



# International Journal of Design

Universitas Komputer Indonesia

Journal homepage: <https://ojs.unikom.ac.id/index.php/injudes>



## Exploratory Study of Visual Enhancement to Display Smart Apps on Android Phones for Selasar Imaji Library

*D Dewiyanti\**, *A M Puspasari\*\**, *F S A Kamil\*\*\**, *B K Ningtyas\*\*\*\**

\*Departemen Teknik Arsitektur, Universitas Komputer Indonesia, Indonesia

\*\* , \*\*\*Departemen Sastra Jepang, Universitas Komputer Indonesia, Indonesia

\*\*\*\*Departemen Ilmu Komunikasi, Universitas Komputer Indonesia, Indonesia

E-mail: [\\*dhini.dewiyanti@email.unikom.ac.id](mailto:dhini.dewiyanti@email.unikom.ac.id)

### ABSTRACTS

The attractive appearance of the system applications on the Android phone is quite important. There is an initial premise that the "Imaji Library" application that the Selasar Imaji Library owns is less attractive to users because it is not attractive. This study aims to explore an attractive appearance based on studies that are filtered to application users. Through Research and Development (R&D) activities, by 1) capturing questionnaire results from users to find out what is less attractive from the application display; 2) study of the search for the preferred visual appearance; 3) designing applications; and 4) application testing to librarians. The results of the exploration activities are in the form of (1) a new prototype design of the "Imaji Library" application display, (2) the development of application features in terms of procurement, processing, tracking, and member and circulation management activities. The implication of this research is helpful for librarians' convenience in managing libraries.

### ARTICLE INFO

#### **Article History:**

*Received 27 May 2021*

*Revised 18 June 2021*

*Accepted 23 June 2021*

*Available online 25 June 2021*

#### **Keywords:**

*Smart Application,*

*Android,*

*Display,*

*Librarian Activity*

*Management,*

*Efficient And Attractive*

## 1. INTRODUCTION

Currently, smartphones are no longer limited to just a means of communication but are also equivalent to Android because of their sophisticated features. Apart from making phone calls, users can play games, chat with friends, use messenger systems, access web services (such as blogs, homepages, social networks) and search for various information (Choi, S.W., et al. 2015). Android is an operating system for mobile phones and touch screen tablet computers based on Linux (Kasman, A. D., 2015). Based on this understanding, it can be said that android is an operating system that develops in the middle of other Operating Systems (OS).

One of the programs on Android is a mobile application, a mobile application that is widely used for various purposes. Mobile applications were chosen because they can increase service productivity, efficiency, quality, cost and communication costs (Alsswey, A. H., et al. 2020). A sophisticated application, it will not be attractive if an attractive display of features does not support it. This research focuses on a study to examine the features of "Imaji Library", an application that the Selasar Imaji Library owns.

The user interface (UI) is an important factor determining the increase in application traffic in the user experience. UI customization can also enhance users by showing usability that can be adjusted effectively (Hui, S. L. T., & See, S. L. 2015). An attractive UI can also have a positive impact on Application users. Attractive UI design is widely recognized as a powerful tool for engaging users,

supporting interactions and creating immersive and engaging experiences (Fang, J., Zhao, Z., Wen, C., & Wang, R. 2017).

There are previous studies that have examined mobile applications that focus on entertainment (Nugraha, R., Setiawan, E. B. 2016), which facilitate data communication services (Ahmad, S., Setiawan, E. B. 2016), as well as controlling DSLR camera devices (Primariadi, Y. O., Susanto, E., Sunarya. U. 2015). The results of the research are in the form of grouping based on user convenience, namely Tools applications, Social Applications, Communication Applications, Photography Applications, Educational Applications, News and Magazine Applications and Entertainment Applications. These studies also suggest the importance of User Interface (UI) to maximize usability and user experience and make user interaction with applications effective, efficient, and satisfying (Solecki, I. D. S. 2019). By combining several elements with reference to the system and users starting from systems such as computers, smartphones, etc. (Joo, H. 2017).

