

DESIGNING VISUAL USER INTERFACE AND EXPERIENCE MOBILE APPLICATION FOR UMN STUDENTS

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ABSTRAK

The modern world and its rapidly growing technology take on many roles in our social world. The influence of the technology is not only impacted personally but also socially in this case the education field. Multimedia Nusantara University is an ICT-based college (Information, Communication, and Technology) that encourages its students to participate in contributing to technological developments. One example is by presenting an academic application, namely UMN Mobile App. But the app has a number of problems that result in low usage rates. So the formula of the problem is how to improve the usage level of the application by redesigning the content and the interface of the application. The research methodology used is mix method including observation, focus group discussion, and interview to user. The results to be achieved through this research is the increased level of application usability by creating application content that suits the needs of students. The application is expected to support the academic process of students and can be an important part in the student's academic life while still studying at UMN.

Keyword : User experience, User interface, mobile apps, academics

ABSTRAK

Dunia modern dan teknologi yang berkembang pesat mengambil banyak peranan dalam dunia sosial kita. Pengaruh teknologi tersebut bukan hanya berdampak secara pribadi namun juga sosial dalam kasus ini bidang pendidikan. Universitas multimedia nusantara merupakan perguruan tinggi berbasis ict (*information, communication, and technology*) yang mendorong mahasiswanya untuk ikut serta dalam memberikan kontribusi terhadap perkembangan teknologi. Salah satu contohnya adalah dengan menghadirkan aplikasi akademis, yaitu umn *mobile app*. Tetapi aplikasi tersebut memiliki sejumlah masalah yang mengakibatkan tingkat penggunaannya menjadi rendah. Maka rumusan masalahnya adalah bagaimana meningkatkan tingkat penggunaan aplikasi dengan melakukan perancangan ulang konten dan desain

tampilan aplikasi. Metode penelitian yang digunakan adalah *mix method* meliputi observasi, fgd, dan wawancara kepada pengguna. Hasil yang hendak dicapai melalui penelitian ini adalah meningkatnya tingkat kegunaan aplikasi dengan menciptakan konten aplikasi yang sesuai dengan kebutuhan mahasiswa. Aplikasi tersebut diharapkan dapat menunjang proses akademis mahasiswa serta dapat menjadi bagian penting dalam kehidupan akademis mahasiswa selama masih berada di UMN.

Kata kunci : *UI/UX, Akademik, Mobile, App*

OVERVIEW

Multimedia Nusantara University (UMN) as a multimedia-based university and ICT (Information and Communication Technology) strongly encourages its students to participate in the world of ICT. This is proved by the sophisticated campus facilities both in hardwares and softwares. One of them is the UMN Mobile App. This mobile application was made with the aim of providing convenience to the students in conducting their academic studies at UMN. This convenience includes the provision of informations relate to college schedules, campus events, shuttle buses, and campus map.

Regarding student affairs, students are often facing some academic difficulties in their studies which caused by internal and external factors. External factors, such as class informations/retractions that are not informed to all students in a particular class or even misinformed informations about substitution class schedule. This causes students a loss in terms of time, effort, and cost. On the other hand, the internal factors such as students' private life made them hard to find a focus on academic information details. Therefore, the explanation above becomes the basic purpose of UMN Mobile App at Multimedia Nusantara University.

But the presence of UMN Mobile App has number of problems which made the application has low active users. This is because UMN Mobile App lost its function as student assistant. Based on the FGD results (focus group discussion) that the author did to the 9 UMN active students related UX (user experience) UMN Mobile App, indicating that the application problem lies in content that does not update (including information and features) and the nature of the application itself that is not user-centered design. According to students, the application does not support their academic process while on campus. This makes student's satisfaction decreased and the usage of application stopped because there is no benefits that can be obtained through the application. In addition, the UMN Mobile App problem lies in the UI design (user interface). Based on the results of the survey to 98 respondents who are UMN active students, 62.2% said they never use the previous UMN Mobile App and only 20.4% answered that the UI looks satisfactory after comparison with 3 similar applications. So based on the data above it can be concluded that UX which is

not user-centered design causes unsatisfactory UI which leads to loss of users and function.

Based on the description above the problems formulation are:

1. How to increase UMN Mobile App usage by UMN students by redesigning UMN Mobile App.
2. How to design a suitable UI (user interface) based on the contents of UMN Mobile App.

