

## **Development of Social Media-Based Cultural Community Applications: A Design Science Approach**

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**Abstract.** Indonesia boasts a wealth of local arts and culture, which is distributed throughout the nation and serves as a valuable legacy that must be preserved. This study aims to create a social media-based cultural community model that connects stakeholders involved in promoting culture, including the government, cultural communities, and the general public or tourists. Utilizing the Design Science Research approach, the model was developed through six stages. The findings of this research include a conceptual model and a social media prototype for cultural communities, designed to facilitate connections among members while also serving as a platform for sustaining and preserving local culture. The proposed model ensures that these communities will be automatically monitored, providing an innovative solution to promote and protect Indonesia's rich cultural heritage.

**Keywords:** cultural communities, Social Media, preserving, local culture

## **1. Introduction**

Indonesia is a very diverse nation in terms of culture, ethnicity, religion, and philosophical viewpoints. All of this diversity develops throughout Indonesian society, ultimately transforming it into a plural society. The community's self-identity and social integration are actually maintained by this divergence. Due to Indonesia's demographic advantages, there are a large number of promising digital firms. Any activity a digital business owner engages in that relates to business operations may generally be categorized as an internal task (Wibowo & Koerniawan, 2022).

Cultural growth and community development cannot be separated. The community is defined as the owner and maintainer of national culture based on the Law on the Advancement of Culture. The party that knows and understands the requirements and difficulties to promote cultural ecosystems is the community as active cultural actors, starting from the community level to the industry

At the moment, research on community, environmental preservation, and local culture has been widely conducted in Indonesia using the Community-Based Tourism model. For example, (Amerta, 2017) did research in an article titled Community Based Tourism Development, which results in a Tourism Development strategy model and community-based tourism development in Karangasem, Bali. Another study was undertaken on Tulungagung's Klatak beach, with the goal of developing a strategy to increase fishing community-based tourism by classifying local fishing communities.

The Community-Based Tourism (CBT) model is a method of community development and environmental preservation that aims to achieve long-term tourism development that is concerned with environmental, social, and cultural concerns (Diharto, Ismail, Iriantini, Murdadlo, & Muafi, 2018). Whereas this strategy strives to improve the local economy, safeguard the natural environment, and preserve indigenous cultural values (Phuong, Song, & Quang, 2020), it also encourages cultural preservation and nature conservation (Briones, 2017).

In our research, the aim of advancing culture is to maintain the nation's cultural history, and direct the direction of the evolution of global civilization towards culture, so that it becomes the driving force for the nation's progress. According to Law no. 5 yrs. 2017 Article 5 which is meant as Objects for the Advancement of Culture are categorized in Oral traditions, Manuscripts, Customs, Rites, Traditional Knowledge. Traditional Technology, Art, Language, Folk Games, Traditional Sports

The plan carefully mapped out by the central government for the promotion of culture will be difficult to implement if there are still problems with the process at the basic level. According to the Law on the Advancement of Culture, which stipulates that this procedure must be completed in stages, the local government which functions as executor of cultural development at the district, city and provincial levels will carry out this process (Nasional, 2017).

The challenges faced in maintaining and developing local culture are obtained from the research, namely ongoing supervision and monitoring of cultural communities by the government and the community, bridging access to information between cultural communities and people who want to involve cultural activities in social life and learn about that culture. as well as the use of information technology to make access easier for those who are interested. A model that can accommodate stakeholders involved in tourism and cultural preservation, particularly the community, government, and society, is required for this. Connecting the physical and digital worlds is a fundamental challenge for the advancement of smart tourism (Gretzel, Sigala, Xiang, & Koo, 2015). The deployment of technologies has transformed the tourism business into a cyberspace where stakeholders can meet without being physically present (George, 2023). The study topic is how to construct the model required by ICT-based cultural communities in Indonesia.

## **2. Literature Review**

Design Science Research (DSR) is utilized to create innovative technologies for problem solving. These challenges and solutions are frequently socio-technical in character, which makes it difficult for DSR to obtain a grasp of the problem, discover potential solutions systemically, and successfully evaluate new and innovative ideas (Baskerville et al., 2009).

