JURTEKSI (Jurnal Teknologi dan Sistem Informasi) ISSN 2407-1811 (Print)
Vol XI No 4, September 2025, hlm. 693 – 700 ISSN 2550-0201 (Online)
DOI: http://dx.doi.org/10.33330/jurteksi.v11i4.4181
Available online at https://jurnal.stmikroyal.ac.id/index.php/jurteksi

DEVELOPMENT OF A QR CODE-BASED WEBAR TO DIGITIZE LOCAL WISDOM AS AN EFFORT TO INCREASE TOURIST ATTRACTION IN BORDER AREAS

Noviyanti. P[1]*, Mira[2], Alexander Jerry[1]
[1]Information Technology, Institut Shanti Bhuana Bengkayang
[2]Information Systems, Institut Shanti Bhuana Bengkayang
email: [1]* noviyanti@shantibhuana.ac.id

Abstract: Current technological developments play a crucial role in driving the tourism industry, one of which is the utilization of technology. However, tourist attractions in border areas face challenges such as limited access to digital information and a lack of interactive media to present local wisdom such as history, customs, and culture. This study aims to develop and implement a QR Code-based Web-based Augmented Reality (WebAR) to digitize local wisdom at tourist attractions, making information more engaging and accessible to tourists. The research methodology adopted three approaches: UCD (User-Centered Design), Agile methods, and TAM (Technology Acceptance Model). This platform contains the local wisdom of two tourist villages in the border area, namely Sebujit Village and Jagoi Babang Village. The results of testing and evaluation using multiple linear regression and SEM-PLS methods on 45 respondents showed that the WebAR technology acceptance model was significant ($F = 6.583$; $p < 0.001$). User Attitude (ATU) is a key variable that significantly influences Intention to Use (BI) ($\beta=0.429$; $p=0.001$), while Ease of Use (PEOU) and Benefit (PU) indirectly influence BI through ATU. As additional validation, the classification test yielded an accuracy of 88.90% and an F1-score of 0.941, confirming that QR Code-based WebAR is effective and well-received as a digital information and promotion medium for local wisdom in border areas.

Keywords: border areas; local wisdom; qr code; tourist attractions; web augmented reality.

Abstrak: Perkembangan teknologi saat ini memiliki peran penting dalam mendorong industri pariwisata, salah satunya dengan pemanfaatan teknologi. Namun, objek wisata di daerah perbatasan menghadapi tantangan seperti keterbatasan akses informasi digital dan kurangnya media interaktif untuk menyajikan kearifan lokal seperti sejarah, adat istiadat, dan budaya. Penelitian ini bertujuan untuk mengembangkan dan mengimplementasikan Web-based Augmented Reality (WebAR) berbasis QR Code untuk digitalisasi kearifan lokal objek wisata, menjadikan informasi lebih menarik dan mudah diakses bagi wisatawan. Metodologi penelitian mengadopsi tiga pendekatan, UCD (User-Centered Design), metode Agile, dan TAM (Technology Acceptance Model). Platform ini memuat kearifan lokal dua desa wisata di daerah perbatasan, yaitu Desa Sebujit dan Desa Jagoi Babang. Hasil pengujian dan evaluasi dengan metode regresi linier berganda dan SEM-PLS pada 45 responden menunjukkan bahwa model penerimaan teknologi WebAR ini signifikan ($F = 6.583$; $p < 0.001$). Sikap Pengguna (ATU) menjadi variabel kunci yang berpengaruh signifikan terhadap Niat Penggunaan (BI) ($\beta=0.429$; $p=0.001$), sementara Kemudahan Penggunaan (PEOU) dan Manfaat (PU) memengaruhi BI secara tidak langsung melalui ATU. Sebagai validasi tambahan, uji klasifikasi menghasilkan akurasi 88,90% dan F1-score 0,941, yang menegaskan bahwa WebAR berbasis Kode QR efektif dan dapat diterima dengan baik sebagai media informasi dan promosi digital kearifan lokal di wilayah perbatasan.