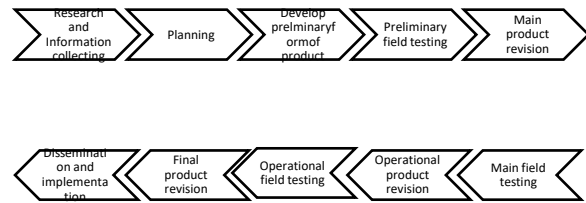
The elements that are considered are physical elements, perceptual elements and conceptual elements. In physical elements, there are many factors to create an actual UI design such as color combination, fonts, layout coherence, etc. (Youn, J. H., Seo, Y. H., & Oh, M. S. 2017). One of them is the color element. offers intuition-based speculation about the effects of color perception on emotional experiences (Elliot, A. J., & Maier, M. A. 2014). Similar research was also carried out by Wardhani, which produced a prototype user interface for mobile applications for business and academic

information systems (Wardhani, D., Wijaya, A. P. 2020).

The application to be studied in this research is the application that is owned by the Selasar Imaji Library, namely the Imaji Library. This application's function is an application that is used to record the circulation of books in the library, whether the books are available or are being borrowed. The application stores data when the book was borrowed and returned. Meanwhile, the Library application can only manually enter books in the library. However, updating a more qualified user interface can help librarians in inputting books at the Selasar Imaji Library. Using the Research and Development (R&D) method, a study was carried out to study the prototype.

## 2. METHOD

The research method in this research used Research and Development (R&D). Research and Development (R&D) is a deliberate, systematic research method to find, improve, develop, produce, or test the effectiveness of superior, new, effective, efficient, productive, and meaningful products, models, and strategies. It was done to measure the user interface's effectiveness in the application (Putra, N. 2015), with several research steps described in Figure 1, by comparing the previous user interface by designing a new user interface repair system, features are also updated to help make it easier for users.



**Fig 1. Research and Development Steps**

In the context of this research, the steps taken to update the user interface of the Perpustakaan Imaji application will be explained as follows. First, analysis of needs. In this study, among others, by conducting literature review and research in the form of paper.

The library study was conducted with problems related to this research by reviewing to find concepts that strengthen the User Interface of the application to be produced. Research in the form of paper by collecting information with comparison from the previous user interface to get information and data related to the development of user interface to be done. Then, System Design Development. After the analysis needs to be analyzed, then it is necessary to collect various information and data that can be used for the development of the user interface. In this stage, it starts by planning the design that is seen from the purpose of using the application needed by the user, namely the prototype of the latest user interface design of the Perpustakaan Imaji application. After obtaining the description of the design that wants to be used in the display of the user interface obtained from the assessment of the previous user interface, so that it can be developed into a new system. Then, validation design is a product design assessment activity involving experts in their field. In this case the new "Perpustakaan

Imaji" application user interface will be more effective than the old one or not.

Based on the validation test results from the experts will then be known weaknesses. The weakness will be tried to be reduced by improving the design so that later obtain the user interface of the application that is ready to be developed. After the design revision is declared good by experts, the final product is made by creating a user interface using the programming language.