The DSR can enter the research process at four different phases. Traditional problem-centered efforts, which are similar to qualitative and quantitative research approaches, are the first point of entry. The second approach is a goal-centered solution approach, which allows the researcher to approach a research effort by first defining goals, which can be quantitative or qualitative, as well as key ideas to define how the new artifacts are expected to support the solution in order to achieve the set goals. The third entrance point is Design Centered, in which initiation can occur as a result of an intriguing design or development problem. The fourth access point is with the research customer, where the design process begins (Lawrence, Tuunanen, & Myers, 2010).

The following are the stages or actions that must be completed in accordance with the DSR (Lawrence et al., 2010; Peffers, Tuunanen, Rothenberger, & Chatterjee, 2007):

- **Problem identification and motivation:** Identifying the unique research challenge and demonstrating the worth of the answer. Focusing on researchers and clients in the research, which will later find answers and help to grasp the reasons for the researcher's comprehension of the problem, are two things that are done to find solutions.
- **Define the objectives for a solution:** Determine the solution goals based on the problem statement and your understanding of what is doable and feasible. The goals can be quantifiable, such as how the intended solution will be better than the current one, or qualitative, such as a description of how the new artifact is expected to support a solution to a previously neglected problem.
- **Design and development:** Make artifacts, such artifacts could be constructions, models, procedures, or examples (each broadly defined). Conceptually, research artifacts might take the shape of objects produced and created by researchers.
- **Demonstration:** Show the usage of artifacts to address one or more problems. It may be used in experiments, simulations, case studies, proofs, or other appropriate activities.
- **Evaluation:** Examine and quantify how well the artifact supports the problem solution. This task entails comparing the solution's objective to the actual observed results of applying the artifacts in the demonstration.
- **Communication:** Inform academics and other important audiences, such as practicing professionals, about their issue and importance, artifacts, utility and originality, design rigor, and efficacy.

## **3. Methodology**

The design strategy used in this study is a science research methodology (DSRM). This DSRM refers to Ken Peffers et al. DSRM is a collection of procedures, principles, and practices. This integration is required to conduct research and consistently meet these three objectives by conducting a literature review. DSRM provides a nominal process model for DSRM research as well as a mental model for presenting and evaluating research. Six steps comprise the DSRM process: problem identification and motivation, goal definition for solutions, design and development, demonstration, evaluation, and communication (Peffers et al. 2007). The image depicts the following DSRM.

The stages or activities that must be carried out based on the DSR are as Fig.1 (Lawrence, Tuunanen, and Myers 2010; Peffers et al. 2007)