Kata Kunci: daerah perbatasan; kearifan lokal; qr code; web augmented reality.

JURTEKSI (Jurnal Teknologi dan Sistem Informasi) ISSN 2407-1811 (Print)
Vol XI No 4, September 2025, hlm. 693 – 700 ISSN 2550-0201 (Online)
DOI: http://dx.doi.org/10.33330/jurteksi.v11i4.4181
Available online at https://jurnal.stmikroyal.ac.id/index.php/jurteksi

INTRODUCTION

Tourism, which prioritizes tourist destinations, continues to grow rapidly to boost regional and national economies. Each region has its own distinctive tourist attractions, which are packaged in a way to encourage the growth of the creative economy. One way to adapt to the development of the creative economy is through the preservation of local wisdom [1]. The preservation of local wisdom, especially in border areas, can be reflected in unique and authentic history, culture, and customs.

Unlike tourist attractions in urban areas, those in border areas are rich in unique and authentic local wisdom. Preserving local wisdom is crucial for increasing tourist appeal and enhancing a region's cultural identity. According to the 2023/2024 Tourism and Creative Economy Outlook report, one of the main factors driving the tourism industry is the use of technology, with a 43.59% impact [2].

However, there are several challenges currently being experienced, especially in border areas, namely limited access to digital information, lack of interactive media to obtain information on local wisdom of tourist attractions, such as history, customs and local culture, as well as lack of promotion of tourist destinations [3]. Tourism object management remains conventional, while rapid technological developments have the potential to trigger the growth of creative tourism and attract tourists.

The study of the limited use of Augmented Reality (AR) technology in tourism in border areas, which is still dominated by mobile app-based AR applications, presents a gap in this research. This gap highlights the need for lightweight, interactive, and educational digital solutions in border areas with limited infrastructure.

This issue highlights the gap between the potential of local wisdom and the limitations in presenting it to tourists. Therefore, an appropriate and widely accessible technological approach is needed. AR technology projects two things: the virtual world and the real environment, creating both 2D and 3D displays [4][5]. AR technology was chosen for several benefits, such as accessibility or ease in exploring tourist attractions virtually, optimizing marketing, the sustainability of the creative tourism economy, and as an educational medium for learning and understanding the local wisdom of tourist attractions in border areas [6][7].

The AR technology developed in this research is Web-based Augmented Reality (WebAR) based on QR Code. WebAR is a technology developed to produce an AR-based platform, not an application or open source platform, but rather an AR technology concept that can be developed using frameworks such as A-Frame and AR.js [8][9].

The development of this platform refers to technological innovation that can provide sustainability for the creative economy [10] local wisdom-based tourist attractions use WebAR to provide interactive and educational media in accessing local history and culture.

Previous research designed an information system for tourist attractions in Bengkayang Regency [11]. The research yielded data on tourist attractions in border areas, including waterfalls, hills, and man-made attractions. The research, however, was limited to general information on natural attractions and lacked local wisdom. Therefore, the proposed research will be supplemented with data

JURTEKSI (Jurnal Teknologi dan Sistem Informasi) ISSN 2407-1811 (Print)
Vol XI No 4, September 2025, hlm. 693 – 700 ISSN 2550-0201 (Online)
DOI: http://dx.doi.org/10.33330/jurteksi.v11i4.4181
Available online at https://jurnal.stmikroyal.ac.id/index.php/jurteksi

on attractions based on local wisdom, such as cultural or educational tourism.

Previous research related to AR technology. This research discussed the development of AR technology focused on tourism with local wisdom using the MAKAR application [12]. This study tested AR technology in the MAKAR application. The results showed that the MAKAR application can be applied to create interactive visualizations combined with local wisdom of tourist attractions in border areas. However, there were obstacles related to delays in displaying AR visualizations on certain smartphones. This study aims to minimize the obstacles encountered in previous studies by developing a QR Code-based WebAR without the need for additional applications.