The purpose of this research are:

1. How to create an user-centered design application's content that suits the needs of students and how to design an user interface that suits the content.
2. How to increase the application usage for UMN students actively so that it can support student's academic process.

THEORITICAL REVIEWS

Interaction Design

According to Goodwin (2009: 5), interaction design is an understanding that focuses on the functionality of an application. That functionality includes the practical functionality of the design of application display, which talks about what the user wants and how the user interacts in order to achieve his/her goal. Interaction design itself consists of 3 components, namely interaction framework, visual framework, and industrial design framework (2009; 11). Interaction framework describes the stages of action that will performed by the user, such as how to sign up an account in social media. Interaction framework is represented by using the pre-built personas, and assisted with site map creation and task flow. Visual framework serves to deliver the quality of a brand or application by using language and design elements, such as typography, colors, and shapes. These elements are organized into a composition to maximize the concept of interaction that has been made before. Industrial design framework is one part of the industrial design studies. This framework has a focus on making the hardware or physical form of a device (2009; 11-13).

Mobile Application

According to Salz & Moranz (2013: 11-17) mobile app is also defined as the result of a merger between mobile characteristics and the application. Basicly, mobile devices have more personalized and superior mobility when compared to computers. But both computers and mobile use applications to interact with their users. Therefore, in terms of application's content and work system, mobile and computer are not so much different. With the benefits from mobility and functionality, the mobile app helps users to solve the problems they encounter.

User Experience Design (UXD)

According to Unger & Chandler (2009: 2-5), User Experience Design (UXD) is the result of creation of a tangible sync process that affects the user experience. These elements are applied to virtual applications (non-tangible) with intention to affect the perception and patterns of user's behavior regarding the application. In the UXD component there is a component named personas. According to (Goodwin, 2009: 229) Personas is a description of the user's basic patterns based on the attention/needs, objectives, and patterns of user's behavior. Personas are made based on actual data that have been studied previously. Through the personas, a designer can get a clear picture of the user as well as potential users of an application.

User Interface Design (UID)

According to Thornsby (2016: 8-11), UID is a bridge that connects users with an app or a computer program. Users connected to a system and have interactions like a conversation. UID makes it easy for an app to be read by users because it's responsive, clear, concise, consistent, and has aesthetic value. (Thornsby, 2016) A user interface must be balanced, clear, and concise in the delivery of its message. Delivering message that less clear or too concise causing confusion about the status of the action that user did. However, delivering message that is too obvious can also be a problem because users will have difficulty to digest the information that floods him/her. As a bridge between the system and the user, user interface must be responsive. Interaction on the user interface that tends to be slow makes the value of an application are not delivered. This is because the content of an application is hidden and covered by an unpleasant user interface. Thus, users will never know how much potential is actually offered through the app. Consistency is one of the important elements in making UID because it prevents frustration in users' mind. Users tend to get confused while using an app for the first time. By consistently guiding the user in every app display page, users will feel familiar with the application system and automatically errors when interacting can be minimized. In addition, an user interface must have aesthetic value in order to provide comfort for users' eyes. The aesthetic value of user interface can be built using design principles, such as align, hierarchy, layout, etc. Design principles make it easy for users to identify what is inside a display page (pp. 12-14). In the process of making UID there are many elements, such as navigation, forms, table and list, search, sort, filter, tools, feedback, & affordance.

RESEARCH AND DESIGN METHODOLOGY

To achieve the goal in designing UMN Mobile Apps, the first step is analyzing UXD and UID UMN Mobile apps that have been made before using quantitative and qualitative approach to UMN students. The results of this approach will be approached once again with the theory of interaction design, User Experience

Design, and User Interface Design through literature review to get a strategy of redesigning User Experience Design and User Interface Design on UMN Mobile Apps.

In terms of design, the methodology of Goodwin is applied (2009: 6-8) through the stages of Project Planning, Research, Modeling, Requirements Definition, Framework Definition, Detailed Design and Implementation Support.

