

Digital Batik Village Based on Virtual Tour as an Alternative for Batik Promotion in Indonesia Especially Pekalongan City

Tangkas Udiono¹, Maryani², Hendra Alianto³, Hery Harjono Muljo⁴

^{1,4}Information Systems Department School of Information System Bina Nusantara University & Jakarta, Indonesia 11480

²Information Systems Department School of Information System Doctor of Computer Science Bina Nusantara University & Jakarta, Indonesia 11480.

³Accounting Program, School of Accounting, Bina Nusantara University & Jakarta, Indonesia 11480

Date of Submission: 21st July 2022 Revised: 11th September 2022 Accepted: 02nd Oct 2022

How to Cite: Tangkas Udiono, Maryani, Hendra Alianto, Hery Harjono Muljo (2022). Digital Batik Village Based on Virtual Tour as an Alternative for Batik Promotion in Indonesia Especially Pekalongan City. *International Journal of Applied Engineering and Technology* 4(2), pp.124-129.

Abstract--The growth of internet users in Indonesia continues to grow. According to a survey conducted by the Association of Indonesian Internet Service Providers. Through the same survey agency, it is known that 62% of internet users most frequently access online store commercial content, 34.2% are used for personal business purposes, and the remaining 3.8% are used for other purposes. Pekalongan City, which is a batik city, has several batik villages where most of the residents work as batik entrepreneurs. The existence of the batik village, apart from being a center for batik craftsmen, is also one of the national tourist destinations that can increase income for both its citizens and the Pekalongan City Government. One way to do digital marketing that can inform products and locations/cities is to create a digital batik village based on virtual tours. Batik craftsmen will have a longer time to promote their products (not constrained by working hours), as well as consumers who have not had time to come to the batik village, can still see the atmosphere of the existing batik village by accessing the available virtual tour-based digital batik village application. The purpose of this study is to evaluate how consumers perceive augmented reality (AR) elements when shopping for apparel online. The stages of research carried out include: starting from a literature review and using the stages of multimedia development which are divided into six stages. The results of the questionnaire filled out by 154 respondents stated that 88% of the respondents had never been to Batik Wiradesa Pekalongan village. 97% of respondents agreed to make a virtual tour of Batik Wiradesa Pekalongan

Keywords-- Batik Village, Digital, Virtual Tour, Desain, Interacting

INTRODUCTION

The number of internet users in Indonesia is rising steadily. A survey was conducted by the Association of Indonesian Internet Service Providers [1], and the results show that there are increasingly more people using the internet in Indonesia every year. There were 196.7 million internet users in 2022, a rise of 25.53 million from the 171.17 million in 2019.

According to the same survey company, 62% of internet users frequently access the commercial material of online stores, of which 34.2% are doing so for their own businesses. The remaining 3.8% are doing so for other objectives. However, the MARS survey [2] found that 32.7% of consumers don't shop online since they can't physically test the items they want. Think Mobiles asserts that this is true throughout the world [3]. Due of consumers' difficulty visualizing the things they wish to purchase from online businesses, up to 54% of customers globally prefer to shop traditionally by visiting brick-and-mortar establishments. When purchasing items through online sites, customers will be skeptical and need to think carefully. They may wish to test these products at home before making a purchase. Databoks [4] on the other hand The value of global e-commerce has increased to about three times that of its US \$ 1.3 trillion in revenue in 2014, and it is predicted to reach US \$ 4.5 trillion in 2021. Data from studies of e-commerce platforms reveals that there were 1.66 billion online shoppers in 2017 and that number is predicted to rise to 2.14 billion shoppers by 2021 [5]. Online purchasing will then have a lot of promise in the future. Due to the enormous consumer interest in online buying, businesses must make measures to allay customers' concerns. One of the attempts is the development of AR features, according to a Tractica report [6]. Customers may feel as though they are physically touching and examining the products they are buying through the use of augmented reality in e-commerce, and they may discover a new way to get beyond any challenges associated with making online purchases. According to Think Mobiles, 63% of consumers believe that implementing augmented reality will result in a different shopping experience, 35% may shop more frequently before attempting to buy, and 22% say it's unlikely that they'll have AR available in online store,so please visit offline store. [3].

