

Augmented Reality for Virtual Try-On of East Kalimantan Batik

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ABSTRACT

Batik is one of Indonesia's cultural heritages that must continue to be preserved, almost every region has a distinctive batik, such as East Kalimantan batik which is unique and distinctive in its colors, motifs, and meanings raised from local culture, flora, and fauna. East Kalimantan batik is not just a cloth but also a representation of regional identity and culture. Augmented Reality is one of the fastest-growing technologies today, which combines the real world and the virtual world. Augmented Reality allows users to interact with digital elements to get a more interactive experience without the need to touch the product directly. Augmented Reality can be used to try East Kalimantan batik so as to get a virtual experience. This research aims to provide insight into the potential of Augmented Reality in preserving and promoting traditional batik through modern technology applications. The formulation of the problem in this study is how effective Augmented Reality technology is in improving user experience to use batik virtually, how the impact of virtual use on purchasing behavior and consumer perceptions of East Kalimantan batik. Nowadays, tradition must follow the development of existing technology with various innovations, so that batik can continue to exist among the community, especially in the younger generation. The research method used is Design Thinking which is carried out at several stages such as empathize, define, ideate, prototype. Based on research conducted on 10 respondents who became samples to use Virtual Try on East Kalimantan batik in the Tiktok application, it was found that respondents had never found Virtual Try on East Kalimantan batik, innovation in promotional media using Augmented Reality increased interest in the decision to buy East Kalimantan batik products.

Keywords: AR, East Kalimantan Batik, VTry-on.

1. INTRODUCTION

Batik is one of the Indonesian cultures that continues to develop and innovate in terms of motifs, colors, techniques, and technology (Wulandari, 2011). East Kalimantan has a huge opportunity for the batik business, East Kalimantan batik has its uniqueness and attractiveness so that it is increasingly in demand by the market, the uniqueness of East Kalimantan batik lies in the motifs, colors, and meanings inspired by Dayak culture and local nature. Typical East Kalimantan batik motifs such as burung kuntul motif, kijang motif, ukiran motif, naga motif, paku motif, macan dahan motif, and batik putri malu motif. Batik is the nation's cultural heritage, so it is necessary to encourage the millennial generation to start pursuing the batik business (Putri, 2021). Today's challenge in the batik industry is to preserve batik for the younger generation innovatively and attractively. To increase interest in increasing product sales, it is necessary to innovate in information technology (Bagus & Putra, 2020). Technological innovation in the batik industry can increase competitiveness and independence (Sharmistha & Sinambela, 2023).

The development of technology continues to grow rapidly until now, it causes humans to be very dependent on technology. Many daily activities have been replaced by using technology such as learning, writing, drawing, ordering public transport, and shopping. Indonesia has enormous potential for the digital economy, this is influenced by several factors, namely the population, the number of internet users, the better internet network, the increase in e-commerce, and of course the support of the government. The demand for online shopping from year to year continues to increase, the increase in transactions in e-commerce is an opportunity for MSMEs to expand the industrial market. Buying decisions in e-commerce are determined by lifestyle, ease of use, and trust. The trust in question is the similarity of the products displayed on the digital page and the original product, not a few customers feel disappointed because the product purchased is not suitable because it cannot be tried directly when buying online and the product obtained is different. The problem of product

trust on digital and original pages can be anticipated with Augmented Reality (AR) technology that combines virtual objects with the real environment so that with this technology customers can have the experience of trying products even when shopping online (Sugiono, 2021). AR has become a successful marketing tool in providing additional experiences for customers through smartphones (Wiley, 2017). The use of AR as a promotional medium can increase consumer interest with an interactive and engaging experience (Sutianto & Wulandari, 2024). Virtual changing rooms can make it easier for consumers to try on clothes quickly and accurately (Mehta et al., 2020).