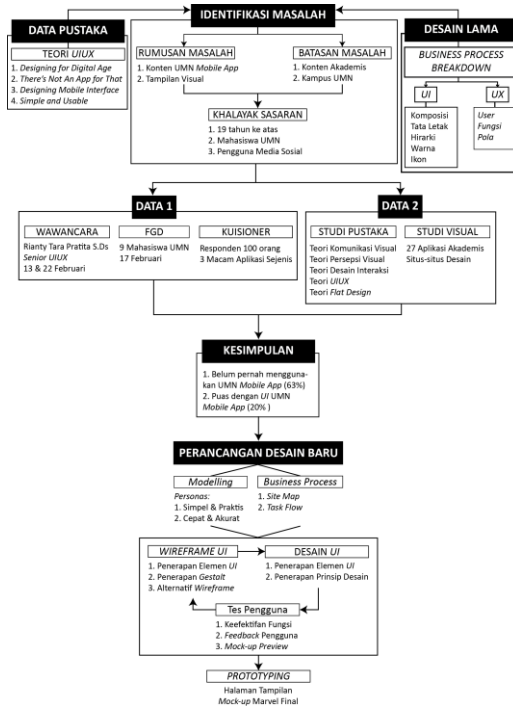


Table II : Methodology Scheme

PROBLEM ANALYSIS

Observation

According Goodwin Observation is they way to see patterns of user's behavior against the application in their environment everyday. In addition to knowing user's interactions, it is also an useful method to capture what problems users encounter when using the app (2009: 56-57). Based on these definitions, the author make observations on UMN Mobile App behavior patterns. The observations made more focused on the pattern of related application's behavior and similar applications, while the pattern of user's behavior will be described in the FGD.



Figure 1: Current My Umn mobile apps

The workflow on UMN Mobile App is fairly easy to understand because of the small number of derivatives. The average number of instances contained in the app feature is 2-3 derivatives only. However, application's navigation patterns and page composition tend to be inconsistent. This makes the app look less visually appealing and potentially creates confusion in the user's mind.

Focus Group Discussion

According to Goodwin (2009: 56-57) FGD is a shortcut to get a lot of feedbacks about something in informative way. This is because FGD are conducted in groups at the same time, creating dynamic opinions and reactions. The FGD process was conducted with 9 UMN active students from various faculties and majors. First, the FGD was conducted by asking 9 students about their experience using UMN Mobile App. As a result, 4 out of 9 students said they had used the UMN Mobile App while the rest said they never knew or used the application before. The four students who answered had used UMN Mobile App are asked the question why they are using this application. They said that the reason for using the application lies on one of its features, i.e. the shuttle bus schedule. According to the four students this feature is very helpful for students who do not have a private vehicle or who lives in campus dormitory. Secondly, the author tested the application followed by asking questions about why students stopped using UMN Mobile App. They said UMN Mobile App does not have new and useful information and content for them. According to the students the content and information are very important to consider when creating this kind of academic application. Based on the FGD results above, it can be concluded that the students feel that the content and information contained in UMN Mobile App is currently not sufficient for their academic needs in conducting academic process.

Questionnaire

According to Creswell (2014, 173-176), the questionnaire is a study of behavior patterns and individual attitudes in a population into numerical formats, such as numbers, graphs, and statistics. Based on data from Student and Academic Administration Department there are 6244 UMN active students on even semester 2016/2017. According to Slovin's random sampling theory with a margin of error of 10%, the number of respondents to be obtained is as many as 98 people with a ratio of 1 respondent is representing ± 63 students from the entire population. The purpose of the distribution of questionnaire, namely to determine the number of users and opinions of students related UI UMN Mobile App. Based on the results of questionnaire conducted with 98 respondents, students who answered had used UMN Mobile App is equal to 37.8% (2,360 students), while those who answered never used is 62.2% (3,883 students). In addition, a comparison between similar applications is done to find out the general overview of student's preferences related to the UI design of an academic application. Each respondent is given the opportunity to observe 3 kinds of applications along with a sample of 6 page views. After looking at these 3 applications, respondents were asked to choose the UI design that they found most functioning and satisfying. Based on the results of the questionnaire above, of the 98 respondents 44.9% (2,803 people) chose the Santa Barbara application, 34.7% (2,166 people) selected the Qatar application, and only 20.4% (1,273 people) chose UMN Mobile App. Thus, it can be concluded that UMN Mobile App has a relatively small number when compared to the total UMN student population. In addition, UI design is also felt less satisfactory for students.

