A Touch of Indonesian Local Wisdom for the Concept of User Interface (UI) Design of Nusantara Traditional Wastra Digital Repository (NTWDR)

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Abstract. This paper aims to create a concept for the UI (User Interface) design for the NTWDR (Nusantara Traditional Wastra Digital Repository) with a touch of Indonesian local wisdom focusing on the implementation of Visual Communication Design and the implementation of eight golden rules of UI web-based and mobile applications to the NTWDR (Nusantara Traditional Wastra Digital Repository). The research is essential as kick-off research to the UX (User Experience) research that will be conducted after the UI (User Interface) is done. The research adapted the Design Thinking method of IDEO and Stanford d.School: Empathize, Interpretation, Ideation, Experimentation, and Test. It was designed with a simple sitemap that easy to follow and directly to the core of data. The uses of Nusantara colors and the interweaving of the intangible culture values of each NTW (Nusantara Traditional Wastra) are visual concepts behind each page of the NTWDR UI (Nusantara Traditional Wastra Digital Repository User Interface) design. The Result is the enchanting visual design representing Nusantara's diversity that attracts to be experienced and surfed.

Keywords: Nusantara Traditional Wastra Digital Repository, User Interface, Design Thinking, Indonesian local wisdom, Nusantara Colors
1. Introduction

This paper is a follow-up paper from the previous paper on Architecture Design for the Nusantara Traditional Wastra Digital Repository (NTWDR). It had an objective to formulate the understanding of Nusantara Traditional Wastra (NTW) and construct a valid architecture design of the Nusantara Traditional Wastra Digital Repository (NTWDR). The NTWDR acts as an infinite window of the complete Indonesian traditional *wastra* and as an Indonesian traditional *wastra* value chain market. The NTWDR is also designed as a place where Indonesian local wisdom will be an added value to support the Indonesian creative industry, and by using the application, we can explore Indonesian *wastra*.[1] Figure 1 shows the Information Technology architecture design of the NTWDR (Nusantara Traditional Wastra Digital Repository).

Furthermore, this paper aims to create a concept for the UI (User Interface) design for the NTWDR (Nusantara Traditional Wastra Digital Repository) with a touch of Indonesian local wisdom focusing on the implementation of Visual Communication Design and the implementation of eight golden rules of UI web-based and mobile applications to the NTWDR (Nusantara Traditional Wastra Digital Repository).

![Figure 1. The NTWDR (Nusantara Traditional Wastra Digital Repository) Architecture of Information Technology](image)

Web design is a term in the system that focuses on the website's appearance without eliminating the website's primary functions. It provides information to the readers or website visitors [2]. Creating a color scheme for a website is one of the essential things for designing a website. Color has an essential aspect of conveying messages delivered to users when they interact with the website. When deciding a color selection, it is something that must be done carefully. Design is the central part of the website, by understanding the principles of design (contrast, emphasis, balance, unity, and rhythm) and the elements of design (shapes, color, texture, lines, and direction) [3]. All of these fundamentals are combined to create a website that achieves individual or company goals.

The color scheme is very mandatory for the website. A website's attractiveness can be determined by the color combination accompanied by an excellent graphic design [4]. Perceptions of colors are subjective, which have a different meaning of each color [5], and precisely, some colors can persuade, provoke, and exciting individuals. Some colors also represent peacefulness, comfortable, and calmness. It means the color has been classified as having an impact on behavioral intentions. Even though there is no accurate theoretical basis for explaining how colors can affect feelings, color studies showed that colors could persuade people [6].

A useful application should undoubtedly have good design rules. Two instruments are usually used as the standard design of an otherwise good application. These two instruments are used as standard and used as a tool to evaluate whether an application has a good design.
According to Ernest Adam [7], the first divides useful UI components into nine components; this instrument is used explicitly for gaming applications, mobile games, and personal computer games.

Secondly, according to Shneiderman [8], dividing good UI components into eight components, these instruments are usually used specifically for web-based and mobile applications [9] [10]. This instrument is also called the eight golden rules.