The application of Augmented Reality in various media has been carried out in previous studies such as those conducted (Sutianto & Wulandari, 2024), using Augmented Reality as a promotional medium with a markerless method so that users can position the camera anywhere and the smartphone will display clothing products in 3D models. Further research conducted by (Mehta et al., 2020), identifying the upper body and lower body so as to increase the accuracy of body detection using Augmented Reality.

This research is different from previous research which experiments using Augmented Reality on web sellers, while in this study applying Augmented Reality to Tiktok media so that users can try first before deciding to buy products, especially East Kalimantan batik.

Based on the above background, the problem formulation in this study is the use of Augmented Reality technology in the Try-On feature of East Kalimantan Batik, so that East Kalimantan batik can do virtual fitting in accordance with current trends and technology. The purpose of this research is to create a Try-On feature on East Kalimantan Batik so that it can be more widely known and promoted. The benefits of this research are to introduce Kalimantan batik more widely using augmented reality features so that it can increase promotion and customer interest, especially the younger generation, in East Kalimantan batik.

2. METHODS

According to the Interaction Design Foundation, design thinking is a process that is carried out iteratively to understand users, make hypotheses, formulate problems, and create solutions to problems. Another opinion according to Career Foundry explains design thinking is an ideology or process in solving a complex problem to answer human needs. The stages carried out in the design thinking method are context analysis, problem formulation, looking for ideas and solutions, creative thinking process, sketching, prototyping, testing, and evaluation (Nandy, n.d.) The method used in this research is the Design Thinking Method which is carried out in 5 stages.

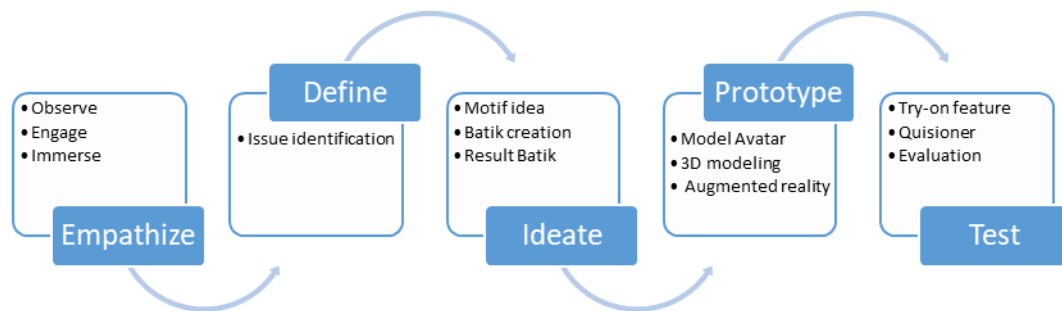


Figure 1. Design thinking method

Based on the picture above, this research was conducted in 5 stages, namely:

1. Emphathise is an approach taken to find out the problems that exist (Brown, 2008). The approach in this research was carried out by observing and interviewing batik craftsmen and customers, besides that the researcher's personal experience was also part of carrying out this initial stage.
2. Define is to formulate the problem obtained from the analysis carried out in the previous stage. (Plattner et al., 2011)
3. Ideate is the process of designing problem-solving from the formulation of research problems (Kelley & Kelley, 2013) Problem solving begins with designing batik motifs, making batik, batik results and the flow of using AR in East Kalimantan batik.
4. Prototype is the creation of a sample research product (Razzouk & Shute, 2012)
5. Prototyping starts with creating an avatar, then a 3D model, and creating AR on batik.

6. Test is a test of research products and analysis of the results of data (Liedtka, 2018) At this stage, a trial of the resulting AR is carried out to 10 respondents and then distributes questionnaires to find out the results of the user experience, from the results obtained, analysis is carried out.

3. RESULTS AND DISCUSSION

3.1 Empathize

It is carried out to collect information from various sources so that it can formulate a problem from the issues raised. The activities carried out are observe, engage, immerse. Observe is done in the community both directly and virtually to observe human behavior in deciding to buy products, Engage is done by conducting discussions with batik craftsmen in East Kalimantan, namely at Shaho batik in Balikpapan and Sekar Buen batik in Penajam Paser Utara to formulate problems in batik craftsmen in East Kalimantan. Immerse is done from personal experience of batik problems in East Kalimantan.