DESIGN ANALYSIS

UX Experience

Making an UX concept on UMN Mobile App begins by making user application personas first, which is UMN students. Based on observations it can be concluded that students spend 90% of their day by accessing smartphones wherever and whenever they are. Therefore the personas for UMN Mobile App is made to focus on application accessibility level. In addition, the concept is also done by analyzing the mental model of UMN students as a student as well as application users. Based on the mental model above, the author concluded the concept of application design using metaphors consisting of: ecological perspective, interaction perspective, and emotional perspective. This is done so that the application can approach the user both from the environment and emotional. In terms of ecological perspective, the application serves as a reminder for students to minimize errors that can occur during the academic process. Interaction perspective, an application interacts like an agenda where users can view academic history as well as their plan for their own academic programs in the next semester. Emotional perspective, application works interpersonally as a student assistant. For business process the application focuses

on the activities and academic needs of UMN active students. Therefore the selection of features and content is tailored to the students.

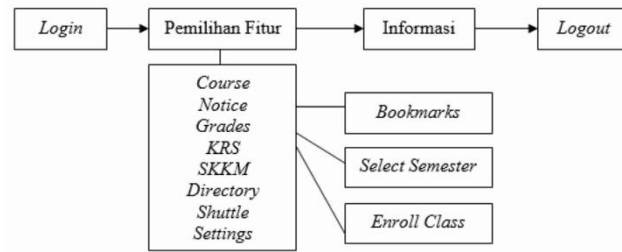


Table II : Business Process

The application wireframe has undergone many changes and revisions to find out the right wireframe in accordance with the design concept of application. Broadly speaking the first option is to maintain the existing wireframe on the old application, namely by using the springboard on the landing page and added images slider that serves to promote campus events/activities. Second option is created using facebook-like views, and instagram where the user is taken to the page that the user's primary purpose is. This wireframe style does not use a springboard but instead uses inline swap or tab menu. The tab menu helps to reduce frustration on users for its benefit which is more flexible, minimal effort, and saving time. The tab menu of features is placed below intentionally in order to make it easier for users' fingers to access other features flexibly. For the options buttons which were previously made as a list is now replaced with tab menu to reduce the users' action when they want to do inline action repeatedly. In addition, wireframe like the picture below also saves user time due to minimum loading. Using the tab menu leads users to tend to swipe rather than tap.

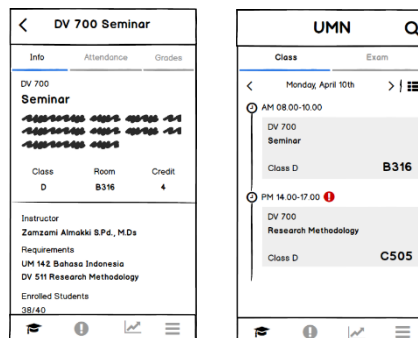


Figure II : Wireframe

User Interface

For the use of typeface, the author used Proxima Nova as one of the standard android typeface. The average size used includes 21 pt for head, 18 pt semibold for sub head, and 15 pt for body contents. However the composition of the font size usage may change based on page view type. For application color selection, most of it consists of dark blue and white color taken from the color on UMN logo and gray color to be the background of the display page. The use of blue and white deliberately done to give the impression of clean, simple, but reliable and trustworthy. It is associated with perceptions received by users based on the color psychology theory.

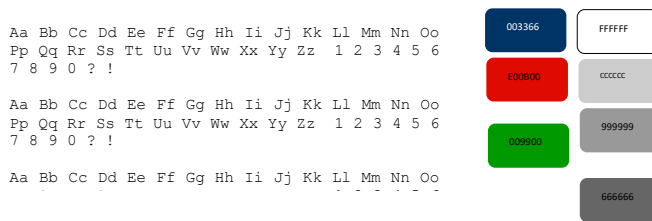


Figure III : Typography and Color

For design style the author used half-simplicity design style for several reasons. First, the design style helps to identify an application status. The identification is visualized using the UMN blue color on the page view and also on the user action button. Second, with half-simplicity style students can also read and scan the contents of application easily and quickly because it is to the point. In addition, when associated with a design concept which is a personal assistant this style gives a characteristic of neat and accurate description that helps to convey information that users want to know quickly, specifically, and also relevant.

Visual Icon

The icon design style that will be used in the design of this application is the fill and outline icon style. The use of these two styles are intended to give a more distinctive impression to the user when using the application. Outline styles will be used when an action button is not selected or in a passive state while the fill style will be used when an action button is selected or active. This is expected to help the user to quickly identify the status of a button or action.