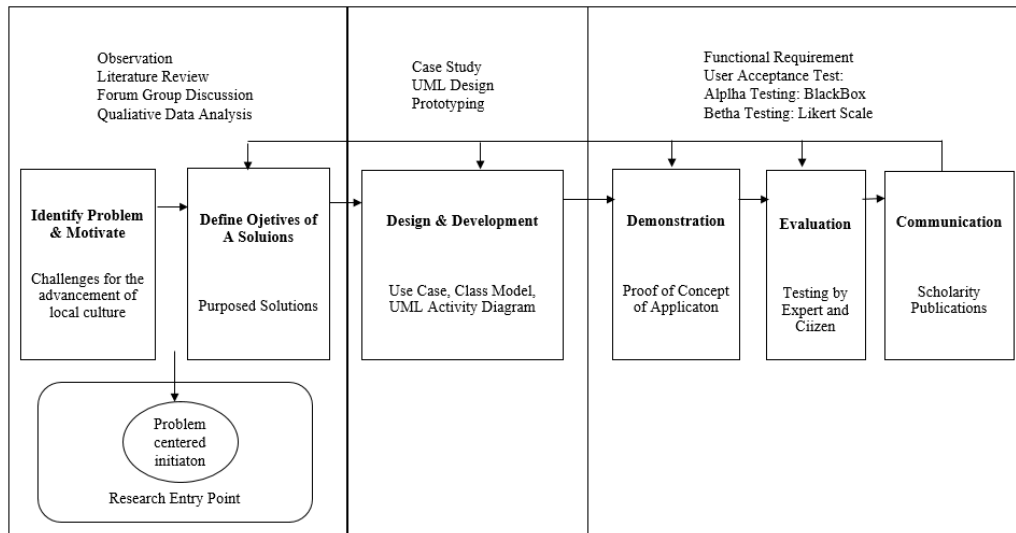


Fig.1: Initial Design Science Research

## 4. Result and Discussion

### 4.1. Problem Identification and Motivation

In this phase, research is focused on exploring problems that exist in the domain of local cultural preservation. The research was conducted by doing the Interview, Observation and Literature study.

According to the findings of discussions with the Culture Service Department in Tangerang, there was a problem in which the government and the cultural community felt that there were limitations to inadequate physical facilities where these facilities were usually used by the arts and cultural community to disseminate works of cultural art, many cultural heritage values that had to be preserved. The loss of cultural knowledge, particularly in the fabrication of instruments, as well as the philosophy of an art and culture.

On the community level, there is a shortage of facilities for communicating art and cultural information to the public, exchanging information between communities/studios, and growing professionalism so that they can be self-sufficient and contribute to the economy. From the standpoint of the community, it is the ability to learn about and participate in social activities or celebrations, as well as other difficulties.

As a result, a model that can accommodate parties involved in tourism and cultural preservation, namely the community, government, and society, is required. Connecting the physical and digital worlds is a fundamental challenge for the advancement of smart tourism (Gretzel, Sigala, Xiang, & Koo, 2015).

### 4.2. Define the Objectives for Solutions

In this phase, the discussion was carried out with the Culture and Tourism office of the city of Tangerang. Where a model is needed to bridge related parties such as the arts and culture community, government and society as well as other parties by utilizing technology, to help solve problems related to the promotion and maintenance of local culture.

The discussion were conducted with two experts from the Tangerang cultural service and the two cultural communities to get an overview of the tasks, activities and constraints related to the maintenance and promotion of culture as primary data source. This stage follows the grounded theory method, where this method is a qualitative research methodology which is defined as the process of applying concepts to produce a theory from a series of raw data. Analysis of the primary data interview process was carried out through three stages (Jones and Alony 2011) namely Open coding, Selective coding and Theoretical Coding. Secondary data source is also processed, notably PPKD documents

generated by the government that comprise identification of potential problems in cultural promotion that are summarized from the city, provincial level for cultural assets.

On the other hand, an article search was conducted using the Systematic Literature Review method to find publications about Information Technology in the field of Culture that supports the tourism industry, as well as with the keywords "Mobile", "Technology", and "Applications", integrated with "Cultural-Tourism". A systematic literature review is a process in which each phase builds on the one before it. The procedure begins with a research topic and concludes with results and reports (Dahiya, Gautam, & Gautam, 2021) . The search was conducted from 2001 to 2021 and yielded 49 documents. These publications were independently validated once more, and 39 journal articles were chosen. This is the technology that was employed:

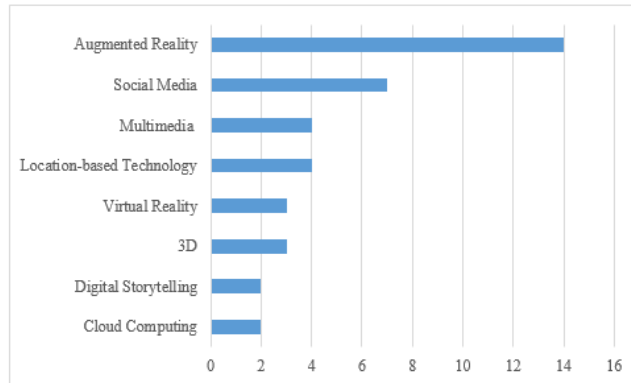


Fig. 2: Technology Used in Cultural domain

The usage of social media technology is widespread, and it is one of the most effective means of disseminating information. This media maintains information about user profiles, interactions, and media for trading information, reviewing products, and verifying locations. Social media and multimedia are being combined for the benefit of cultural tourism (Ping, Yang, & Cao, 2020).

