

## **Transformation of Traditional Woven Fabric Marketing through Augmented Reality Technology as a Community Empowerment Effort in Tenganan Traditional Village**

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### **ABSTRACT**

Traditional weaving artisans in Tenganan Traditional Village possess significant potential to produce superior products based on local cultural heritage. However, limited adoption of digital marketing has resulted in conventional marketing practices, leading to restricted market reach and suboptimal sales performance. This community service program aims to enhance the knowledge and skills of weaving artisans through the implementation of digital marketing and the use of Augmented Reality (AR) as a modern marketing strategy. The implementation methods included observation and planning stages, educational sessions on the importance of digital marketing, practical training in the use of social media and marketplace platforms, as well as mentoring in the application of AR technology to present woven products interactively and engagingly. The activities were conducted using a participatory approach that actively involved the weaving artisan groups. The results indicate an improvement in the artisans' understanding and skills in digital product marketing. The weaving groups in Tenganan Traditional Village are now able to utilize social media and marketplace platforms for product promotion and have gained insight into the potential of AR technology to enhance product attractiveness and expand market reach at the national level. The integration of digital marketing and AR is expected to strengthen the artisans' competitiveness while supporting the preservation of traditional weaving culture in the digital era.

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## INTRODUCTION

The traditional village of Tenganan in Karangasem Regency, Bali, is widely known for its well-preserved cultural heritage, one of which is the unique and highly valuable gringsing weaving. In addition, there are other traditional woven fabrics, such as endek ATBM (non-machine loom) fabrics with various motifs that tell ancient history or philosophy. These fabrics not only serve an aesthetic purpose but also carry symbolic and philosophical values passed down through generations. The complex production process, which requires a long time and high skill, makes gringsing weaving an exclusive product and a cultural identity of the Tenganan community. The economic potential of this craft is enormous, but its utilisation is still limited because marketing has so far been done conventionally, relying on tourist visits and sales around the village area (Sari et al, 2023).

The influx of tourism, changes in lifestyle, and consumerist culture have encouraged traditional woven fabrics, especially double and single ikat techniques, to be used not only in traditional ceremonies but also increasingly sought after by foreign tourists as souvenirs. Gringsing and endek ATBM fabrics are now widely used in the fashion world, with a number of renowned Indonesian designers using them as a source of inspiration, either by utilising gringsing-patterned weaves or printing the patterns on organza and silk. The use of these weaves has also expanded beyond rituals to include party wear and pre-wedding needs, indicating a shift from sacred functions to commercial interests. This commercialisation phenomenon has social, economic, and cultural impacts, giving rise to new meanings such as efficiency, creativity, and innovation, while also shifting some of the sacred values (Alimin et al, 2024). Nevertheless, in Tenganan Karangasem Village, gringsing cloth still holds an important position as a medium for traditional, religious, and marriage rituals, with a weaving tradition passed down from generation to generation as part of the community's habitus. Global developments and the influence of the tourism industry have accelerated the transformation of the function and value of gringsing double-ikat woven cloth (Sukmadewi, 2021).

In the digital era, traditional marketing patterns have become challenging because they are unable to reach a wider market. Many traditional weavers in Tenganan Traditional Village are unfamiliar with digital marketing strategies, such as the use of social media, marketplaces, and websites to promote their products (Tabita et al, 2025). In fact, digital technology opens up great opportunities to expand the market to a national and even international scale. Barriers such as limited knowledge, digital account management skills, and a lack of understanding of branding have resulted in gringsing woven products not being marketed optimally online. This situation calls for innovation so that local cultural products can remain competitive amid the rapid pace of modernisation (Sagitan and Wijaya, 2022).

One relevant strategy is the integration of digital marketing with augmented reality (AR) technology. Through AR, woven products can be displayed interactively, for example, by displaying motifs in 3D or allowing potential buyers to try combining fabrics with clothing virtually (Sariyono and Nerisafitrah, 2024). This innovation not only enhances the appeal of promotions but also provides a different experience that is more convincing to consumers. Thus, the application of digital marketing and AR not only helps increase sales but also plays an important role in strengthening the sustainability of the gringsing weaving culture in Tenganan Traditional Village (Wahyuddin et al, 2021).