Figure 2. Observation and interview

3.2 Define

The researcher carries out the process of identifying the problems obtained at empathize. This stage is carried out in-depth analysis so that it can produce problem-solving solutions from problems. Based on observations and interviews, as well as personal experience, the conclusion of the problem formulated is how the impact of the use of Augmented Reality on East Kalimantan batik

3.3 Ideate

At this stage the researcher makes a mind map of the problem-solving solution, In this activity the researcher formulates the techniques that will be used to get the best way to solve a problem formulated.

3.1.1 Motif

Local wisdom can be used as a source of inspirational ideas in creating batik motifs (Salma, 2020), The motif raised in this research is Kalimantan's endemic fruit, Durio Kuthejensis or better known in the local language as lai fruit (Atmoko, 2014) Lai fruit is a type of durian, this fruit is known for its durian-like shape with a smaller size and has orange-colored contents for a taste that is not too sweet like durian. Lai fruit is a seasonal fruit that continues to decrease, this is due to trees that continue to age and are not adequately cultivated (Krismawati et al., 2012) Therefore, lifting the lai fruit as an idea for the creation of a typical motif of East Kalimantan is also an effort of preservation. The process of visualizing ideas is done by making sketches, then the sketches are made digitally to facilitate the transfer on 2.5 m fabric.



Figure 3. Design motif on fabric

3.1.2 The process of batik

Batik making is carried out by preparing the fabric, sketching the design, transferring the motif to the fabric, dyeing, coloring with the colet technique, and carrying out the melorod process to remove the remaining lilin malam (Larasati et al., n.d.)



Figure 4. The process of batik

3.1.3 The results of batik on fabric

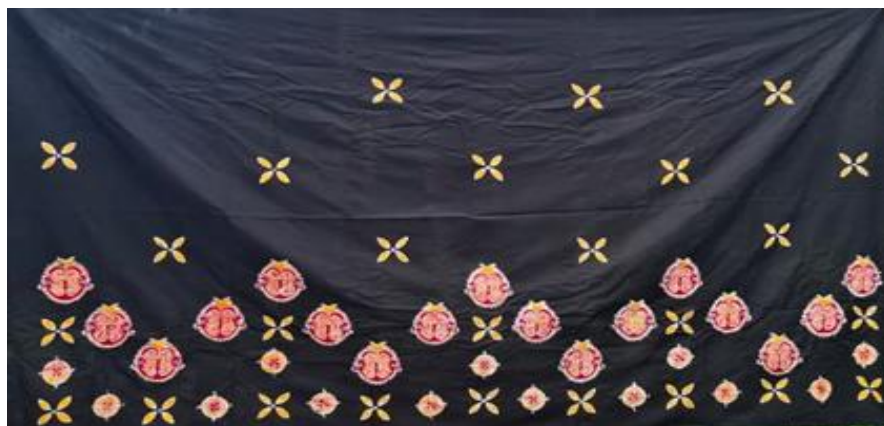


Figure 5. The result of batik on fabric

3.1.4 Flowchart of using AR Try-on Batik East Kalimantan

To try the AR Try-on feature of East Kalimantan batik starts with the actor opening the tiktok application, then the profile, and adding friends. After that the hanphone will display a barcode scan, then the camera will open and the body sensor is carried out, after that tracing the marker, pattern matching to display 3D objects, finally the user can download the AR Try-on video results.

