

# Sustainable Digital UX/UI Innovation Mobile Application Design for Bandar Ikat Weaving Msmes, Kediri City

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## ABSTRACT

*Weaving Ikat Bandar Kediri is an MSME engaged in the production and sale of ikat woven fabric as well as an educational forum for ikat weaving located in Bandar sub-district, Kediri City, East Java, which sells conventionally and online via social media Instagram and WhatsApp. However, sales carried out online are still considered not to be running well, effectively, and efficiently. So a solution is needed to overcome the problems experienced by Ikat Weaving MSMEs in the form of developing more effective and organized marketing media to increase consumer attraction and product sales. The author recommends designing a user interface prototype and user experience of the Tenun Bandar Ikat mobile application with the aim of user comfort. This research aims to design and implement a more attractive and functional user interface presented in the Tenun Bandar Kediri (TBK) mobile application. This design aims to promote Bandar Kediri Ikat Weaving as branding for local products typical of the City of Kediri. The research results show that research has a positive influence on digital innovation in the development of sustainable local products based on MSMEs.*

**KEYWORDS:** Digital Innovation, Mobile Apps, Sustainable MSMEs, User Experience, User Interface

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## 1. INTRODUCTION

Bandar Kidul Kediri Ikat Weaving is a handicraft in the form of weaving that has been established since the 1950s which processes raw materials in the form of thread into semifinished products in the form of cloth and finished products such as sarongs, clothes, shoes, scarves, wallets, hats. Until now, the sales process at the Bandar Kediri Tenun Ikat MSME is still carried out conventionally and carried out promotions via social media Instagram to display product catalogs and WhatsApp as a communication medium to serve customers.

Currently, it is felt that the online sales business process is still not running effectively and efficiently. This is because the process of searching for products and ordering transactions takes a long time. After all, it involves two media applications, namely Instagram and WhatsApp. Then, there is a lack of transparency during the process of sending products to customers, such as the estimated delivery of batik cloth sometimes does not match the estimated time given. The next problem is for administrators regarding managing online sales data which is still done manually which can cause problems in recording products and sales. The recording process takes quite a long time, so it is felt to be less efficient. Based on this information, UMKMT Tenun Ikat Bandar Kediri wants to create innovation in the form of an application for selling bandar ikat weaving.

To be able to design an application, it is necessary to implement a structured User Interface (UI) and User Experience (UX) to suit the needs of the user and provide comfort for the user (Ramadhanti & Slamet, 2020). User Interface (UI) is an important aspect that must be implemented in application design because it is a means of interaction between the system and the user (Fattah et al., 2023). Meanwhile, User Experience (UX) is how the user feels or experiences when using the product or service being designed which includes branding, design, usability, and function (Husodo et al., 2022).

In designing a UI/UX, there is a method that can be used, namely design thinking (Azhar et al., 2022). Design thinking is an approach that provides creative practices, cognitive processes, and design culture. The design thinking approach focuses on solving problems and providing solutions according to users' needs which are translated into value (Magistretti et al., 2020). There are 5 stages in this method, namely empathize, define, ideate, prototype, and test (Cross, 2015). The design thinking process has previously been applied in several previous studies. The first researcher, carried out by (Dobrigkeit & De Paula, 2019) by applying design thinking in designing a user experience that is oriented towards potential users' problems and evaluating solution designs using the User Experience Questionnaire (UEQ). The second research, conducted by (Darmawan et al., 2022) which redesigns the user interface and user experience using a design thinking approach which focuses on creating new solution ideas which are then evaluated by comparing old and new applications to expert users and end users.