**FIGURE 1.** The Condition of Weaving Artisan Groups

In addition to utilising AR (augmented reality) technology, social media presence can be an opportunity to market products digitally. Social media serves not only as a means of communication but also as an effective marketing tool to introduce products to the wider community (Istiqomah, 2023). Through platforms such as Instagram and Facebook, businesses can display their products in a more attractive way, build interactions with consumers, and expand their market reach without being limited by space and time. Thus, social media plays an important role in improving sales strategies while supporting business sustainability in the digital era (Sutama and Pratama, 2023).

The use of social media as a marketing tool is currently becoming more widespread and is considered highly effective in increasing sales. Through paid advertising features, product promotions can be targeted more accurately to the desired market, as social media has the ability to reach various groups and regions around the world (Silajadja et al, 2023). In addition, social media also makes it easier for businesses to build direct interactions with consumers, introduce product identities, and create a more attractive image. Thus, social media has a strategic role in strengthening competitiveness, expanding marketing networks, and at the same time providing a great opportunity for the preservation and development of traditional products such as gringsing weaving amid the tide of globalisation (Dwijayanti et al, 2022).

## IMPLEMENTATION METHOD

This community service programme was carried out in Tenganan Traditional Village, Manggis Subdistrict, Karangasem Regency, which is home to a group of traditional weavers who are still active today under the auspices of the local village head. This activity was held over two days, on 11-12 August 2025, involving around 28 people consisting of members of the traditional weaving artisan group and village officials responsible for the welfare of the existing weaving artisan group. The activity aimed to enhance the group's knowledge and skills in digital marketing. The implementation of the Community Empowerment Programme (PMP) involved several stages, as outlined below:



**FIGURE 2.** The Condition of Weaving Artisans Groups

- Observation and Identification of Partner Issues

The activity began with a survey and interviews with a group of traditional weavers from the Tenganan Traditional Village. From this stage, the main issues were identified, namely limited knowledge of digital marketing, minimal use of social media, and a lack of technology-based innovations for product promotion.



**FIGURE 3.** Observation & Identification of Partners

- Activity Planning

Once the issues had been identified, the team drew up an activity plan that included training in digital marketing through social media and websites (Susilawati and Hakim, 2022). In addition, innovations were added in the form of the use of design applications (Canva) and the introduction of Augmented Reality (AR) technology as an interactive marketing strategy.



**FIGURE 4.** Activity Planning

- Programme Implementation

This stage includes material presentation and hands-on practice. The training programme begins with the preparation of materials and supporting tools, followed by a presentation on the role of social media in marketing, branding strategies, and content creation using Canva. After that, participants practise creating business accounts on Instagram and Facebook, setting up profiles, and uploading their first content. The activity continues with content publication simulations and mentoring (Wa'san and Sariningsih, 2021).



**FIGURE 5.** Social Media Creation

Participants were trained to create business social media accounts, upload products to websites, and design attractive logos and photos using Canva. The team also introduced the use of simple AR so that woven products could be visualised in 3D to increase the appeal of promotions (Reyhan et al, 2024).

The implementation of Augmented Reality (AR) technology on the website was designed to enhance the digital marketing experience of traditional woven products by providing interactive and immersive product visualization. AR technology allows potential consumers to view woven fabrics in three-dimensional (3D) form through web-based access without requiring additional applications. The AR feature was integrated into the official product website using web-based AR technology (WebAR), enabling users to scan a QR code or directly access the AR function via their smartphone or computer browser. Through this feature, users can visualize woven fabric products in real-time, explore details such as texture, patterns, and color variations, and interact with the products from multiple viewing angles.