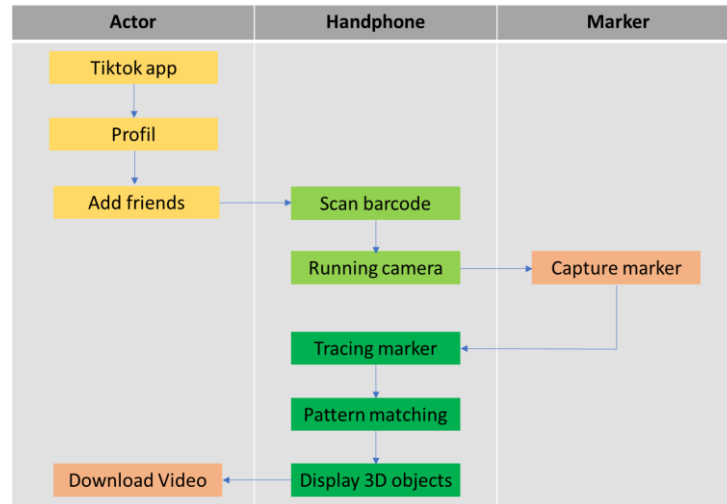


Figure 6. Flowchart of using AR Try-on Batik East Kalimantan

3.4. Prototype

The prototype stage is the process of visualising the selected solution into a real form in the form of product samples so that it can determine whether the solution offered can solve the problems that have been formulated. Making avatar models, 3D modelling and Augmented Reality (AR).

The research team made a functional prototype of the AR feature based on the design that had been made. The research team made several alternative batik designs and selected the lai (Durio Kuthejensis) design.

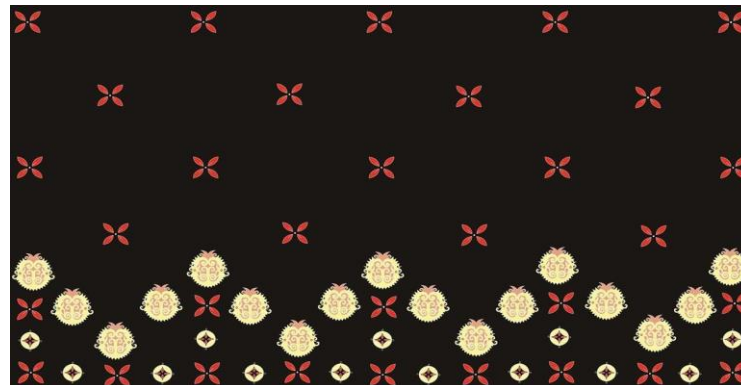


Figure 7. Design Motif Lai (Durio Kuthejensis)

The initial stages of the prototyping process begin with creating the desired avatar model through open source tool VR Chat (<https://vrchat.readyplayer.me/>) The website provides various avatar templates that can be edited as needed. Avatars through VR Chat are very helpful in making initial designs before being processed in blender software.

The next stage after the avatar is created, the 3D avatar design is customized using open source blender software (<https://www.blender.org/>). Blender is able to accommodate the refinement of the 3D mockup design. At this stage, adjustments are made to the design shape, as well as removing unused parts, such as the head, hands, and feet. These parts are removed with the aim that the 3D mockup design focuses on the fashion product.

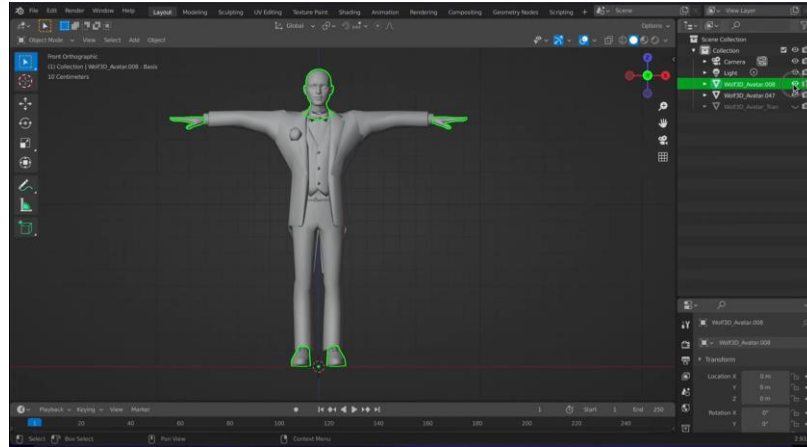


Figure 9. The Design Refinement Process

The next step is to integrate the 3D avatar design that has been used using Meta Spark Studio software. Spark AR Studio is a platform designed to develop AR effects on smartphone cameras. This platform utilizes the concept of Augmented Reality, which is a technology that integrates digital content created by computers with the real world in real time.