Further research will discuss the design of AR technology that is not too excessive, but can provide details related to the local history and culture of tourist attractions [13]. The research conducted refers to previous research to produce WebAR that not only provides an interactive experience but also provides educational information related to the local wisdom of tourist attractions.

Previous research also discussed the exploration of QR code-based WebAR technology [14]. The study explains that QR Code-based WebAR has been developed in various cases, including interactive and educational local wisdom. Virtual technologies such as WebAR will continue to be developed and developed in the future, so based on this, the research will develop WebAR for the digitalization of local wisdom of tourist attractions as an application of virtual technology in the future. Other studies also explain that WebAR technology can provide an interesting experience for users and increase user confidence in the real environment [15][16][17].

METHOD

The stages of this research include planning, WebAR design, implementation, testing and evaluation, and the final result, a WebAR platform. The research flow can be seen in Image 1.

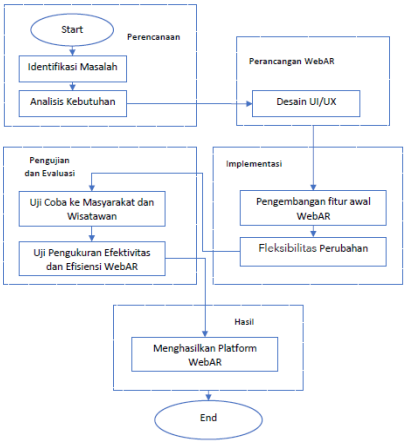


Image 1. Research Flow

Planning

The initial activity undertaken in this research was problem identification. The needs analysis process aimed to collect data related to Cultural and Historical Heritage, Arts and Crafts, Traditions and Ceremonies, and Local Cuisine in the border region. The needs analysis process included a User-Centered Design (UCD) approach.

WebAR Design

The WebAR design process consists of UI/UX design. The design process is crucial because it determines the development of WebAR for digitizing local wisdom at tourist attractions in border areas. The UI/UX design is tailored to user needs and prioritizes ease of access. This UI/UX design also refers to the UCD approach and can be designed based on needs analysis.

JURTEKSI (Jurnal Teknologi dan Sistem Informasi) ISSN 2407-1811 (Print)
Vol XI No 4, September 2025, hlm. 693 – 700 ISSN 2550-0201 (Online)
DOI: http://dx.doi.org/10.33330/jurteksi.v11i4.4181
Available online at https://jurnal.stmikroyal.ac.id/index.php/jurteksi

Implementation

The implementation process begins with the development of initial WebAR features, referring to UI/UX design, which is carried out in stages. The implementation of QR Code-based WebAR development for the Digitalization of Local Wisdom in Border Areas uses the A-Frame and AR.js frameworks. After WebAR is successfully implemented, it is necessary to ensure feature suitability so that it remains flexible to changes. If there is still a need for additions or reductions in WebAR features, the implementation phase allows for adjustments. Both processes include a problem-solving approach using the Agile method.

Testing and Evaluation

At this stage, researchers ensure that the developed WebAR platform meets needs and provides ease of access. At this stage, trials will be conducted with the public and tourists to obtain feedback and measure effectiveness and efficiency within the specified sample size. This testing and evaluation phase uses the TAM approach. The testing and evaluation in this study utilize multiple linear regression analysis and SEM-PLS, as well as accuracy and F1 score tests. The formulas for calculating accuracy and F1 score are as follows.

$$Accuracy = \frac{TP + TN}{TP + TN + FP + FN}$$

$$F1 = 2 \times \frac{Precision \times Recall}{Precision + Recall}$$

Results

The output of this research is a QR code-based WebAR for digitizing local wisdom of tourist attractions in border areas, which can be openly accessed by the public and tourists. Through this WebAR development, the public and tourists can access digital information and gain interactive and educational experiences of local wisdom of tourist attractions in border areas, as well as serve as a promotional medium for tourist destinations in border areas.