Furthermore, 70% of shoppers anticipate that their loyalty to brands that integrate augmented reality into their purchasing experiences will grow. Internet access and computers are now ubiquitous in many facets of modern life, including work, communication, education, entertainment, and shopping. The primary method used by management to carry out marketing or promotions is digital marketing. According to Jokowi, one thing that may be done is to construct a virtual trade exhibition. Digital transformation cannot be opposed and must be embraced in order to enhance our trade. In this manner, purchasers can communicate without having to attend an exhibition. is a batik city with several batik villages, the majority of whose population are batik business owners. Apart from serving as a hub for batik artisans, the existence of these batik villages makes them one of the national tourist hotspots, which can boost income for both the local population and the Pekalongan City Government. Making a digital batik village based on virtual reality is one way to carry out digital marketing that may inform about products and places/cities. Therefore, if there is a virtual tour-based digital batik village, those who make batiks will have more time to advertise their goods since they won't be constrained by working hours, and customers who don't have time to visit the batik village can still experience its atmosphere by using the application that is currently available. It can be observed that the usage of virtual tours in some of these locations [22], [23], [24] beneficial influence: Ability to be a component of more alluring promotional materials, Ability to make users seem to see and move in that area, Ability to influence how someone experiences a place, Ability to draw visitors straight to the museum However, the adoption of virtual tours in online showrooms for creative industry items, which also permits interaction between creative industry participants and consumers, has not been seen in the numerous studies that have been conducted. Ability to be a component of more alluring promotional materials, Ability to make users seem to see and move in that area, Ability to influence how someone experiences a place, Ability to draw visitors straight to the museum However, the adoption of virtual tours in online showrooms for creative industry items, which also permits interaction between creative industry participants and consumers, has not been seen in the numerous studies that have been conducted.

The purpose of this study is to evaluate how consumers perceive augmented reality (AR) elements when shopping for apparel online. Today's internet usage has an impact on the explosive development of online commerce. When augmented reality is used, virtual shopping can offer convenience, advantages, and pleasure. It can also help businesses connect with customers.

The advantages of the study's findings will have a positive effect, including the ability to be a part of more alluring promotional materials, the ability to make users seem to see and move in that place, the ability to assist someone in influencing the experience of visiting a place, and the ability to draw visitors to the museum. directly. However, it has not been seen from the numerous studies that have been conducted that the incorporation of virtual tours in digital showrooms for products from the creative industries, which also permits interaction between creative industry actors and customers. If achieved, it will undoubtedly have a favorable effect on Indonesia's creative industry's development.

THEORETICAL REVIEW

2.1 Virtual Tour

A collection of images or films that are accompanied by music, sound effects, text, or narrative. Panoramic tours are another name for virtual tours. Given that a panorama is a collection of extending images or a form of shooting video where the camera rotates or shifts, it can be thought of as a virtual tour view that is an uninterrupted replica of an actual place or site [25]. Museums, tourist destinations, universities and educational facilities, real estate, and well-known public locations are some of the most well-known virtual tour locations.

The following formatting rules must be followed strictly. This (.doc/.docx) document may be used as a template for papers prepared using Microsoft Word. Papers not conforming to these requirements may not be published in the journal.

2.2 Multimedia

The term "multimedia" is made up of the two words multi," which means "many," and "media," which means "an intermediate." Multimedia can therefore be thought of as various mediums. Text, images, sounds, animation, and video that are integrated into a computer are referred to as multimedia [26]. You may classify virtual tours as a subset of multimedia. The virtual tour combines text, photos, sound, animation, and video with other multimedia elements

THEORETICAL REVIEW

It is important to plan carefully throughout the stages of research to create research outcomes that are consistent with study objectives. The following diagram depicts the stages of this research:



Data Collection Method

It is a collection of information that uses the following methods to give a detailed description of the study object:

- a) Field Research Methods Data is gathered by keeping an eye on relevant activity. such as taking photos, movies, and other types of materials
- b) Literature Study Techniques Data were gathered from a number of relevant references and periodicals.
- c) Interviewing Methods Interviews with relevant sources, including a number of batik artisans in the Kepatihan / Wiradesa Batik Village and the Head of the Kepatihan / Wiradesa Village, Pekalongan City, provided the data for this study.
- d) Method for Distributing the Questionnaire Data from the questionnaire recapitulation results were sent to respondents, including the community and the batik artisans in Kepatihan/Wiradesa Batik Village

Multimedia System Development Method

The process of creating a multimedia system is divided into six stages, including concept, design, material gathering, manufacturing, testing, and distribution [21].