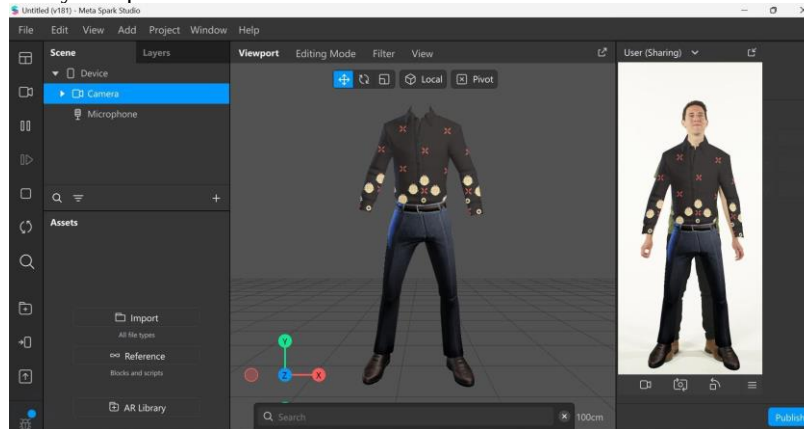
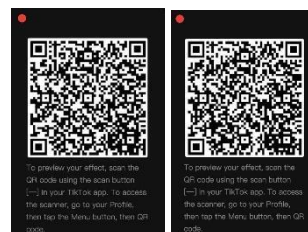


Figure 10. 3D Avatar Integration Process on Smartphone

Test

The test was carried out using QR in the TikTok application and testing using AR and filling out questionnaires. The following QR is adjusted to genders.



(b)

Figure 11. Barcode for man (a) and woman (b)

The following are the results of experiments conducted using AR Try-on Batik East Kalimantan



Figure 12. Male try-on results



Figure 13. Female try-on results

The results of testing the use of try-on AR Batik East Kalimantan on a sample of 10 respondents showed that 90% of respondents did not find the AR try-on feature of East Kalimantan batik. This AR try-on feature 50% of respondents stated that it was very interesting to use this feature in promoting local culture and products, 30% were interesting and 20% were quite interesting.

Does this AR try-on feature affect your interest in buying East Kalimantan batik?

10 responses

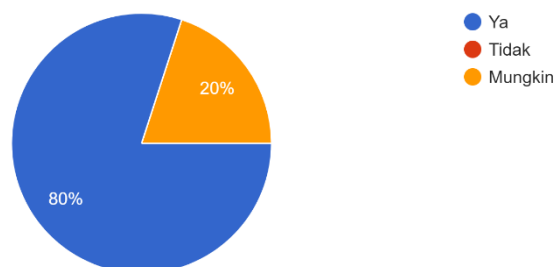


Figure 14. Pie Chart of AR Try-on on the interest in buying East Kalimantan batik

The role of the AR Try-on feature in influencing customer interest in buying East Kalimantan batik is up to 80%. Evaluation from several respondents stated that this AR feature is still not realist so that it can be improved on the suitability of virtual images with the real appearance of the product, besides that occasionally AR does not adjust body size.

4. CONCLUSION

This research shows the use of Augmented Reality (AR) in a Virtual Try-On application for East Kalimantan Batik. It enhances the user experience and can visualize East Kalimantan batik. This research contributes to the development of East Kalimantan batik promotion media using AR technology so that users experience the experience of using East Kalimantan batik. However, this research has shortcomings, namely the visuals produced are not realistic and the sensors of Augmented Reality occasionally come out of the body.

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