This research focuses on implementing Visual Communication Design and implementing eight golden rules [8] into NTWDR (Nusantara Traditional Wastra Digital Repository). The components of the eight golden rules are as follows:

- Strive for Consistency: Good design has a consistent interface, such as consistent layout aesthetics, constant use of typefaces, and colors.
- Seek universal usability: it is necessary to accommodate diverse users' understanding and needs, so the design should be easy to understand through symbols that are already commonly used—an example of a home symbol as navigation back to the home view.
- Offer informative feedback: make sure the application provides feedback on any input data provided by the user. Feedback can be a notification of the data input on a form is correct or not.
- Design dialogs to yield closure: need to provide information to the user when finished doing a process to give satisfaction or relief. An example, when finishing the account registration process, it will display a new interface that provides information that the data was successfully saved to the database, and the registration was successful.
- Prevent errors: Good design needs to make sure the user does not make mistakes when using the application, especially for data input from each input text given the correct sample data. If the user makes an input error, then an error message will be immediately raised.
- Permit easy reversal of actions: note that an incorrect action that has been performed by the user can be canceled and corrected easily and quickly. The example provides a reset button.
- Keep users in control: Good app design has menu navigation that is easy for users to understand. Navigation naming should also reflect its use so that the user is in full control of every action given to the app and the app provides the right response.
- Reduce short-term memory load: humans have limited information, so designing applications that do not require the user to memorize the required information, and the menu layout is necessary.

2. Method

This paper adapted a Design Thinking method combination of IDEO and Stanford d.school in creating a concept for the UI (User Interface) design for the NTWDR (Nusantara Traditional Wastra Digital Repository). It started with the Empathize and Interpretation, to design UI (User Interface) by using the local wisdom [11] that reflect the NTW (Nusantara Traditional Wastra), followed up with an Ideation and Experimentation. It ended with a Test to evolve the design to the next step (Figure 2).

Empathize is the needs and insights collected from empathy. Interpretation is based on the point of view, the design challenge to be interpreted. Ideation means brainstorming and generating ideas for possible solutions, while Experimentation is design development. Test means testing solutions and gathering new insights.

The tests in this paper are dependent variables that include the user's needs conformity test. The test creates an open and pleasant atmosphere, making the user creative, the iterative test that is the user finding the solution for the product, and the test that can accommodate different user points of view. Because of its human nature, brainstorming and generating ideas, and design development in this paper are named Ideation and Quasi Experimentation.
The questions guideline sequence of the research starts from how we approach and interpret, how the idea was formulated, realized, and developed, and how the design will be evolved to the research next step.

1. Empathize
2. Interpretation
3. Ideation
4. Experimentation
5. Test

Figure 2. An adapted Design Thinking method uses for the research approach

3. Results and Discussions
The site map of the NTWDR (Nusantara Traditional Wastra Digital Repository), as shown in Figure 3, was designed to achieve a simple way to reach a complete understanding of each NTW (Nusantara Traditional Wastra). For the next paragraphs, we will refer to NTWDR as Nusantara Traditional Wastra Digital Repository and NTW as Nusantara Traditional Wastra.

NUSANTARA TRADITIONAL WASTRA
DIGITAL REPOSITORY

Figure 3. The site map of the NTWDR
The uses of Nusantara colors and the interweaving of the culture tangible and intangible values of each NTW are visual concepts behind each page of the NTWDR UI design as an approach to the Indonesian local wisdom. "The 'root' must be carried forward into the design and development of strategies for an international market" [12]. Wattimena, a famous Indonesian fashion designer, said that the traditional cloth is usually used for mass, wisdom, and conventional sacred ceremonies in a big event [13]. The approach to the value of colors is explicitly employed to build a specific character for each NTW. It is applied to elements design for every page, such as text, forms, colors, and images. Colors can be represented by bold colors and photographs of the NTW and its ambiance surroundings such as landscape, architecture, and interior details and society as a manifestation of the situation.

Colors have intangible value for NTW. In Betawi culture, red symbolizes courage in defending the truth, often used as a sweetener color, where pink is a symbol of friendliness and cheerfulness. Orange represents the caution of the Betawi people in speaking and acting. Yellow symbolizes the glorification of the Almighty, while green gives peace of mind as a Muslim Betawi culture. Moreover, blue symbolizes opening a broad vision with a relaxed and calm state of mind and mind, while white is a color that symbolizes purity and cleanliness. Black is the color of the guardian of the universe.