- a) Concept This phase establishes the system's functional and non-functional requirements based on user needs and the findings of data collecting.
- b) Design System development tools will be used to design the system flow, system interface, and system database at this stage Materials Gathering
- c) a collection of the materials and content needed to create the multimedia systems, including the necessary data, photos, videos, and other media.
- d) Manufacturing A multimedia application or system will be created based on the design at the production stage

- e) Testing Multimedia apps and systems will be tested at this time using the alpha test and beta test methodologies.
- f) Distribution at this point, people are introduced to the application or system through online multimedia applications or systems.

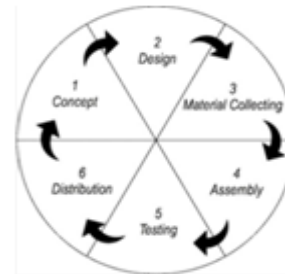


Figure 2 Multimedia Development

RESULTS AND DISCUSSION

The system's functional and non-functional requirements are identified through data collecting. The following are a few of the data collection methods:

4.1. Observation/survey/field study

By conducting a site/field study pertaining to the state or location of the Kepatihan Batik Village/Wiradesa Pekalongan City, observations in the Kepatihan Batik Village/Wiradesa Pekalongan City were made. Observations were recorded using 360-degree photography. YIVR 360 camera from Canon was the equipment used. In the Kepatihan/Wiradesa Batik Village, pictures were taken one at a time in accordance with the residences or showrooms of the batik artisans.

In addition to shooting images, information was gathered about the identities and addresses of the artisans who make batik in the Kepatihan/Wiradesa Batik Village. The Kepatihan/Wiradesa Village provided the data. Up to thirty-five batik artisans were identified from the data collected.

4.2 Interview

Interviews were held with several relevant stakeholders, including Mr. "H. Sudaryo, S.H.," the Head of the Kepatihan/Wiradesa Village in Pekalongan City. The internet has reached and is accessible in the Kelurahan Kepatihan/Wiradesa area, according to the findings of interviews with the head of the organization. The residents of Kepatihan/Wiradesa Batik Village have access to the internet, but many of them have not used it to run their batik businesses. Batik artisans from Kepatihan/Wiradesa Batik Villages take part in several exhibitions and events in Pekalongan City to promote their businesses. Kelurahan Kepatihan/Wiradesa basically has provided a collective online shop for the community. However, only a few are used. The rest they take advantage of existing marketplaces independently such as Tokopedia, Bukalapak, Lazada, etc.

According to him, the hope with the construction of a Digital Batik Village Based on Virtual Tour is that it can bring tourists from outside Pekalongan City, so that it can increase the promotion and income of residents in the Kepatihan Batik Village/Wiradesa. Interviews were also conducted with five batik entrepreneurs representing the batik craftsmen of Kepatihan Batik Village/ Entrepreneur. From the results of interviews with batik craftsmen, it was found that: In order to advertise their products, several artisans have used Internet media. Those who covered the marketing sector traveled both inside and beyond Pekalongan City. They utilize social media sites like Facebook, Twitter, and the marketplace to conduct their online marketing. They claim that by showcasing the location, contact information, and any social media links or marketplaces that the batik craftsmen have, the virtual batik-based digital batik village they are building will aid in the marketing of their products.

4.3. Questionnaire

To learn more about Kepatihan/Wiradesa Batik Village's presence among the public, questionnaires were sent to the public. Utilizing the features of the Google Form, questionnaires were disseminated. The questionnaires were distributed during a seven-day period, from June 11 to June 17, 2022. As many as 154 people completed the survey, yielding the results. The questions and the number of responses to the questionnaire are listed below.:

