to emphasize the nation's personality at that time. The application program is divided into two, namely specific and versatile applications [7].

Technology-related integration is an implementation of technology education that is carried out effectively with learning activities [8]. A prototype is a design that is made to be tested directly based on the ideas that have been compiled [9] state the steps in developing a prototype, including collecting needs, processing interface designs, compiling prototypes, and evaluating and recompiling according to input.

The research was conducted to deeply understand the architectural elements of De Javasche Bank in an application model that can be developed as an information platform to be well received by the academic community who want to deepen the historical building. The purpose of this research is to integrate the character of historical architectural elements at De Javasche Bank in Surabaya into a historical building application program with Figma.

2. RESEARCH METHODOLOGY

The research was conducted with descriptive qualitative, with quantitative data analysis obtained by distributing questionnaires to 20 selected respondents. Respondents were selected by purposive sampling and specifically considered the number of previous studies that determined the number of respondents in testing the application [10][11]. Respondents were selected by taking the age criteria of 20-29 years old because Kominfo statistical data [12] states that most cellphone users are in that age range. Respondents focused on the academic community who have an interest in architecture, so fast-track, undergraduate, and postgraduate students were selected at a predetermined age.

2.1. Research Location

The object of this research will focus on one building, De Javasche Bank, which is located at Garuda St. 1, South Krembangan, Krembangan Sub-district, Surabaya City.

Figure 1 Research Location of De Javasche Bank in Garuda St. 1, Surabaya.

2.2. Data Collection Methods

2.2.1. Primary Data

Primary data was collected by conducting interviews with the management staff of De Javasche Bank, namely Rizky, as well as direct documentation from observation. In addition, quantitative data was obtained by distributing questionnaires to selected respondents.

2.2.2. Secondary Data

Secondary data is collected through archives obtained from sources, in the form of previous studies that have similar research objects and De Javasche Bank conservation archives from Bank Indonesia.

2.2.3. Application Program Data

Figma application can be downloaded with 64-bit processor system device specifications and a minimum of 4 GB RAM. If it has been downloaded from the www.figma.com/downloads/ page, it can operate to develop the interface design.

2.3. Data Processing Methods

2.3.1. Processing of Architectural Data

Architectural data includes results from interviews, documentation, and direct observations that will be processed by redrawing with the Sketch Up and AutoCAD application programs, then compiled in accordance with the discussion of the observed unit under study.

2.3.2. Processing Data for Interface Design

The architectural data that has been compiled and stored is then compiled as data to be included in the interface design using the Figma application. The stages carried out in compiling the interface design to process the data obtained are as follows:

1. Arranging the categories of the data obtained according to the building observation unit.
2. Completing the goal statement and user flow to determine the flow of the application.
3. Develop a storyboard that contains scenes, characters, and narratives to explain the function of the application.
4. Developing wireframes as the basic structure of interface design. Then the wireframe will be continued as a low-fidelity stage.
5. Develop a mockup which is the final result of the program before continuing with the high-fidelity preparation.
6. Developing high-fidelity that has been adjusted to the user flow, so that the application flow is in accordance with the function.
7. Conducting user experience research (usability study) with selected respondents who have been determined, which amounted to 20 with an age range of 20-29 years, and are academicians from the Department of Architecture, Universitas Brawijaya. The questions asked in this stage are in accordance with the criteria related to five aspects of usability testing, including learnability, efficiency, memorability, errors, and satisfaction [13].
    a. **Learnability**, in this criterion the questions asked will be about the user's understanding of using the application when first accessing it.
    b. **Efficiency**, measuring the effectiveness of the design in performing application tasks.
    c. **Memorability**, measuring the level of ease with which users are proficient in using the application again after some time.
    d. **Errors**, measures the errors made by users in using the application, namely the number of errors and their severity to find out the solution.
    e. **Satisfaction**, measures user satisfaction in application design.

Table 1. Usability Testing Questionnaire

8. Synthesize the suggestions obtained from the usability study.
9. Make design modifications according to the suggestions obtained from the usability study.

2.4. Data Analysis Method

Architectural data is analyzed by reducing data, arranging according to categories, combining interview data and literature by the unit of observation, processing the answers to the questionnaire results by synthesizing to evaluate the interface design, and the numbers obtained will be averaged to determine the feasibility value.