RESULTS AND DISCUSSION

This research develops a web-based augmented reality (AR) representation of local wisdom of tourist attractions in border areas as a form of tourism development. The AR design requires photographs and 3D designs to be used and input into the A.Frame framework and AR.js library.

This WebAR research is QR Code-based, allowing AR to be executed when the camera is pointed at a code that has been customized with markers created in the .patt format. The .patt file format itself can be created using a dedicated website to support AR development.

The initial webAR feature development was designed to be simple and user-friendly. Furthermore, the initial webAR feature development was flexible and adaptable to changes as needed. WebAR developers developed QR codes or markers, supported by a simple AR display through the markerless concept. Markers can be used when users have a code created and will be present at the tourist attraction. Markerless displays, on the other hand, are simple AR displays that can appear without a code, providing an immersive experience for users not present at the attraction. The developed webAR also features narratives for each AR object, adding value to preserving local wisdom and culture.

The Web-based Augmented Reality display that has been built has a homepage display and has the option to display 2 tourist attractions based on the Sebujit

JURTEKSI (Jurnal Teknologi dan Sistem Informasi) ISSN 2407-1811 (Print)
Vol XI No 4, September 2025, hlm. 693 – 700 ISSN 2550-0201 (Online)
DOI: http://dx.doi.org/10.33330/jurteksi.v11i4.4181
Available online at https://jurnal.stmikroyal.ac.id/index.php/jurteksi

tourist village and the Jagoi Babang tourist village.

Image 2. WebAR Home View

Image 2 displays two tourist attractions: Sebujit Village and Jagoi Babang Village. Each village has two attractions: traditional houses and unique rituals. Each village is also equipped with markers and markerless displays. Markerless displays are used by scanning codes within the tourist attraction area, while markerless displays simple AR displays when the user does not have a code or is not present at the attraction. The following is a webAR display running via a laptop webcam:

Table 1. Results of QR Code-Based Web-Based Augmented Reality

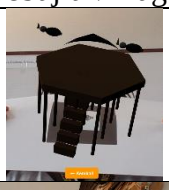
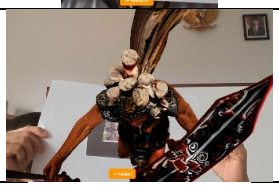
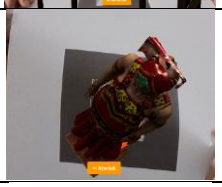
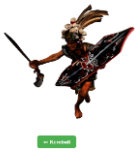
Information	Border Area Tourism Village	
	Sebujit Village	Jagoi Babang Village
WebAR Results of Traditional Houses with QR Code		
WebAR Results of Traditional Rituals with QR Codes		
WebAR results of Traditional Houses without QR Code (available on the WebAR link)		
WebAR Results of Traditional Rituals without QR Code (available on the WebAR link)		

Table 1 shows a display of Marker-based and Markerless webAR. Marker-based or QR code-based AR will produce a display similar to the one shown in the table when the camera is pointed at the code corresponding to the object. AR with a built-in 3D design appears and is placed on paper containing a QR code that functions as a marker. Meanwhile, markerless AR displays a simple AR similar to marker AR, the only difference being that the simple 3D AR appears directly without a QR code.