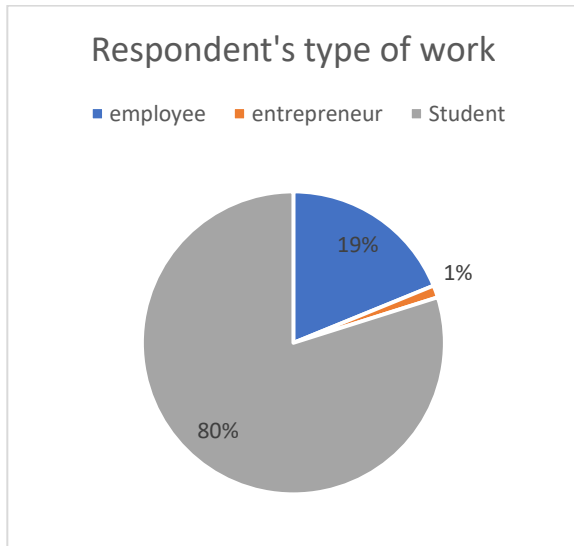


Figure 3 Respondent's type of work

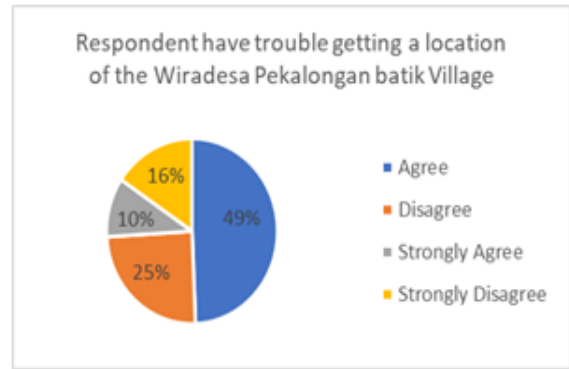


Figure 4 Respondent have trouble getting a location of the Wiradesa Pekalongan Batik Village

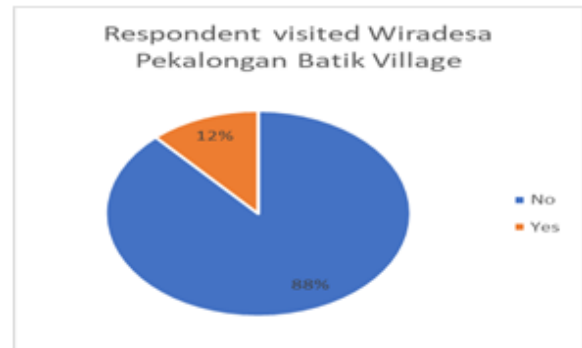


Figure 5 Respondent visited Wiradesa Pekalongan Batik Village

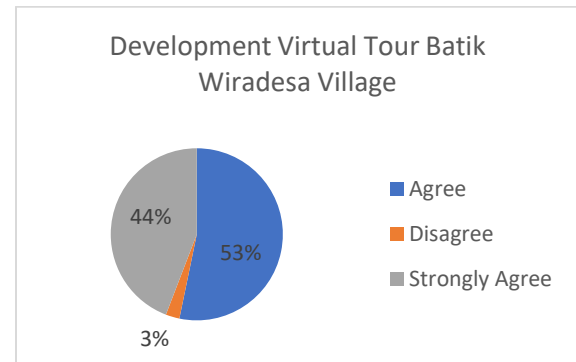


Figure 6 Development Virtual Tour Batik Wiradesa Village

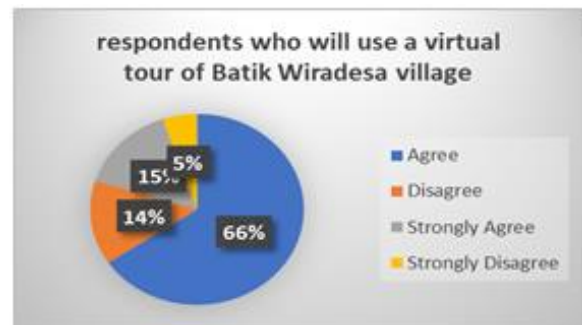


Figure 7 Respondents who will use a virtual Tour of Batik Wiradesa Village

4.4. Design

On a smart phone, the general public or users can access the digital batik village application, which features a virtual tour of the Kapatihan/Wiradesa Batik Village. Through this application, the public may experience what it would be like to visit the Kapatihan/Wiradesa Batik Village; users can view what it would be like to be in a batik village. This Virtual Tour-Based Digital Batik Village application, in contrast to previous virtual tours, can display links or internet addresses of marketing media from batik artisans in Kapatihan/Wiradesa Batik Village (marketplace, online store, personal web, social media, showroom). Therefore, it is hoped that people would be able to see products and buy batik items without having to exert much effort to travel to those locations