Based on the description that has been explained, the aim of this research is to create an innovation to attract more consumer interest by designing an application. In this design process the author is limited in scope by only producing a mobile application

prototype. In this design process the author is limited in scope by only producing a mobile application prototype. By designing a good prototype, it will immediately adapt to user needs. UI/UX technology development aims to provide comfort and convenience to users when using the product. In this research the author will design a UI/UX design prototype for the Bandar Kediri Tenun Ikat UMKM mobile application with limitations only at the prototype design stage. The design thought approach is used by the author to focus on users and understand and adapt to their needs. The author used Figma as a UI/UX design tool for the mobile application prototype for the UMKM Tenun Ikat Bandar Kediri, and the SWOT analysis method was used to evaluate important elements that could influence this design. With the designed sales application, it is hoped that it can solve problems and be able to help administrators and customers of the Bandar Kediri Tenun Ikat MSMEs. So that the sales process of ikat weaving becomes more effective and efficient and can attract the interest of people outside the city of Kediri

## 2. LITERATURE REVIEW

### Mobile APP

Technological developments have brought innovation in the form of mobile applications used for digital promotions. The main advantage of this innovation is the ability to disseminate information widely and be accepted by society (Ballard, 2007) Mobile apps are special software designed to run on tablets and smartphones. Mobile applications utilize user interfaces that use specific interaction mechanisms provided by the mobile platform (Dobrigkeit & De Paula, 2019) integration with web-based resources, these applications can access related information and then collect, analyze, and organize that information to suit the appearance and functionality of the mobile platform (Benyon, 2017).

### E-Commerce

E-commerce or electronic commerce is an online site used for buying and selling transactions carried out via electronic media (Laudon & Traver, 2019). E-commerce is a rapidly developing technology for buying and selling goods and services via electronic networks such as the internet. The development of online buying and selling media, including marketplace platforms, provides many benefits such as wide reach, flexible time constraints, ease of transactions, increased delivery security, more affordable costs, and so on (Li & Ku, 2018). E-commerce and marketplaces have differences in understanding and customer access. E-commerce is an online site for buying and selling, while a marketplace is a service provider with products from various sellers. Marketplaces are relatively difficult to acquire customers, while e-commerce is easier (Guercini et al., 2018).

### User Interface (UI)

A user interface is a collection of interactive system components, both software and hardware, that provide information and control to users to complete specific tasks in an interactive system (Ruiz et al., 2021). User interface (UI) is a visual interface that is used to make it easier for users to access and interact with computer programs to achieve certain

goals. UI is an important element in a system, because weaknesses in the UI can cause overall system failure (Hussain et al., 2018). When designing a UI, you need to pay close attention to existing aspects. Apart from the aesthetic aspects that are visible visually, the UI must also be able to convey its function well, which is usually referred to as usability (Hasani et al., 2020). Several supporting components in usability design include ease of remembering and learning, effectiveness, managing errors made by users, and user satisfaction (Bakaev & Khvorostov, 2018).

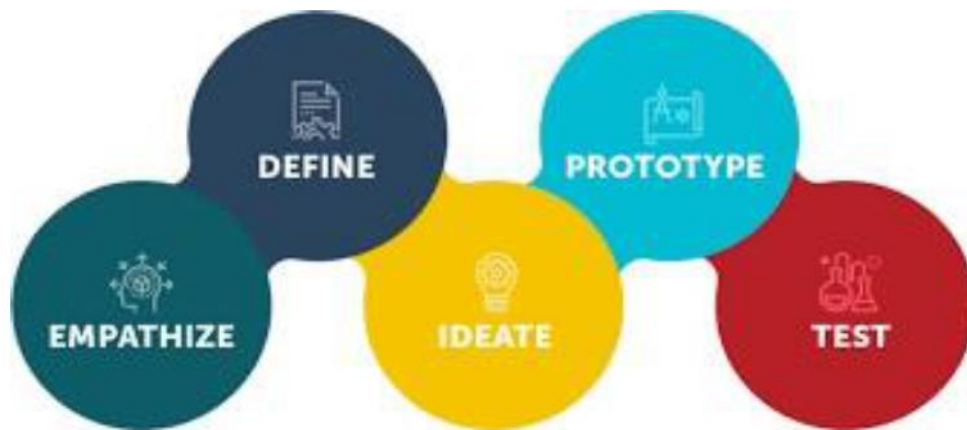
### **User Experience (UX) Mobile Apps**