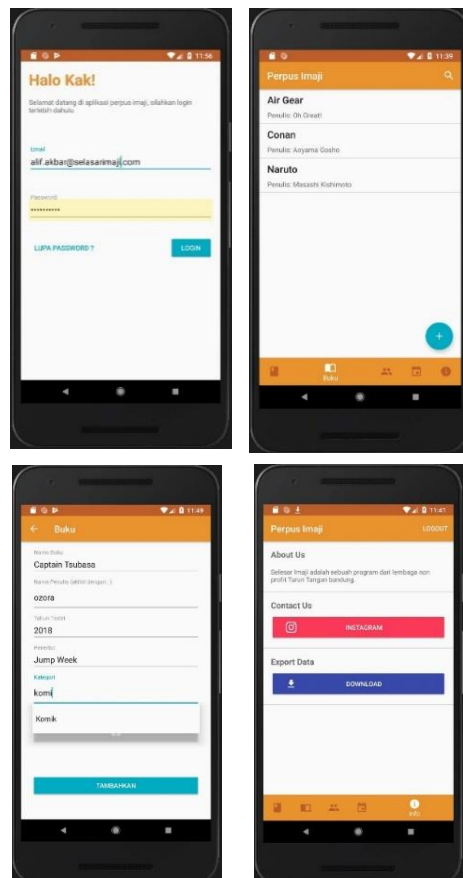
The end result will be a user interface system that has been developed already functioning and ready for field trials. If the system will be deficient, prospective users can notify and can be revised again. This trial can be done comparing the effectiveness of the old user interface with the new user interface (before-after). In this case there should be an experimental group and a control group.

### 3. RESULTS AND DISCUSSION

This paper is a study that tries to capture the level of user satisfaction with pre-existing applications. Therefore, the report results obtained from the study are accompanied by an updated application along with its specific explanation. Based on visual design theory and style and accessibility guidelines for mobile apps, we have identified evaluation criteria that can be applied with App Inventor.

As a UI design component, visual design expects to shape client meetings and improve them, given, for this reason, the impact of the visual component on ease of use and quality of items of interest (Schlatter, T., & Levinson, D. 2013). Visual design tends to use meta-standards for objects that have values of consistency, order and character. The

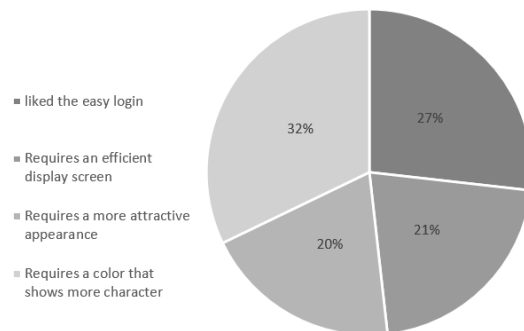
visual design itself, can be guided by the existence of a stylistic reference, for example, Material Design (Google Design 2019), which focuses on the interface plan for the Android application and provides proposals on the plan for different components, for example, color, textual style, format and sections. In addition, availability rules, for example, the Web 2.0 Content Accessibility Guidelines (WCAG 2.0) can also be used to direct visual plans, ensuring that content is open to whatever number of clients reasonably would expect. To update the user interface, a description of the advantages of the new user interface is attached. Therefore, to analyze the need for updating the user interface design, data is needed, where Figure 2 shows the Imaji Library application user interface form before updating.





**Fig. 2. User Interface of Perpustakaan Imaji's Application Before Updating**  
 Source: <https://apkpure.com/id/perpus-imaji/com.selasarimaji.perpus>

The image above is a login display on the Selasar Imaji screen, which will be an object that will be asked for its opinion from the user. Based on the results of a questionnaire distributed to many students in Universitas Komputer Indonesia, who used the application Selasar Imaji, 27% of the students liked the easy login. 21% percent of respondents need an efficient display, 20% need a more attractive display because the current display is considered only dominated by words and does not represent young people's character. 30% stated that the current display lacks strong colors because the colors that appear are too diverse and do not give the spirit of being interested in reading. An illustration of the results of the questionnaire can be seen in the pie chart in Figure 3.



**Fig. 3. The results of the Questionnaire Regarding the Appearance of the Application**

Then, after we do some research and gain a respondent, we provided a prototype of the design results that we have updated through the following explanations. The first thing that will be seen from the user interface design is the color combination used, the color is one of the things that is responsible for a form of interface display (Yogananti, A.F. 2015).