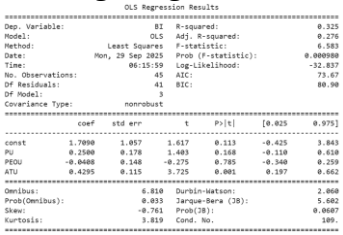
This research differs from previous studies, particularly in terms of ease of access to QR Code-based Web-based

JURTEKSI (Jurnal Teknologi dan Sistem Informasi) ISSN 2407-1811 (Print)
Vol XI No 4, September 2025, hlm. 693 – 700 ISSN 2550-0201 (Online)
DOI: http://dx.doi.org/10.33330/jurteksi.v11i4.4181
Available online at https://jurnal.stmikroyal.ac.id/index.php/jurteksi

Augmented Reality for Digitizing Local Wisdom. Tourist Attractions in Border Areas can be accessed simply by having a link without having to install an application, as in previous studies. Although this system seems to have to be built from scratch, its function as a digitization of local wisdom is more specific than simply creating augmented reality without a specific purpose.

Testing and Evaluation

The testing and evaluation process in this study used the Technology Acceptance Model (TAM). TAM testing and evaluation are based on four aspects: Perceived Usefulness, Perceived Ease of Use, Attitude Toward Using, and Behavioral Intention to Use. Testing and evaluation were conducted by creating a questionnaire containing questions referring to the four aspects of the TAM method. The summary model results can be seen in the following Image:



OLS Regression Results

Dep. Variable:	BI	R-squared:	0.325
Model:	OLS	Adj. R-squared:	0.276
Method:	Least Squares	F-statistic:	6.583
Date:	Mon, 29 Sep 2025	Prob (F-statistic):	0.000980
Time:	06:15:59	Log-Likelihood:	-52.837
No. Observations:	45	AIC:	73.67
Df Residuals:	41	BIC:	80.90
Df Model:	3		
Covariance Type:	nonrobust		

	coef	std err	t	P>|t|	[0.025	0.975]
const	1.7090	1.057	1.617	0.113	-0.425	3.843
PU	0.2500	0.178	1.403	0.168	-0.110	0.610
PEOU	-0.0408	0.148	-0.275	0.785	-0.340	0.259
ATU	0.4295	0.115	3.725	0.001	0.197	0.662

Omnibus:	6.810	Durbin-Watson:	2.060
Prob(Omnibus):	0.033	Jarque-Bera (JB):	5.602
Skew:	-0.761	Prob(JB):	0.0607
Kurtosis:	3.819	Cond. No.	109.

Image 3. Summary of Multiple Linear Regression Model

Image 3 is a summary of the multiple linear regression model obtained based on questionnaire data with the x variable consisting of 3 aspects, namely the PU, PEOU, and ATU aspects and the y variable the BI aspect. The test results show that the regression model is simultaneously significant ($F = 6.583$; $p < 0.001$) with an R^2 value of 0.325 and an Adjusted R^2 of 0.276. This means that the independent variables are able to explain 27.6% of the variation in BI, while the remaining 72.4% is explained by other factors outside the model. Partially, only the ATU variable has a significant effect on BI ($\beta = 0.429$; $p = 0.001$). Meanwhile, PU ($\beta = 0.251$; $p = 0.168$) and PEOU ($\beta = –0.048$; $p = 0.785$) do not have a significant effect.

In addition to testing and evaluation using multiple linear regression analysis, this study also used SEM-PLS to validate indicators, test the strength of relationships between constructs, and identify the main factors driving technology acceptance. The SEM-PLS results can be seen in Image 3.

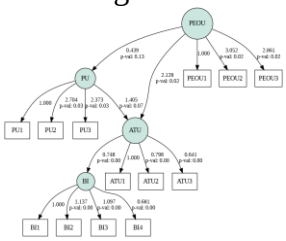
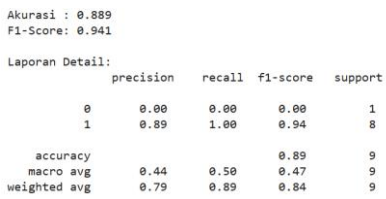