From a marketing perspective, the use of AR on the website enhances consumer engagement and trust by offering a virtual experience that closely resembles physical product inspection. This approach reduces uncertainty in online purchasing decisions and increases the perceived value of traditional woven products. For the artisans, the website-based AR system serves as an innovative promotional tool that expands market reach and strengthens competitiveness in the digital marketplace. The implementation process involved content preparation, including product photography and 3D model development, followed by technical integration into the website interface. Training and mentoring were also provided to the artisan groups to ensure their ability to operate, update, and utilize the AR features independently for sustainable digital marketing practices (Chatsiopoulou & Michailidis, 2025).



**FIGURE 6.** Website & AR Support

- Assistance and Monitoring

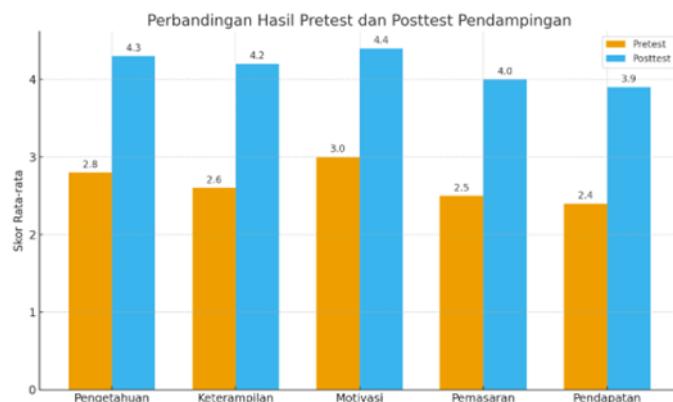
After the training, the team assists partners in applying the knowledge they have gained. Monitoring is carried out to ensure that artisans consistently create promotional content, manage digital accounts, and begin to explore AR as an additional feature in their marketing strategy.



**FIGURE 7.** Assistance And Monitoring

- **Evaluation and Follow-up**

In the final stage, an evaluation is conducted to measure the success of the activity through discussions, questionnaires, and assessments of participants' practical results. Based on the evaluation results, follow-up measures are formulated in the form of ongoing assistance so that traditional weavers in Tenganan Traditional Village become more independent in marketing their products with the support of digital marketing and AR innovation. Additionally, the follow-up to be implemented by the proposing team is to make the traditional weavers of Tenganan Traditional Village a partner group under the auspices of the LPPPM of Triatma Mulya University. The following are the results of the questionnaire given to the partners:



**FIGURE 8.** Partner Questionnaire Results

Explanation:

- Question 1: The community service programme planning carried out by lecturers at Triatma Mulya University is in line with the needs of the community service partners.
- Question 2: The implementation of the community service programme is carried out in accordance with scientific methods.
- Question 3: The results of the community service programme are in line with the programme planning.
- Question 4: The programme outcomes are in line with the solutions expected by the partners.
- Question 5: The programme outcomes can be utilised to the fullest extent.

## RESULTS AND DISCUSSION

The results of the Community Empowerment Programme (PMP) with a group of traditional weavers in the traditional village of Tenganan have yielded several important achievements. First, in terms of knowledge and awareness, the weavers have begun to understand the urgency of digital marketing in developing their business. Before the programme was implemented, most weavers relied solely on direct sales to tourists, which meant that their market reach was very limited. After receiving materials and interactive discussions, they realised that social media and websites could be a means to expand their market and introduce gringsing weaving to a wider audience, both nationally and internationally.