The researchers bridged the solution by suggesting social-based technology features to be constructed on a cultural community platform to solve current problems after assessing and processing data connected to existing challenges and conditions as well as the results of a literature study. The Soft System approach was used to create the Conceptual Model. The solution proposed is to build a media by utilizing mobile-based digital technology for cultural and community communities and decision-support Dashboard technology for local governments. So it is hoped that this media can help related parties to carry out maintenance, disseminate information, maintain, monitor and promote local culture.

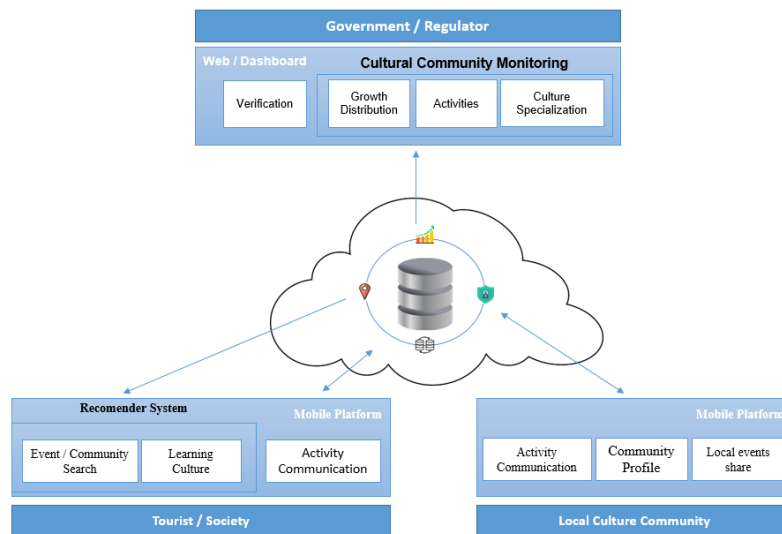


Fig. 3: ICT-Based Cultural Community Conceptual Model (Nindito, Prabowo, & Hendric, 2022)

This community model is explained using three business process pillars, namely people, process, and technology, as follows.

- **People:** The actors involved in this model are the first, the government as the regulator and responsible for promoting culture according to Law No. 5, Year 2017, which is represented by the cultural services at both the city and provincial levels, the second is the cultural community that grows and spreads throughout the territory of Indonesia and the last is the public and tourists who want to learn or get information to interact further.
- **Process:** Communities can register and inform cultural activities that are unique and special. The dissemination of information on cultural activities will be directly monitored by the regional government and the general public so that culture can be spread and at the same time popularize the community concerned. The community can also receive input from the public or tourists who are interested in their culture.

The government can identify a new community automatically through the monitoring dashboard, so that the relevant community can then be verified. Information on uploading activities or maintaining culture in the form of articles, images or short videos which are the specialty of the community is also a concern. So that the government gets a profile picture of the community so that it can determine development, appropriate assistance and involve the community in events of a certain scale

The citizen and tourists can find information related to the desired cultural arts based on their interests. Monitoring the community in spreading culture and adding insight regarding a culture, providing feedback and comments aimed at advancing the culture or community.

- **Technology:** The technology used in this model is mobile technology with social media platforms for communities and society. So that the dissemination of information and digital documentation in the field of culture can be recorded and spread widely. Web technology in the form of a monitoring dashboard is also used from the government's side to provide input for decision making regarding the development of a thriving cultural community.

### 4.3. Design and Development

In this phase, we designs artifacts that will be used in the model. Zachmand's framework (Zachman 1999) was chosen to provide guidance in identifying relevant information system artifacts. Zachman's framework is built in a two-dimensional matrix with six columns representing various abstractions (data, process, location, people, time, and motivation) and six rows representing the perspectives of different actors (planner, owner, designer, builder, programmer, and user). The author acts as a planner, owner, and designer of the cultural platform that includes the first three top tiers of Zachman's structure.