The reason why color is responsible for user interface design is that the user interface cannot be separated from the design components, namely the components that give visual aspects to a particular product. Referring to the sentence above, the combination of orange and white is dominant in the Perpustakaan Imaji application user interface. Orange is a tertiary color and a combination of red and yellow. According to Goethe (Yogananti, A.F. 2015), orange gives the impression of life, high passion, warmth, delight and joy, but orange also gives off a negative impression, which is annoying. As an educational application, the orange color certainly matches its meaning, which is a high passion and represents as if the Perpustakaan Imaji is an application that is full of joy and warmth (Haristian, N., & Rifa'i, M. M. 2020).

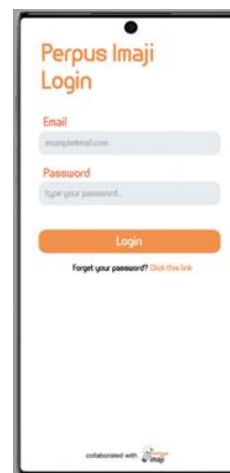


This does not mean that orange and white are a bad combination, it just needs to be tweaked and adjusted to the latest design shapes. Orange was chosen as the main color because the “Selasar Imaji” logo is an orange and black color, it is understandable why orange is the main color in the Perpus Imaji application. Therefore, we created a new user interface design while maintaining the orange color and adjusting and adding some appropriate color components. In addition to updating and adjusting the color code that will be used in the Perpus Imaji application, the author also updates the user interface design to be more minimalist and follows the development of smartphone application designs in general. As is the case with the Perpus Imaji application prototype as in Figure 4.

In updating the Perpus Imaji application's user interface design, the first thing to do is update the opening screen. In addition, the orange color, which is color coded FF9D20, has been changed to a more refined color with the color code F0914D. Therefore, the orange color that was previously very bright, looks calmer and softer without leaving the cheerful impression of the orange color. Then, for the user interface design when logging in, it is updated to be more minimalist as in the prototype as in Figure 5. Then, Figure 6 show the home screen of the newest Perpus Imaji application. On this screen we updated the icon and added an on-screen sub menu for the newly added book collection to the database.



**Fig. 4. New Opening Screen of Perpus Imaji's Apps**



**Fig. 5. New Login Screen of Perpus Imaji's Application User Interface**

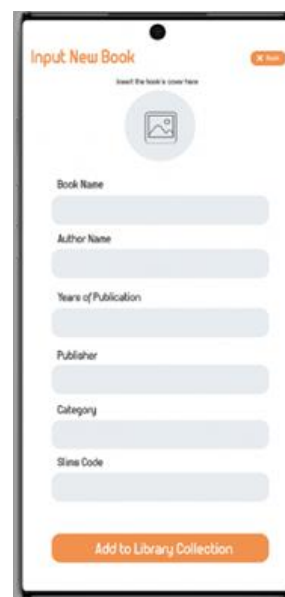


**Fig. 6. Prototype Menu Log in New Design Library Imaginary Application User Interface**

Figure 7 shows the screen from the book collection menu. In this menu, we prioritize visuals by providing a screen view through book covers that have been entered into the database. Therefore, interface result will be more attractive. Figure 8 shows the form's newest user interface to enter the data for the books that the child from Rusunawa Cingised want to borrow. The forms are made more minimalist without reducing the beautiful impression on the user interface design. In the Figure 9, this is one of the menus from the Date's List. The point is a list of book borrowers' data, when they borrowed it and when it is time to return it. In addition, this menu section is facilitated by a system where librarians can input the latest borrower data.



**Fig. 7. Prototype Menu Book collection New Design Library Imaginary Application User Interface**



**Fig. 8. Prototype Menu Input New Book New Design Library Imaginary Application User Interface**



**Fig. 9. Prototype Menu Date List New Design Library Imaginary Application User Interface**

#### 4. CONCLUSION

Updating and redesigning the user interface requires a joint discussion with the application user and getting good respondents, namely approval to change the application design. From the latest design, orange does not look bad and can be combined with white and black well if the design's composition is in synergy. Therefore, the new user interface design looks more elegant, minimalist, and more interactive than the previous user interface design.