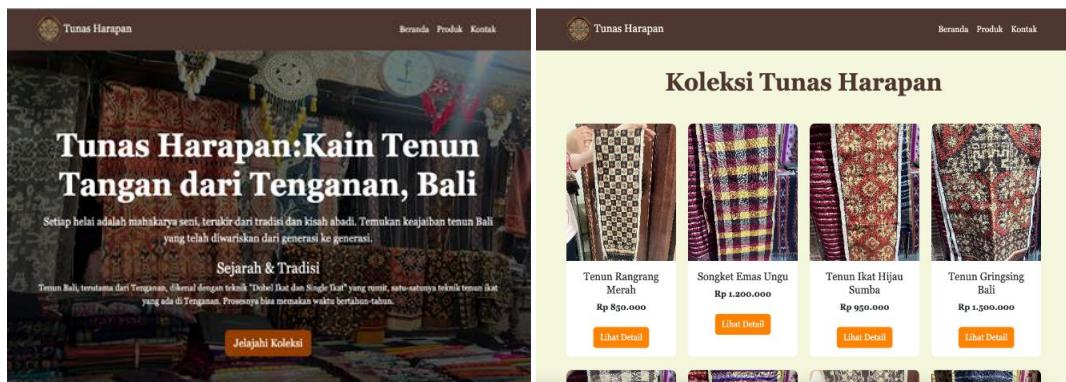


FIGURE 9. Results and Discussion

Secondly, in terms of practical skills, the artisans have successfully created business accounts on social media platforms such as Instagram and Facebook. They have also been trained to design more attractive product packaging using the Canva application. The results of the training show an increase in the creativity of the participants in visualise the product through more eye-catching and professional packaging. This is important because packaging plays a role in building the product's image and influencing consumers' purchasing decisions.

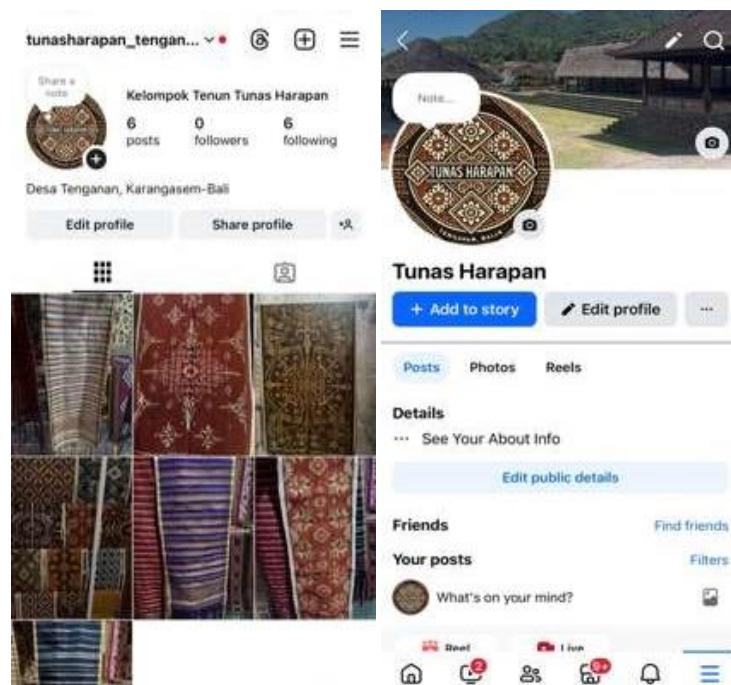


FIGURE 10. Weaving Group Social Media Accounts

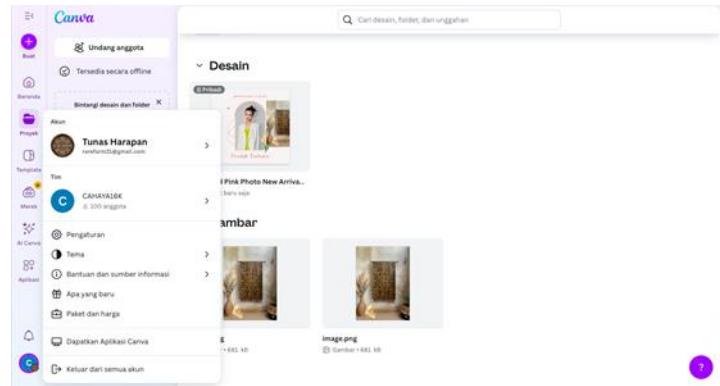


FIGURE 11. CANVA Account for the Weaving Group

Thirdly, the activity also produced achievements in the aspect of marketing innovation through Augmented Reality (AR). Although most participants were still new to this technology, they began to understand the enormous potential of AR in providing interactive experiences to consumers. By displaying gringsing and endek ATBM weaving motifs in 3D or virtual try-on formats, the products became more attractive and consumers could experience their aesthetic value more realistically before purchasing. The application of AR is also seen as capable of enhancing the competitiveness of traditional woven products in an increasingly competitive global market.