These needs are described after a review of present procedures, and they are then elaborated upon by using social media-based community development theories. Three specialists from the Tangerang Department of Culture in Indonesia as well as two members of the Community were interviewed. All ideas are taken into account to produce artifacts. The majority of the artifacts, including activity diagrams and use case diagrams, are produced as a result of interviews (Madyatmadja, Abdurachman, Gaol, Pudjianto, & Hapsara, 2018). A summary of application development can be seen in the table 1 below.

Table 1: Application Development Summary

Level	Abstraction	Data Requirement
Level Business Conceptual Model	Data / What	Class Diagram
Owner's View	Function / How	Business Process Model
	People / Who	Use Case Diagram
	Time / When	Activity Diagram
	Motivation / Why	Plaform Rules

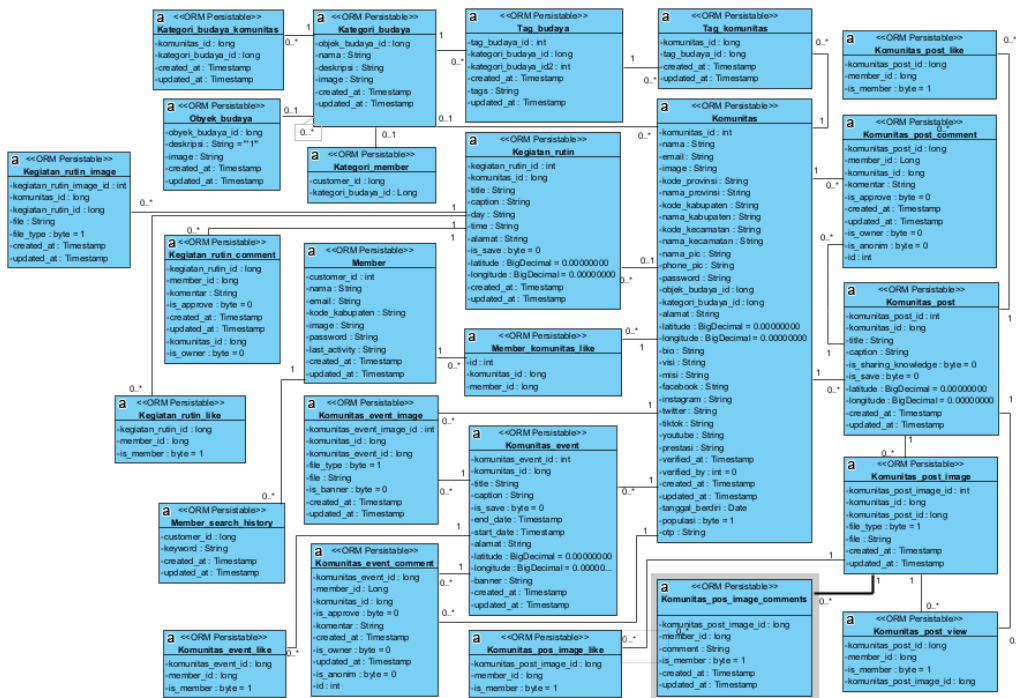