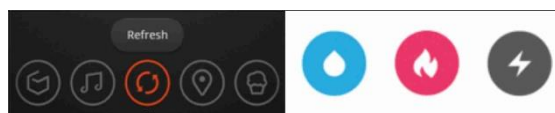


Figure III: Outline style and fill style examples

Icons are created based on a 24px x 24px box field to maintain the proportion of icons in various screen resolution sizes. The use of the box field is also intended to make the created icons look aligned and unified.



Figure IV: Visual Icon My UMN

Page Layout

The display page that will appear first when the app is accessed is a splash screen which helps to inform the authorities responsible for the application. After the login page user will go to course page as one of page of landing page. The course page is divided into class and exam menu tabs. In addition this page also comes with a calendar that allows users to view lecture schedules from day to day. The next page that can be accessed by the user is the course description page. This page also comes with a student attendance list and related course grades that enable students to monitor attendance and scores. While in the grades section, students can see the scores obtained both in alphabetic and numeric along with the division of tasks, mid term, and final term. Notice is the second feature in the landing page consists of info and bookmarks. In the info section there are days, dates, hours, and categories of information which can then be filtered using filters. These categories include: course, campus, and events. Each information will belong to one particular category and to get a more detailed explanation the user can do a quick access by moving the page. Grades is the third feature in the landing page consisting of semester selection and description of courses that have been taken previously. This page also contains GPA as well as student cumulative GPA. Menu is the fourth feature in landing page consisting of KRS, SKKM, Directory, and Shuttle Bus. Menu view is made in the form of list and not springboard because it only consists of 4 kinds of contents. Directory contains email and contacts of campus, faculties, and student affairs. Directory is created with tab menu from general and faculty. The faculty section contains contacts of lecturers, heads of study program, and administration from each faculties of UMN. Settings contains Account, About, and Logout. Account contains profile and change password. The profile page contains information about names and Student ID, emails, and student's major and interests.

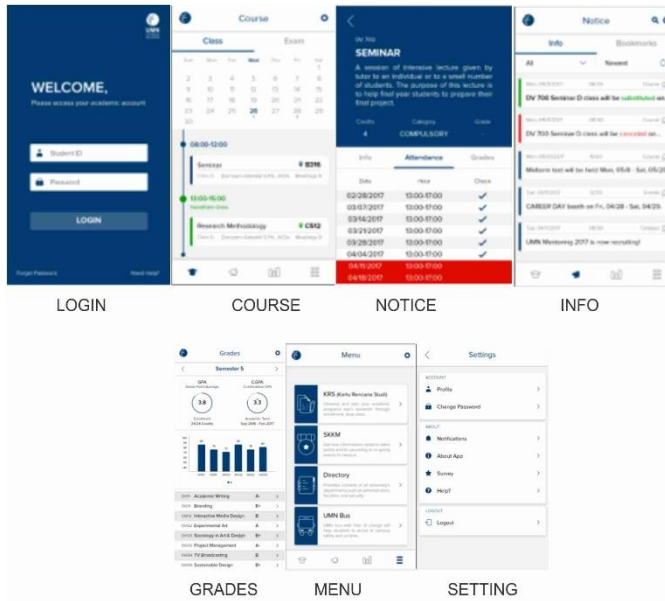


Figure V: Page preview

Onboarding Page

Onboarding page in this application is made by using blue and white color with simple display style and to the point. This page consists of 8 pages, namely: account page, course page, notice, grades, KRS, SKKM, Directory, and Shuttle Bus.



Figure VI: Onboarding Page

CONCLUSION

Based on the results of the analysis obtained concluded that the previous UMN applications classified as an application that failed to achieve its objectives. This is because the application is less user-oriented and goal-directed where the number of users and the level of user satisfaction of UMN Mobile App is low when compared to the number of UMN active students. In addition, the previous UMN Mobile App's display design also lacks in terms of composition, consistency, and aesthetics. This is due to immature student personas which gave a bad impact to the application usage

level. Therefore, in order to improve user levels and user satisfaction, the UMN Mobile App redesign was done by redesigning the app's content. The content is produced through personas making and student's mental models. Both are made by based on the research that includes cognitive, affective, and environment that affect user's behavior. This made a UI/UX of one application related to functionality become clear and well targeted.

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