User experience is the entire process of a user's journey interacting with a product (Muslim et al., 2019). Meanwhile, User Experience (UX) includes all factors related to the user's experience when using a product, such as the extent to which it is clear how it works, the feelings that arise when using the product, and how users succeed in achieving their goals through the product (Benyon, 2017). Not just interacting, user experience has the function of making it easier for users to complete goals. Basically, experience is subjective because all human being's feelings of satisfaction have no benchmark (Bitkina et al., 2020). In achieving user goals, user experience will coincide with the user interface as a visual display in the user interaction process. In this case, the user interface and user experience have an important role in the goal of creating a mobile app (Quiñones et al., 2018).

## **3. METHODS**

The author divides it into three stages in designing this research, namely the initial stage which includes literature study, interviews, then entering the design stage using a design thinking approach and data analysis using SWOT, and the final stage making conclusions and suggestions. In the initial stage, the author looked for information from various sources, such as previous journals related to UI/UX design as well as design thinking approach theory and SWOT analysis. An online survey was conducted looking for information related to Bandar Kediri Ikat Weaving. At this initial stage, the author also obtained primary data in the form of interviews with the Kediri Cooperative Service regarding the Bandar Ikat Weaving MSMEs in Kediri City, while secondary data was taken from websites and Instagram.

At the design stage, the author uses the design thinking method which is an approach method by approaching the user. Design thinking integrates user, technology and business needs. This approach will help the writer to adapt to what the user needs so that the writer can produce a product that originates from the user's problems. In the design thinking method, there are 5 series of processes, namely Empathize, Define, Ideate, Prototype, and Testing.



Source: Brown, 2008

**FIGURE 1.** Design Thinking

Empathize is a process of observing and interviewing users. Observations are made for the purpose of understanding what users need. How to collect data is through observation or interviews and questionnaires. The author obtained data for this stage from interviews conducted with the Bandar Kediri Ikat Weaving MSME group. The defining process is carried out after knowing the focus of the problem being experienced clearly based on user needs based on the results of observations made in the previous process (empathy). This design uses SWOT data analysis, namely, an approach used to evaluate important elements which include strengths, weaknesses, opportunities and threats that can influence an organization, project, or certain situations. The analysis carried out is related to the potential that exists in Weaving Ikat Bandar Kediri. After knowing customer needs, product requirements are arranged according to predetermined user objectives. Then, the author completes the third step, namely ideate. Ideate is a step that creates a work that comes from a collection of ideas to solve the problem faced in the previous step. The idea step aims to find many ideas so that the resulting product meets the user's wishes, the creator then translates these ideas into a design at the beginning of the prototype framework

## 4. RESULTS

### SWOT Analysis

The SWOT data analysis method was used in designing the UI/UX prototype of the UMKM Tenun Ikat Bandar Kediri mobile apps to optimize the design.

#### 1. Strength

Strength, Bandar Kediri Ikat Weaving is unique, namely its fabric is dense, the coloring is strong and does not fade easily when washed or used repeatedly, as well as a solid weave even using traditional looms. Bandar Kediri Ikat Weaving has the opportunity to become an icon of unique product characteristics, attract consumers, increase local

income, and strengthen the economy of the Bandar Kidul sub-district, Kediri City as a whole.

## 2. Weakness

Weakness, Weaving Ikat Bandar Kediri has several weaknesses that need to be considered and improved, such as lack of effective promotion and marketing, limited skilled human resources, lack of product diversification and experience, lack of effective management and coordination, and lack of access to education and training. To overcome this weakness, efforts need to be made to improve and develop more effective marketing strategies, increase human resource skills, diversify products and experience, improve management and coordination, and increase access to education and training. This action is expected to increase the potential and growth of Bandar Kediri Ikat Weaving MSMEs as a whole.