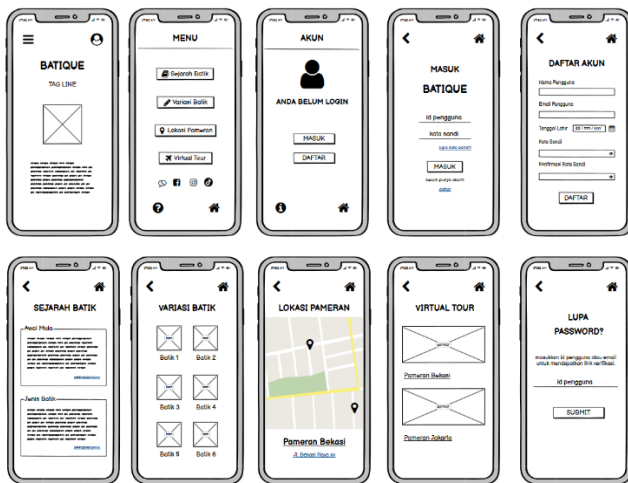


Figure 8 Pekalongan Batik Virtual User Interface Design

Conclusion

Based on the testing results, it can be said that the digital batik village application meets both the functional and non-functional needs that were anticipated. The Kapatihan / Wiradesa Batik Village in Pekalongan City, the subject of the study, can be seen or visualized using the digital batik village application. The digital batik village application can show data or links to marketplaces held by pekalongan city wireadesa's Kapatihan Batik Village's batik artisans. The batik village application can educate the general public or tourists about authentic batik and batik that is typical of Pekalongan City. Visitors can interact with batik vendors in addition to virtually exploring, which can be a major convenience for the neighborhood as the Industrial Era 4.0 develops.

Due to the restricted space, further research might be done to broaden the subject's geographic coverage. In order for visitors to learn more about the different varieties of batik made by batik craftsmen in Kapatihan/Wiradesa Batik Village, the digital batik village application should also be able to identify between original batik items and fabrics in the future.

Additionally, it is necessary to complete the content or this on the educational menu about knowledge about batik in Pekalongan City. Examples of this include adding a profile video of Batik Pekalongan, tour guide information, adding meatballs to turn on the power of the Virtual Tour, and improving the content overall. The findings of this study can be used as guidance by the Pekalongan City Government to help batik entrepreneurs become better equipped to deal with the industrial era 4.0 while still preserving batik as a distinctive feature and strength of Pekalongan City in the face of inevitable global competition.

REFERENCES

- [1] APJII. "Pertumbuhan Pengguna Internet Indonesia Tahun 2022." (accessed : 19 Januari 2022)
- [2] MARS. "Alasan Tidak Belanja Online." (accessed 20 Desember, 2020).
- [3] ThinkMobiles. "What Is Augmented Reality (AR) and How Does It Work." [https:// thinkmobiles.com/blog/what-is-augmented-reality/](https://thinkmobiles.com/blog/what-is-augmented-reality/) (accessed).
- [4] Databoks. "Berapa Pengguna Internet di Indonesia?" [https://databoks.katadata.co.id/ datapublish/2020/09/09/berapa-pengguna-internet-diindonesia](https://databoks.katadata.co.id/datapublish/2020/09/09/berapa-pengguna-internet-diindonesia) (accessed)
- [5] A. Enfroy, "5 Tren E-Niaga Masa Depan 2019," in ECommerce Platforms, ed, 2019.
- [6] Tractica. "The Enterprise and Industrial Virtual Reality Market Will Grow to \$9.2 Billion by 2021" <https://www.tractica.com/newsroom/pressreleases/the-enterprise-and-industrial-virtual-realitymarket-will-grow-to-9-2-billion-by-2021/> (accessed).
- [7] M. Nyma "How Augmented Reality Can Be Used In E-Commerce," in CitrusBits, ed, 2018.
- [8] C. Prayogo, "Forbes.com," Zara Stores Target Millennials With Augmented Reality Displays , ed, 2018.
- [9] G. McLean and A. Wilson, "Shopping in the digital world: Examining customer engagement through augmented reality mobile applications," Computers in Human Behavior, pp. 1-47, 2019.
- [10] B. Furht, Handbook of Augmented Reality. New York: Springer, 2011.
- [11] E. Pantano and R. Servidio, "Modeling Innovative Points of Sales Through Virtual and Immersive Technologies," Journal of Retailing and Consumer Services, 2012.
- [12] C. Li, "Evaluation of a theoretical model for gamification in workplace is context," Doctoral Dissertation, University of Brisith Columbia, 2014.
- [13] C. D. Marci, "A Biologically Based Measure of Emotional Engagement: Context Matters," Journal of Advertising Research, 2006.
- [14] L. D. Hollebeek, R. K. Srivastava, and T. Chen, "Consumer brand engagement in social media: Conceptualization. scale development and validation," Journal of Interactive Marketing, pp. 149-165, 2014.
- [15] B. J. Babin, W. R. Darden, and M. Griffin, "Work and/or fun - measuring hedonic and utilitarian shopping value," Journal of Consumer Research, pp. 644-656, 1994.
- [16] D. Ballenger, E. Steinberg, and W. Stanton, "The congruence of store image and self image," Journal of Retailing, pp. 17-32, 1976.
- [17] C. Demangoet and A. J. Broderick, "Exploiting the experiential intensity of online shopping environments," Qualitative Market Research, pp. 325-351, 2006.
- [18] W. W. Chin, "The partial least square approach to strucutral equation modelling," Modern method for business research, vol. 2, no. 295, pp. 295-336, 1998.