Fig. 4: Model Class Diagram of ICT-Based Communities

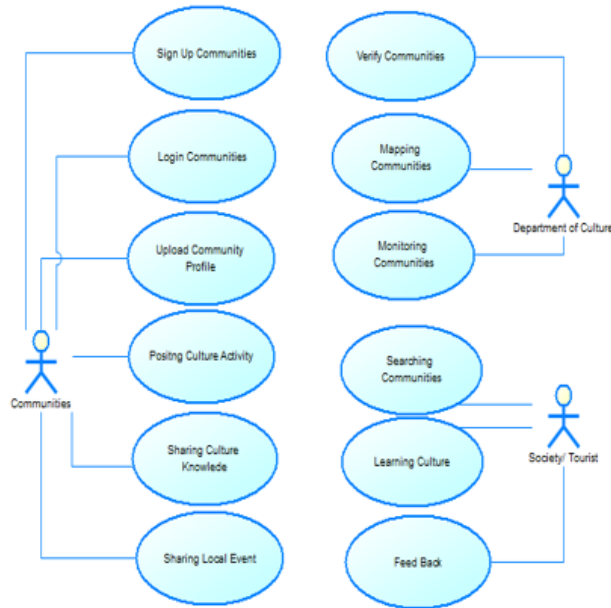


Fig. 5: Model Use Case Diagram of ICT-Based Communities

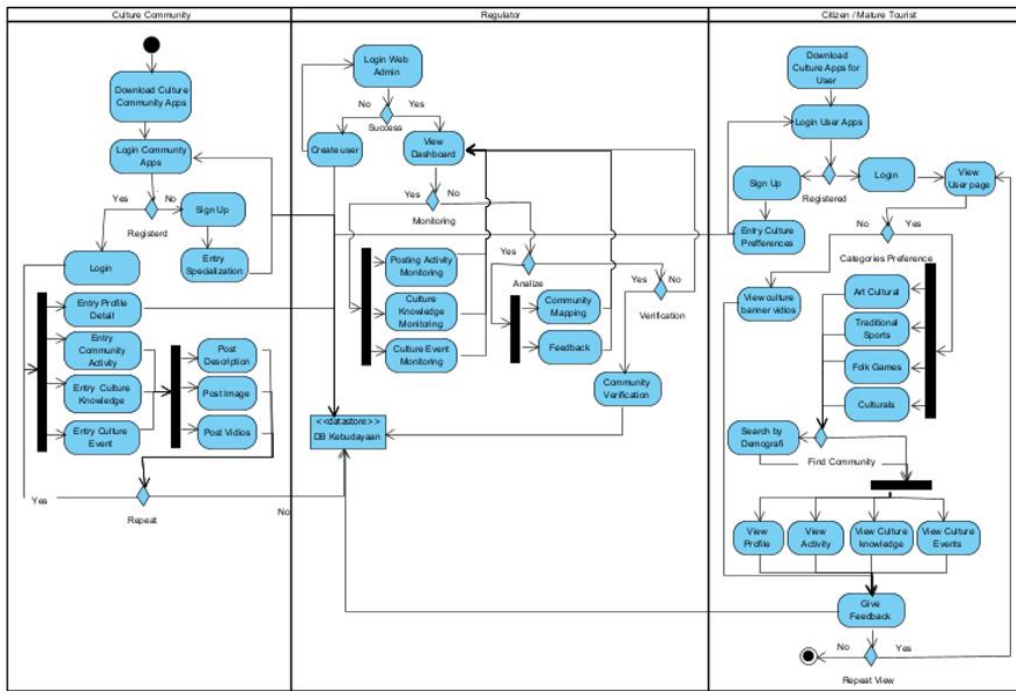


Fig. 6: Model Activity Diagram of ICT-Based Communities

#### 4.4. Demonstration

This phase provides an overview of the use of artifacts using a prototype. The process is carried out by conducting experiments, simulations according to the needs of stakeholders.

The regulator or the government is carrying out verification, monitoring, and community mapping based on cultural objects and their locations. This is part of their responsibility to embrace Indonesian culture. A community position mapping feature at the site of this application relates to Information on Indonesian Islands and Government Administrative Areas as per Permendagri No. 58 of 2021, can be seen in Fig.6