## 3. Opportunity

Bandar Kediri Ikat Weaving MSMEs have an interesting opportunity to develop local products based on tourism education. The potential for increasing tourism, developing ecotourism, increasing awareness of culture and traditions, partnerships with external parties, increasing accessibility, and diversifying products and experiences provide positive opportunities for the environment of Bandar Kidul Sub-district, Kediri city, which incidentally is the Bandar Kediri Ikat Weaving-producing sub-district. By taking advantage of these opportunities, Bandar Kidul Kediri families can increase the number of visitors, expand the market, increase income, and strengthen the development of their potential not only in the local product sector, but also in the tourism sector.

## 4. Threat

Bandar Kediri Ikat Weaving MSMEs need to be alert to factors that can hinder their development and sustainability. The threat of competition from other local products, changes in natural conditions, changing policies or regulations, changes in consumer interests and preferences, limited access to funding, as well as economic and social changes can be challenges for Bandar Kediri Ikat Weaving MSMEs. To face these threats, Bandar Kediri Ikat Weaving MSMEs need to take appropriate mitigation actions, such as increasing innovation, adapting to environmental changes, monitoring policy changes, diversifying products and experiences, and developing responsive marketing strategies. By facing these threats effectively, Bandar Kediri Ikat Weaving MSMEs can reduce their negative impacts and maintain the continuity of their development.

### ● Creative Strategy

The target audience for this application is teenagers to adults (aged 20 - 52 years), both men and women, who are students or workers. Geographically, this application is aimed at local consumers, especially from the Kediri area and surrounding areas. In terms of psychographics, this target audience has an interest in fashion and is interested in local products. They also have a special interest in the production process of Bandar Kediri ikat weaving. In addition, they are users who frequently shop online.



The Bandar Kediri Ikat Weaving MSME mobile application "KIRANA" is only focused on developing sustainable Bandar Kediri Ikat Weaving MSMEs with the main message of social and economic sustainability. This application educates about the history of Bandar Kediri Ikat Weaving, as well as supporting the local economy. With interaction, community participation, and mapping, users can use and experience the unique fabric typical of the City of Kediri, namely Tenun Ikat Bandar and support sustainable actions. The app also promotes environmentally friendly practices. The aim of this application is to provide a positive experience and encourage sustainable economic innovation.

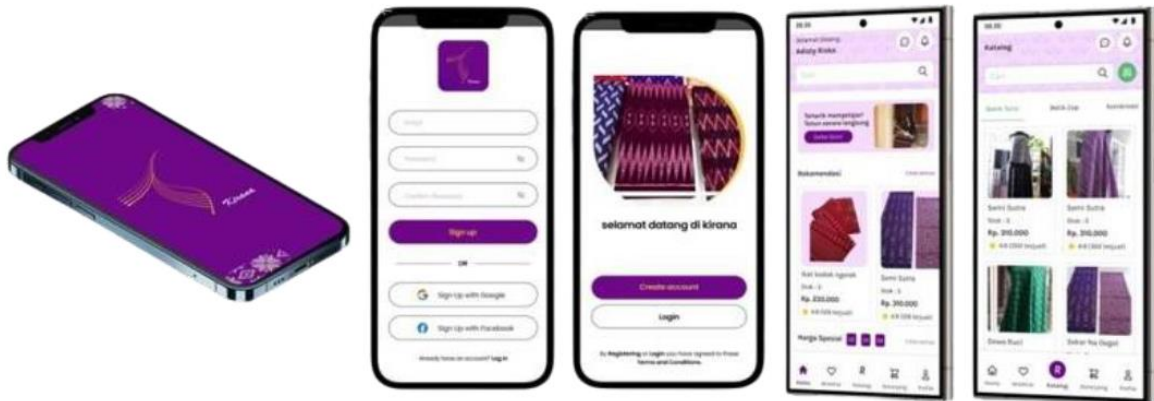
In the form of verbal messages, the Kirana application (Weaving Ikat Bandar Kediri Mobile Application) is a platform that introduces Ikat Bandar Weaving, the characteristic of Kediri City. With a consistent and strong visual design, this application reflects the uniqueness of Bandar Kediri ikat weaving through the use of traditional patterns, relevant colors and appropriate typography. The design combines modern aesthetics and the charm of the Kediri Bandar Ikat Tenun pattern to create an attractive and intuitive appearance for the user. Through the Kirana application, users can easily explore the products offered by the Bandar Kediri Tenun Ikat MSME group, providing an unforgettable experience and increasing understanding of the unique cultural heritage in the form of local products.