The layout (Figure 4) expresses the richness of NTW by showing significant images of NTW and its ambiance as an opening window. The NTWDR logo is revealed as the first identity. It was designed simple and without an image/logogram to highlight and emphasize the name itself and without competing with the richness design of the NTW itself.

The layout, the slider banner appearance, will be dominated in white with an image background that will be changed depends on the topic. To see more detail for each banner, a View Story button that links to the stories in Featured Posts about trending and essential news was added. The most prominent or hit articles on the banner slider can be shifted to left and right for a more comfortable and faster search. There are other articles about traditional literature under Featured Posts presented as a more exciting and interactive video. It is part of showing the interview or conversation with the craftsmen as the main actors in the preservation of NTW.

Type fonts of San Serif characters, such as DIN, use body text to achieve a relatively straight forward level of legibility even with small font sizes (under 11 points), especially for monitors.

Indonesia map was placed under the Location to give a broad knowledge about the wastra positioning in Indonesia by choosing the textile location to choose buttons on the left side.

The Mood board shows the color palette white, brown, red to black (Figure 5A) represents Indonesian multi-colors, with a neutral white background to achieve a neutral ambiance. At the same time, it represents purity and tenderness, creating a charming background, and placing the NTW as the focused object. A touch of red means the festive hospitality of Indonesian friendly warm people and symbolizes the sparks of eagerness. Generally, the fabrics used are the best fabrics of the highest quality, following the standards or norms that apply in that society.

This research used a case study on the Betawi and compared the mood board with Yogyakarta's contrast mood board. Figure 5 B shows the bright and vivid colors in one color scheme: red, pink, orange, yellow, green, and blue, while Figure 5 C shows the earthiness of the deep brown.

The study of Betawi color refers to the Betawi food, drink, and fabrics use for ceremonies such as Kembang Kelapa replica, Betawi dancer, and ondel-ondel. Eight Betawi dominant colors: red, pink, orange, yellow, green, blue, black, and white represent a diversity of society and culture life and symbolize happiness, energy, and open minds. While the black and white symbolize a bold and spiritual society.[14]

Simultaneously, the study of Yogyakarta color refers to the Yogyakarta food, cloth, and traditional clothing are dominated by various kinds of brown called sogan as a primary color represents a color for the King. Other colors that are also dominated are dark blue called indigo, off white to cream, green, and red as an accent [15].

On the Betawi page, the layout is divided horizontally into six parts: five of the main body of the NTW concludes local wisdom, history, philosophy, material, craftsmanship, and one for the Gallery.
To make it easier for the user, on the top of the page, there is information to let the user know how far they go into the page, Figure 6.

**Figure 4.** layout of the NTWDR

**Figure 5.** Mood board of the Home (A), Betawi (B), and Yogyakarta (C)
Figure 6. Page of Betawi
One of the goals of the NTWDR, as discussed in the previous paper as a marketplace of Indonesian traditional _wastra_ value chain [1], is provided in Gallery and Store as one related page. The Gallery in each NTW location page will connect to the Store page and vice versa, Figure 6 B.

To get some data from the buyer, the customer needs to sign up or sign-in. The sign-up page has the same look to the design to build the relationship between pages. The white-dominated page has an image background with a red color button to get the user's immediate attention. They can sign in personally or using data from Facebook or Google. There are some examples of reactions when sign up or sign in personally or from other third parties, and also when the customer made a mistake on the sign-up page, Figure 7.

Figure 8 is an example of NTWDR pages that have been combined and composited to give a culture looked and tasted. The digital repository will go to the mobile layout also. It has the same looked and tasted but got adjusted in size and position. The mobile design for Location, Betawi, Betawi Gallery, and Sign Up – Sign In things, Figure 9.

Both web and mobile NTWDR applications support eight golden rules criteria. The register page already offers informative feedback while the user needs to enter data and design dialogues to yield closure. In contrast, the user completes entering data and click the submit button. The application will give confirmation dialogues to tell the user the process neither completely save to the database or there are misleading data. To prevent errors, we can find at the password text box if there is a warning word in red font "Minimum 6 characters" (star character sign). NTWDR application has consistent font and navigation and already uses the universal symbol to connect to social media. The navigation menu keeps the user in control, and the application returns the page by the navigation control. The design already easy to use, and the information that searches is easy to find, so the user does not need to remind many steps while using the application.