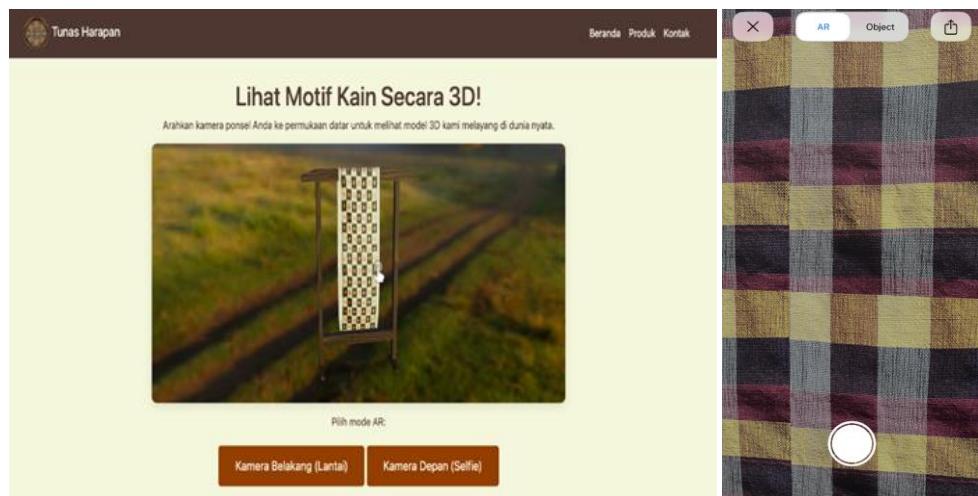


FIGURE 12. AR Display on the Website

The implementation of digital marketing strategies not only increases sales opportunities but also paves the way for the preservation of local culture (Rahmadieni and Wahyuni, 2023). Gringsing and endek ATBM weaving, which were once only known among local tourists, now have the potential to be recognised internationally with the help of digital technology. On the other hand, although the use of AR is still in its early stages, artisans already have an idea that this technology can be a future marketing strategy that distinguishes their traditional products from other textile products. Based on sales data before and after assistance, it shows that the integration of digital marketing and AR is very relevant to be applied to traditional artisan groups.



**FIGURE 13.**  
(Source: Partner Data)

The results of the activity show that the traditional weaving group in Tenganan Traditional Village is able to adopt new skills in digital marketing and is beginning to be open to the application of innovative technology. This is an important asset in enhancing competitiveness, expanding marketing networks, and supporting the sustainability of the gringsing weaving cultural heritage. This is also supported by sales data before and after the weaving group received training and assistance, which showed a significant increase.

Several challenges were encountered during the implementation of Augmented Reality (AR) technology, primarily related to the limited level of digital literacy among the weaving artisan groups. Most participants had minimal experience with advanced digital tools, requiring repeated guidance to operate web-based AR features. In addition, unstable internet connectivity and variations in device compatibility affected the optimal use of AR applications. Time constraints due to artisans' production activities also limited training duration, indicating the need for continuous mentoring to ensure sustainable adoption of AR technology.

## CONCLUSION AND RECOMMENDATIONS

The transformation of traditional endek fabric marketing in Tenganan Traditional Village demonstrates a clear shift from conventional, limited marketing practices toward more modern and adaptive digital strategies. The adoption of digital media, including websites and social media platforms, has enabled local artisans to expand their market reach beyond direct village-based sales to national and international audiences. This transformation has been further supported by collaboration with local governments, creative communities, and tourism stakeholders, strengthening the position of endek fabric as a cultural product with high economic value.

Overall, the digital marketing transformation contributes not only to increased community income but also to the preservation of cultural heritage and the reinforcement of local identity. By positioning endek fabric as a competitive cultural product in the digital era, this initiative supports the sustainability of traditional weaving practices while enhancing the economic resilience of the Tenganan Traditional Village community.

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