### **Work Visualization**

In the Kirana mobile app prototype, there are various elements and features designed to provide a comprehensive user experience. A well-designed and easy-to-use user interface helps users interact with the app smoothly. User authentication features, such as login and registration, enable users to access and manage their data securely. There are 2 superior features of this application, namely ordering Bandar Ikat Weaving and Bandar Ikat Weaving Training. The dashboard or information board in the prototype provides an overview of data and information that is relevant to users or consumers, such as the latest updates to the application and promos offered to visitors. The payment feature allows users to make online transactions quickly and easily. The search feature helps users easily find information regarding the products and content they are looking for. The account settings feature allows users to manage their personal preferences and settings, such as profile settings, notification preferences, account security, or privacy settings. Social media integration allows users to share content, and transactions.

In the Kirana mobile apps prototyping process, there are generally two main stages involving the development of prototypes with different levels of information density, namely low fidelity and high fidelity. At the low fidelity stage, prototypes are created with a low level of information density, such as rough sketches or wireframes. The main focus is on roughly testing the concept and navigation flow, while visual details and functionality have not been a priority. The goal is to get input from early users and identify weaknesses or necessary improvements early before entering further stages of development. prototypes are developed with a higher level of information density and are closer to the final appearance and functionality of the actual application. Uses complete visual

elements such as colors, fonts, images and realistic interactions. High fidelity prototyping provides an accurate picture of the application's appearance and behavior, so users can provide more specific and detailed feedback before starting full application development.



Source: Data processed, 2024

**FIGURE 2.** Final Design of the KIRANA Application

To support the main media, the author uses supporting media using various media. Supporting media is used for promotion and introducing the design of the Kirana mobile app UI/UX prototype as a campaign to be known and experienced directly by users. The design of infographic supporting media displays descriptions of the content contained in the Kirana application design, such as colors, icons, typography and concepts. On the next page, the author adds a display of all application screens with the aim of helping the audience clearly understand the content in the Kirana application.

## 5. CONCLUSIONS

The research results show that this research has a positive influence on the development of digital innovation in local products for a sustainable economy. This Kirana application is expected to be an example of new innovation in the field of digital MSME development, especially in Kediri City. In this case, UI/UX design principles are used well, such as appropriate use of colors, easy-to-understand layout, and intuitive navigation. The design that has been created is directed so that application users can have a pleasant experience and obtain the information they need easily. Apart from that, this design also aims to promote Kediri Ikat Weaving MSMEs as a local product characteristic of Kediri City that is attractive, unique and of high quality. By implementing a fresh prototype UI/UX design, the Kirana application has the potential to become an innovative means of introducing and promoting Bandar Kediri Ikat Weaving MSMEs.

After evaluating the final design of the Kirana application, it is hoped that this application will become a new breakthrough in developing a sustainable economy by supporting local products as products that are loved in the country. In this research, the author is aware that there are many shortcomings and weaknesses, so he has suggestions for further research as application development in the future. The author has several suggestions proposed, including adding a 3D AR feature to this application, so that users.



can experience a more interactive and interactive experience. It is realistic to see the results of the Bandar Kediri Ikat Weaving MSME products in the Kirana application before entering the programming stage, the next researcher needs to conduct a more in-depth study of the Kirana application design. This aims to ensure that the design implemented can meet user needs well; Future researchers can continue to develop the Kirana application design with every update that occurs because this is important to keep up with technological developments and ever-changing user needs, and lastly, encourage other researchers to continue this research so they can make a more perfect contribution to development. Kirana application and sustainable economic.

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