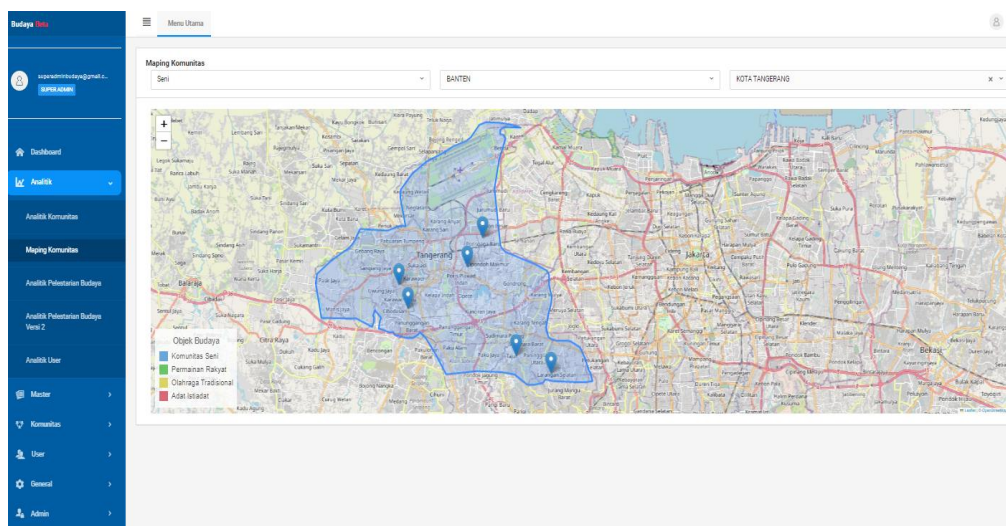


Fig. 7: Mapping Communities in Indonesia For Culture Department

From the Community side, where each registered community can upload art-related activities in the form of photographs, videos, or descriptions of activities. In this application, the community can also share knowledge about art and culture in the form of photographs or videos, depending on their expertise. Communities can also post local events and share them with other communities. Users, visitors, and



local authorities will later be supplied with information about profiles, activities, cultural sharing, and events.

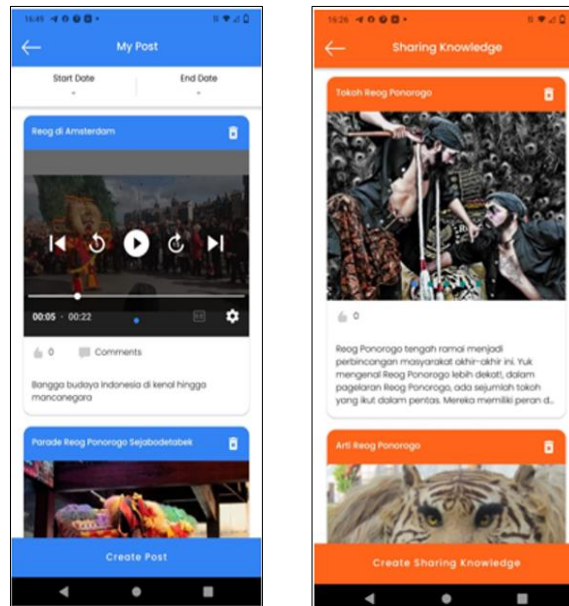


Fig. 8: Cultural Community Apps for posting activity and cultural sharing

Tourists can select the video banner function or short videos, depending on their preferences as users or visitors. Short videos are typically played on mobile devices by viewers (Xiao, Wang, & Wang, 2019). In general, the user's preferences will determine how this video banner is shown. Also, visitors can find out details about the relevant neighborhood, such as information about its location or specialties.

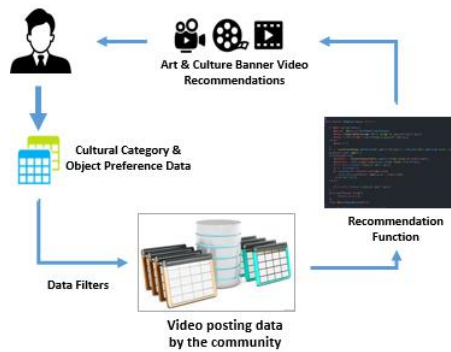


Fig. 9: Cultur vidio banner recomendation

Tourists can evaluate these localities' vibrancy using this application. Feedback on events or cultural exchanges that are informed by the community might also come from visitors or the user community.