The feasibility value can be found by using a Likert scale calculation with a scale of 1-5 which applies the following formula in Equation (1):

$$\bar{x} = \frac{\Sigma x}{n} \bar{x} = \frac{\Sigma x}{n} \quad (1)$$

With the following information:

$\bar{x}$ = average

x = the sum of all data

n = number of data values

The scale applied by the Likert scale uses the following assessment categories:

Table 2. Type of Assessment

Score	Assessment Criteria
5	Strongly Agree
4	Agree
3	Neutral
2	Disagree
1	Strongly Disagree

Then the interval formula used to determine the eligibility criteria from the average value obtained includes:

$$I = \frac{(Skt - Skr)}{v} \quad (2)$$

Description:

I = Length of interval class

Skt = Highest value

Skr = Lowest value

V = Number of criteria

From this formula, the following results were obtained:

$$I = \frac{(5-1)}{5} I = \frac{(5-1)}{5}$$

= 0,8

The interval class results obtained will be applied according to the acquisition of the previous formula values in accordance with Table 3, among others:

Table 3. Interval on Feasibility Assessment Criteria

Interval Class	Assessment Criteria	Quadrant
V	Very Decent	4,21-5,00
IV	Feasible	3,41-4,20
III	Decent Enough	2,61-3,40
II	Deficient	1,81-2,60
I	Very Less	1,00-1,80

3. RESULT

3.1. History of the Research Object

De Javasche Bank is one of the branches of the Bank Indonesia office established in 1829 with the first Branch Manager being F. H. Prayer as an effort to improve the uncertain financial conditions of the Dutch East Indies, one of

which was in the city of Surabaya. The De Javasche Bank branch office in Surabaya was still under Dutch influence until 1942. The short-lived Japanese occupation (until 1945) meant that the building was not operational until after the Allied forces occupied Surabaya on April 6, 1946. After that De Javasche Bank was inaugurated as Bank Indonesia on July 1, 1953 and remained in use as an operational building until 1973, when it occupied a new building at 105 Pahlawan Street, Surabaya. Another reason for consideration was the lack of operational capacity available in the old building.

Figure 2 De Javasche Bank in 1910 and Surabaya's Red Bridge as the city center in the 1900s.

3.1.1. History of De Javasche Bank

A. Khazanah

The treasury room is a room on the first floor or semi-basement that stores several valuable items such as money, gold, and securities. The treasury at De Javasche Bank is divided into three rooms, namely the money treasury room, the gold and material treasury room, and the documentation treasury room.

B. Workspace

The workspace maintained by De Javasche Bank until now is on the second floor. During the Bank's working period from the 19th century to the early 20th century, the workspace was semi-open, with the division of function zones using floor patterns and partitions.

Figure 3 Workspace During Operations

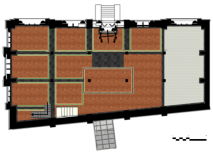

Figure 4 Floor Pattern in Second Floor

3.1.2. The Character of De Javasche Bank Surabaya City

De Javasche Bank has an architectural style that follows the conservative style of the early 20th century, namely the Neo-Renaissance. The neo-renaissance architecture is a style that was born in the 14th century, emphasizing shapes that tend to be symmetrical, and proportional, and the application of columns that support the style with the basic form of a circle. One of De Javasche Bank's implementations of this style is the use of Greek columns that are plastered to give the impression of grandeur from the symmetrical design and appearance. However, from the explanation of Bank Indonesia's written archives, the columns do not function structurally.

3.1.2.1. Elements on the Building Facade

a. Roof. The roof shape of the building is shield-shaped with clay material, which is Marseilles tiles which then after undergoing conservation there is additional material, namely zinc to provide access to light space on stained glass.

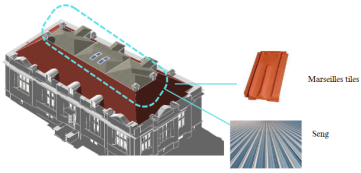

Figure 5 Roof Material

b. Dormer or balustrade. The roof of the building is not decorated with balustrades but with dormers installed parallel to the windows on the facade. In addition to the dormer, there is a gevel decorated with monumental sculptures from Japanese artists that are eclectic in nature.

Figure 6 Gevel Shape

c. External walls of the building. The wall on the outside of the building has a thickness of up to 150 cm as a form of building protection with steel as the main material. There are drainage details that give an intricate impression, as well as eaves that protect the outside of the building.

Figure 7 Details of Drainage and Eaves on External Walls

d. Windows and doors. There are windows from the top side of the roof with the main purpose of channeling natural light illumination, and windows on the ground floor also serve as ventilation that circulates air into the storage room. The front door as an entrance access is located at the back of the building.

Figure 8 Door and Window Shapes on the Facade of De Javasche Bank

e. Display of structural and non-structural columns. One of the ornamental ornaments on the exterior of the building is that the non-structural columns on the facade have carvings formed in the form of 11 ready-made molds, namely Tuscan.

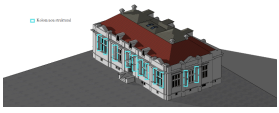

Figure 9 Building Exterior Details

3.1.2.2. Interior Elements of the Building

a. Walls of the building's inner space. The interior of the building has a similar color to the exterior, which is white. There are details shown by the inner space of the building including pattern ornaments on the columns and walls.

Figure 10 Wall Colors and Patterns

b. Windows and doors. The revolving door that is one of the objects on display has a luxurious revolving system when compared to the use of ancient doors. The door used for storage uses thick steel material. The windows at De Javasche Bank apply holes with grate frames that are evenly distributed from the first floor or basement and the third floor.