Image 4. Path Diagram (Structural & Measurement Model) in SEM-PLS

Image 4 shows the results of SEM-PLS analysis in the form of a path diagram. All indicators in the constructs of Perceived Usefulness (PU), Perceived Ease of Use (PEOU), Attitude Toward Using (ATU), and Behavioral Intention (BI) have high and significant loading values, so they can be said to be valid in representing their constructs. In the structural model, the relationship between PEOU and PU shows a path coefficient of 0.439 with a p-value of 0.13, so it is not significant. This indicates that ease of use does not directly affect perceived usefulness. However, PEOU has a significant effect on ATU ($\beta = 2.128$; $p = 0.02$), which means that the easier the system is to use, the more positive the user's attitude towards using it. PU has a positive effect on ATU with a coefficient of 1.405 and a p-value of 0.07. Although the direction of the effect is positive, this significance value is still at a marginal

JURTEKSI (Jurnal Teknologi dan Sistem Informasi) ISSN 2407-1811 (Print)
Vol XI No 4, September 2025, hlm. 693 – 700 ISSN 2550-0201 (Online)
DOI: http://dx.doi.org/10.33330/jurteksi.v11i4.4181
Available online at https://jurnal.stmikroyal.ac.id/index.php/jurteksi

level, so the contribution of perceived usefulness to user attitudes is not strong enough. Meanwhile, ATU significantly influenced BI (β = 0.748; p < 0.01). This means that users' positive attitudes toward the system are the main factor driving behavioral intentions to use the system. In addition to multiple linear regression analysis and SEM-PLS, this study also includes a classification model test for additional validation.



```
Akurasi : 0.889
F1-Score: 0.941

Laporan Detail:
              precision    recall  f1-score   support

           0       0.00      0.00      0.00         1
           1       0.89      1.00      0.94         8

    accuracy                           0.89         9
   macro avg       0.44      0.50      0.47         9
weighted avg       0.79      0.89      0.84         9
```

Image 5. Accuracy Test Results and F1 Score.

The classification model test results show an accuracy of 88.9% and an F1 score of 0.941, indicating strong predictive ability. These findings are consistent with the results of multiple linear regression and SEM-PLS, where the ATU variable was shown to be the dominant factor influencing BI.

CONCLUSION

The research that has been conducted, namely the development of web-based augmented reality based on qr code for digitalization of local wisdom of tourist attractions in border areas using multiple linear regression analysis and SEM-PLS provides positive results in the acceptance of WebAR technology. Multiple linear regression analysis shows a significant model (F = 6.583; p < 0.001) with an Adjusted R^2 value of 0.276, which means that the variables of benefits (PU), ease of use (PEOU), and attitude (ATU) are able to explain 27.6% of the variation in usage intention (BI). Partially, only user attitudes (Attitude Toward Using – ATU) have a significant effect on BI (Behavioral Intention to Use) (β = 0.429; p = 0.001). The SEM-PLS results strengthen the multiple linear regression analysis by showing that PEOU has a significant effect on ATU (β = 2.128; p = 0.02), PU has a positive effect on ATU but is marginally significant (β = 1.405; p = 0.07), and ATU has a significant effect on BI (β = 0.748; p < 0.01). The questionnaire scores on ATU and BI aspects ranged from 4–5 on a Likert scale, indicating high acceptance. Thus, user attitudes are key variables mediating the influence of PU and PEOU on BI, making QR Code-based Web-based Augmented Reality effective as an information medium and promotion of local wisdom that attracts tourists to border areas. The classification model test results showed an accuracy of 88.9% and an F1 score of 0.941, indicating strong predictive ability. These findings are consistent with the results of multiple linear regression and SEM-PLS, where the ATU variable was shown to be the dominant factor influencing BI.