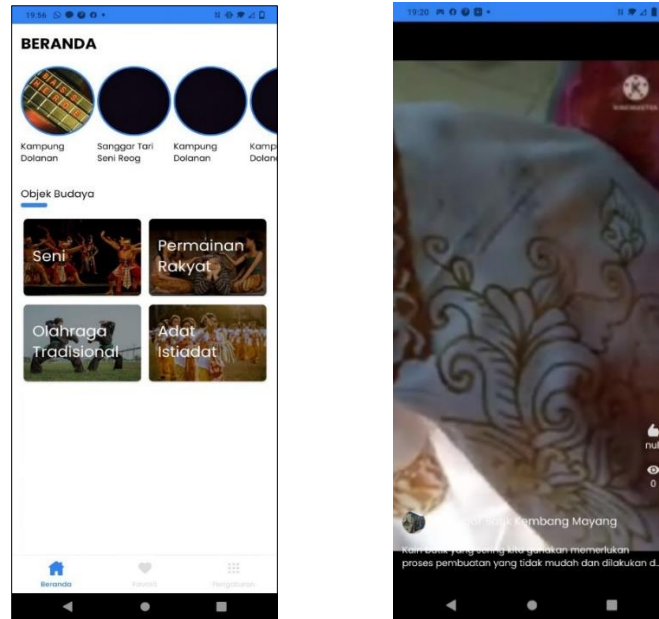


Fig. 10: Cultural Community Apps for posting activity and cultural sharing

#### 4.5. Model Evaluation

At this stage an evaluation is carried out with the aim of finding out to what extent the ICT-based Community model can be used to improve government services in the field of cultural promotion as well as from a cultural community point of view in terms of using technology to disseminate information to public spaces as well as from the public/tourist side to interact with local culture.

The generated application prototype was tested utilizing Alpha, Beta, and User Acceptance techniques At this stage an evaluation is carried out with the aim of finding out to what extent the ICT-based Community model can be used to improve government services in the field of cultural promotion as well as from a cultural community point of view in terms of using technology to disseminate information to public spaces as well as from the public/tourist side to interact with local culture.

The generated application prototype was tested utilizing Alpha, Beta, and User Acceptance techniques (Che Ku Mohd & Shahbodin, 2015). Whilst Beta testing is testing from the system's end user as part of an assessment of the system being constructed, Alpha testing is testing from the developer's side that attempts to see all of the system's capabilities (Zamtinah, Supriyadi, & Soeharto, 2020).

The internal development team performs Alpha Testing on the application by executing 158 test cases using the Blackbox testing method. There were 35 successful user applications, 45 successful community applications, and 78 successful regulator applications. The Betha testing was completed by as many as 19 end users, with a final score of 82.5%. At the end of the phase, the team might iterate/repeat the design and development stage to improve the artifact or go to the final stage, subsequent research, or future research initiatives Whilst Beta testing is testing from the system's end user as part of an assessment of the system being constructed, Alpha testing is testing from the developer's side that attempts to see all of the system's capabilities

#### 5. Conclusion

The conclusions that can be derived from research utilizing the DSRM approach are that it is more concentrated and can produce a proposal that can truly tackle the difficulties that exist in this study. Where the community is designated based on its cultural object, making it easier for the government

to provide direction and help, as well as for members of the public or tourists who want to incorporate the arts into social life. The study's findings include the identification of individuals participating in attempts to promote culture, conceptual models and system designs, as well as application prototyping that has been evaluated with an 82.5% user acceptance rate.

This research makes the following contributions: (a) one of the creative efforts in preserving local culture; (b) introducing local arts and culture to the community; (c) providing a platform that integrates cultural promotion actors, namely the government, cultural communities, and the general public or tourists; and (d) a systematic approach to developing solutions for promoting and preserving local culture through the use of social media applications.

The study's limitation is the gathering of primary data, particularly data from cultural communities, which has to be enhanced given to the spread of community demographics in Indonesia. This was supplemented with secondary data from PPKD records in this investigation. This research can be connected with e-commerce activities related to the findings of traditional knowledge from current local cultures for future research development.

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