## REFERENCES

- Akhmad Dharma Kasman. 2015. *Trik Kolaborasi Android dengan PHP & MySQL*. Jogjakarta: Loko Media
- Allswey, A. H., Al-Samarraie, H., El-Qirem, F. A., Alzahrani, A. I., & Alfarraj, O. 2020. Culture in the design of mHealth UI. *The Electronic Library*, 38(2), pp. 257–272.
- Choi, S.W., et al. 2015. Comparison of Risk and Protective Factors Associated with Smartphone Addiction and Internet Addiction. *Journal of Behavioral Addictions*, 4(4), pp. 308-314.
- Elliot, A. J., & Maier, M. A. 2014. Color Psychology: Effects of Perceiving Color on Psychological Functioning in Humans. *Annual Review of Psychology*, 65(1), pp. 95–120.
- Fang, J., Zhao, Z., Wen, C., & Wang, R. 2017. Design and Performance Attributes Driving Mobile Travel Application Engagement. *International Journal of Information Management*, 37(4), pp. 269–283.
- Google Design 2019. “Material Design”, <https://material.io/design/>, March.
- Haristiani, N., & Rifa’i, M. M. Combining Chatbot and Social Media: Enhancing Personal Learning Environment (PLE) in Language Learning. *Indonesian Journal of Science and Technology*, 5(3), pp. 487-506.
- Hui, S. L. T., & See, S. L. 2015. Enhancing User Experience Through Customization of UI Design. *Procedia Manufacturing*, 3, pp. 1932–1937.
- Joo, H. 2017. A study on understanding of UI and UX, and understanding of design according to user interface change. *International Journal of Applied Engineering Research*, 12(20), pp. 9931-9935.
- Putra, Nusa. 2015. *Research & Development Penelitian dan Pengembangan*. Jakarta: PT Raja Grafindo Persada.
- R. Nugraha, E.B.Setiawan. 2016. Pembangunan Perangkat Lunak TrackL Music Sharing Pada Platform Android. *Jurnal CoreIT*, 2(2), pp. 14-21.
- S.Ahmad, E.B. Setiawan. 2016. Pengembangan Layanan Mobile Pada IP-PBX Berbasis Session Initiation Protocol. *Proceeding Seminar Telekomunikasi dan Informasi*, pp. 56-61.
- Solecki, I. D. S., Porto, J. V. A., Justen, K. A., Alves, N. D. C., von Wangenheim, C. G., Borgatto, A. F., & Hauck, J. C. R. 2019. Code Master UI Design-App Inventor: A Rubric for The Assessment of The Interface Design of Android Apps Developed With App Inventor. In *Proceedings of the 18th Brazilian Symposium on Human Factors in Computing Systems* (pp. 1-10).
- Tania Schlatter and Deborah Levinson 2013. *Visual Usability: Principles and Practices for Designing Digital Applications*. Morgan Kaufmann.

- Wardhani D, Wijaya A P. 2020. "Perancangan Prototype User Interface Aplikasi Mobile Sistem Informasi Akademik Institut Teknologi Dan Bisnis Bank Rakyat Indonesia". Institut Teknologi Dan Bisnis Bank Rakyat Indonesia. BRITech (Jurnal Ilmiah Komputer, Sains dan Teknologi Terapan). 1(2) januari.
- Y. O. Primariadi, E. Susanto, dan U. Sunarya. 2015. "Perancangan Kendali pada Tripod dan Kamera DSLR Menggunakan Komunikasi Bluetooth Berbasis Aplikasi Android," eProceeding Eng., 2(2), pp. 6-11.
- Yogananti, A.F. 2015. Pengaruh Psikologi Kombinasi Warna dalam Website. Andharupa, Jurnal Desain Komunikasi Visual & Multimedia. 01(01).
- Youn, J. H., Seo, Y. H., & Oh, M. S. 2017. A Study on UI Design of Social Networking Service Messenger by Using Case Analysis Model. Journal of information and communication convergence engineering, 15(2), pp. 104-111.