Figure 11 De Javasche Bank's Interior Doors and Windows

c. Ceilings and columns. The columns in the interior apply a standard form with the principle of beam-column unity applying geometrics. In addition, there are patterns on the columns that are the same as the wall patterns.

Figure 12 Columns and Ceiling of De Javasche Bank Interior

d. Floor. The colors used on the floor of the building include white, black, yellow, terracotta, green, and blue. The dominating materials on the floor tiles are asbestos to cement.

Figure 13 De Javasche Bank Floor Material Type

3.1.2.3. Building Mass

a. Roof. The shield-shaped roof of the building has a basic rectangular trapezoidal shape that is in harmony with the surrounding colonial buildings.

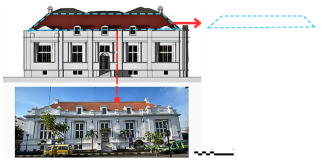

Figure 14 Basic Shape of De Javasche Bank Roof

b. Building walls. The basic shape of the building walls is rectangular with a symmetrical application that accentuates the overall smooth texture of the building and retains most of the previous ornamentation.

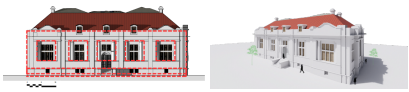

Figure 15 Basic Wall Form of De Javasche Bank

c. Windows and doors. The basic shape applied by the building to the windows and doors uses rectangular proportions with due regard to the style applied by the building.

d. Style. The style applied to the building is neo-renaissance, a style popular in the 19th and early 20th centuries. Strong characteristics of this style are symmetrical shapes, application of Tuscan columns, and adaptation to the surrounding climate.

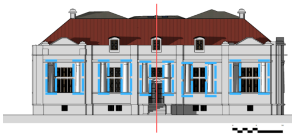

Figure 16 De Javasche Bank Architecture Style

3.1.3. Interface Design Preparation

Drafting is done by creating a user flow and goal statement (attached), then continuing with the storyboard. After that, there is a sketch that will be continued into a mock-up design. The design will be continued to the next stage, which is high-fidelity for the preparation of the prototype flow, and ready to be assessed for feasibility in the usability study.

Figure 17. shows the process of developing the interface design, which is to develop a mock-up design which is then developed in more detail at the high-fidelity stage, with the addition of features such as pop-up buttons and object descriptions.

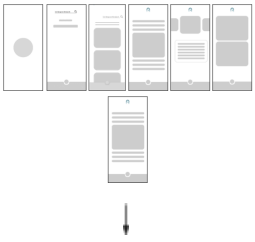

Figure 17 Develop Process of Interface Design

The scores obtained from the usability study by the selected respondents are averaged as follows:

Table 4. Usability Study Results on Interface Design Feasibility

No.	Usability Study Aspects	Average	Assessment Category
1	Learnability	4,4	Very Decent
2	Efficiency	4,3	Very Decent
3	Memorability	4,58	Very Decent
4	Errors	3,96	Feasible
5	Satisfaction	4,55	Very Decent
Total Average		**4,36**	**Very Decent**

Table 4. shows a value of "very decent" which indicates that both in terms of information and visualization of buildings in the application have been conveyed well. This value can grow if there are improvements made to correct the shortcomings of the application. The improvement information arises from the form that has been provided from questions related to the usability study.

In addition, modifications were made according to the respondents' suggestions, namely distinguishing the color of the button, changing the color of the search field, and moving the position of the pop-up button, as follows:

Figure 18 Design Modifications to Interface Design

In Figure 18, it can be seen that the color of the button that was originally inconsistent was changed so that the color was more consistent with the theme. Researchers also changed the position of the pop-up button, which originally covered the building illustration, so that its position was aligned, and gave color emphasis to the search section so that users could more easily find the search bar.

4. CONCLUSION

De Javasche Bank has elements of form, interior space, exterior, and architectural details that are still thick with neo-renaissance characters. This character can be recognized through analysis of the building facade elements, namely the roof. Dormers, external walls, windows and doors, to structural and non-structural columns of the building, then the elements of the building's interior, namely the walls of the interior, windows and doors, ceilings and columns, to the floor, as well as the mass of the building identified from the roof, building walls, windows and doors, to the building style. The three character-forming elements have been implemented by the building, displaying tangible cultural heritage from all elements. Some elements of the building became the unit of observation determined as part of the historical determinants such as form, exterior, interior, and architectural details, which will be integrated as part of the research objectives by redrawing and integrating them as part of the interface design in the Figma application

that facilitates supervision from both the designer and the user. The integration involved a design process and a pilot assessment by 20 selected respondents.

The interface design of the historical building application (RUSA-Historical Space) with De Javasche Bank as one of the objects, was tested and received a medium score in the initial design stage. The result obtained was 4.36 with an indication of very feasible and has gone through design modifications to implement suggestions from the questionnaire results.

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