- [19] Choiron, Achmad, dan Irfian Lesmana. "Aplikasi Virtual Tour Dinamis Pada Universitas Dr. Soetomo Surabaya Berbasis Web." *Jurnal Inform* Vol.2 No.1, Januari 2017, ISSN : 2502-3470, Januari 2017.
- [20] Detik.com. <https://finance.detik.com/berita-ekonomi-bisnis/d-3679331/jokowi-perubahan-digital-takbisa-dilawan-harus-dirangkul>. diakses pada 23 Maret 2019, 2017.
- [21] Hadi, Sutopo Ariesto. *Multimedia Interaktif dengan Flash*. Yogyakarta: Graha Ilmu, 2003.
- [22] Kusniyanti, Harni, dan Fendra. "Aplikasi Virtual Museum Berbasis Tiga Dimensi." *Jurnal Ilmiah FIFO*, ISSN 2085-4315, April 2016.
- [23] Suhendar, Akip, dan Aditya Fernando. "Aplikasi Virtual tour Berbasis Multimedia Interaktif Menggunakan Autodesk 3Ds Max." *Jurnal ProTekInfo* Vol. 3 No. 1 September 2016, ISSN: 2406-7741, September 2016.
- [24] Susanto, Ajib, Wijanarto, dan Ibnu Utomo WM. "Rekayasa e-Market untuk Kelompok Usaha Pemuda Binaan Dinas Pemuda dan Olahraga Propinsi Jawa Tengah sebagai Upaya Peningkatan Pemasaran dan Penjualan Produk." *Prosiding SNATIF Ke-1 Tahun 2014*, ISBN: 978-602-1180-04-4. 2014.
- [25] Thomas, Dianto G., Sherwin R. U. A. Sompie, dan Brave A. Sugiarso. "Virtual Tour Sebagai Media Promosi Interaktif Penginapan Di Kepulauan Bunaken." *E-Journal Teknik Informatika* Vol. 13, No. 1 (2018) ISSN : 2301-8364, 2018.
- [26] Vaughan, Tay. *Multimedia : Making it Work*. Edisi ke 6. Yogyakarta: Andi Offset, 2004



Maryani is a doctoral student at Bina Nusantara University. She is a faculty member the School of Information Systems – Bina Nusantara University since 2009. Her research interest is ecommerce, Knowledge Management, elearning, IS/IT adoption.



Hendra Alianto is a faculty member the School of Information Systems – Bina Nusantara University since 2001. His research interest are ecommerce, Knowledge Management, Web Solution.

Author's Profile



Tangkas Udiono is a faculty member the School of Information Systems – Bina Nusantara University since 2000. His research interest are ecommerce, and System Design.



Hery Harjono Muljo is a researcher at Bioinformatics & Data Science Research Centre and a lecturer at Accounting Program, Bina Nusantara University, Jakarta, Indonesia. His research expertise is in developing management information system of health institutions such as hospitals and clinics.