The eight golden rules' criteria strive for consistency: good design has a consistent interface, such as consistent layout aesthetics, constant use of typefaces, and colors, also applied throughout the UI (User Interface)—Figure 8. The criteria of the users in control and seek universal usability are also applied—Figure 4.
Figure 8. The thorough layout of the Betawi section
4. Conclusions
The UI (User Interface) layout of the NTWDR uses colors representing the wastra origin culture. The choices of colors refer to the intangible value of the colors on each culture. In particular element, the layout was designed to have the same design to keep the relation on each page as the whole design of the NTWDR. While representing Indonesia's richness on the UI (User Interface) design, it is essential to implement the eight golden rules for UI (User Interface) design, and the most two related rules on designing are striving for consistency and seeking universal usability. The Result is the enchanting visual design representing Nusantara's diversity that attracts experienced and surfed and has its own identity.

Keeping the site map direct and straightforward to the core is essential for the users to keep focus. It is also important to close the end of the journey with the Gallery and Store that connect each other. The other point to be highlighted is the combination of pictures and motion pictures (video) to create an exciting and interactive engagement with the users.

Future research will be a challenge to start with prototyping and research on UX (User Experience), including measure the effective design and the most enjoyed experience by users.

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References
[1] Purbasari M, Sasmoko, Caroline OS, Manalu SR 2020 Architecture Design of the Nusantara Traditional Wastra Digital Repository Bina Nusantara University.
[2] Zeldman J 2007 Understanding Web Design [cited 2020 1 September] https://alistapart.com/article/understandingwebdesign/.
[3] Kyrnin J 2020 [cited 2020 1 September] https://www.lifewire.com/introduction-to-web-design-3470022
[4] Cuaresma A 2019 12 Key Elements of Modern Web Design: B3 Multimedia Solutions.
[5] Cherry K Can Color Affect Your Mood and Behavior? [cited 2020 1 September] https://www.verywellmind.com/color-psychology-2795824.

[6] Bonnardel N, Piolat A & Le Bigot L 2011 The impact of colour on Website appeal and users’ cognitive processes. Displays 32(2): p. 69-80.

[7] Adams E 2014 Fundamentals of Game Design. 3rd ed. USA: New Riders

[8] Shneiderman B, Plaisant C, Cohen M, Jacobs S, Elmqvist N, 2016 Designing the User Interface: Strategies for Effective Human-Computer Interaction. 6th ed. Pearson.

[9] Gong J, 2004 Tarasewich, P., Guidelines for handheld mobile device interface design. Proceedings of DSI Annual Meeting p. 3751-3756.

[10] Boon Khuan O 2013 Study of FSKKP Portal Based on Shneiderman's Eight Golden Rules, in Faculty of Computer Systems & Software Engineering Universiti Malaysia Pahang.

[11] Caroline OS, Fajarwati AAS, Octarina, Adriani 2002 Implementation of Jepara Wood Carving Patterns for Wastra Craftsmanship in Troso – A Design Thinking to Create a Sustainable Creative Industry Bina Nusantara University.

[12] Rombe OSC 2020 The Sui Utik, Creative Works and Tembawang: Retaining Biodiversity in Kalimantan, Indonesia eTropic 19(1): p. 124-150 http://dx.doi.org/10.25120/etropic.19.1.2020.3696.

[13] Fanani AK Wastra lebih dari sekadar kain. [cited 2019 1 October] https://www.antaranews.com/berita/823114/wastra-lebih-dari-sekadar-kain.

[14] Purbasari M, Marianto MD, Burhan MA 2016 The Dynamic of Betawi in Colors Mudra 31(3): p. 384-392 https://doi.org/10.31091/mudra.v31i3.59

[15] Purbasari M 2015 Analisa asosiasi wara kultural dalam tekstil dan kuliner tradisional di pulau Jawa 12(1): p. 53–68 https://trijurnal.lemlit.trisakti.ac.id/dimensi/article/view/99/99