BIBLIOGRAPHY

[1] BK Vuspitasari, *Local Wisdom as a Tourist Attraction*. Ponorogo: UWAIS Inspirasi Indonesia, 2024. [Online]. Available: https://books.google.co.id/books?hl=en&lr=&id=cY9BEQAAQBAJ&oi=fnd&pg=PA1&dq=Creative Tourism Information System Based on Augmented Reality to Preserve Local Wisdom of Tourist Attractions in Border Areas&ots=hlF6Cty-_Q&sig=ET31EVk0YrIwvCvHX27PkP4xlhw&r

[2] Ministry Of Tourism And Creative Economy, "Outlook on Tourism and the Creative Economy," Jakarta, 2023. [Online]. Available:

https://www.kemenparekraf.go.id/hasil-pencarian/outlook-pariwisata-dan-ekonomi-kreatif-20232024

[3] Indra, Rina, and I. Veriansyah, "Analysis of the Riam Pangar Tourist Attraction, Tujuh Belas District, Bengkayang Regency," *Geo Khatulistiwa J. Educator. Geogr. and Tourism*, vol. 2, no. 3, pp. 1–14, 2022.

[4] IKAA Maheswara and IBG Sarasvananda, "PKM: Implementation of Augmented Reality Application for Introduction to Manda Traditions Based on Mobile," *J. Soc. Work Empower.*, vol. 3, no. 1, pp. 11–18, 2023, doi: 10.58982/jswe.v3i1.511.

[5] F. Muff and HG Fill, *M2AR: A* Web-based Modeling Environment for the Augmented Reality Workflow Modeling Language, vol. 1, no. 1. Association for Computing Machinery, 2024. doi: 10.1145/3652620.3687779.

[6] BK Vuspitasari, *Creative Economy and Tourism*. Sumedang West Java: megapress, 2023.

[7] HM Pohan, A. Syaputra, FS Harahap, D. Yunita, RA Siregar, and A. Ben Mabrouk, "Development of an Augmented Reality-Based Practicum E-Module Integrated with Local Wisdom of Salak Fruit," vol. 2, no. December, pp. 124–135, 2024.

[8] HA Hussein, MH Ali, M. Al-Hashimi, NT Majeed, QA Hameed, and RD Ismael, "The Effect of Web Augmented Reality on Primary Pupils' Achievement in English," *Appl. Syst. Innov.*, vol. 6, no. 1, pp. 1–20, 2023, doi: 10.3390/asi6010018.

[9] K. Karuppasamy, M. Madesh, R. Jaiharini, B. Priyadharshini, and R. Jasvanth, "Interactive Learning through Augmented Reality, Enhancing Textbook Engagement with QR Code-Based 3D Visualizations of Educational Content in the Real World," vol. 10, no. 4, pp. 3754–3764, 2025.

[10] BK Vuspitasari, YN Atlantika, and N. Novianty, "Utilization of Digital in Marketing Rattan Woven Products from Creative Villages on the Border," *EKOMBIS Rev. J. Ilm. Ekon. dan Bisnis*, vol. 11, no. 1, pp. 997–1004, 2023, doi: 10.37676/ekombis.v11i1.3106.

[11] N. Wirana and P. Noviyanti, "Analysis and Implementation of Bengkayang Tourism Object Information System Using Object-Oriented Approach," vol. 3, no. 2, pp. 61–74, 2024.

[12] FLM Horhoruw, P. Noviyanti, Mira, and JP Nadapdap, "Development of Augmented Reality Technology in Tourism as an Effort to Preserve Local Culture," *J. Science Info Inform. and Science*, vol. 13, no. 03, pp. 882–887, 2023.

[13] M. Cabeleira and CV de Carvalho, "Using Augmented Reality to Improve Touristic Efficacy," vol. 14, no. 2, pp. 1–19, 2025, doi: https://doi.org/10.3390/computers14020075.

[14] KF McNally and H. Koviland, "A Web-Based Augmented Reality System," *ICST Trans. Scalable Inf. Syst.*, pp. 1–8, 2024, doi: 10.4108/eetsis.5481.

[15] NM Tuah, WNW Ahmad, RM Andrias, DS Ajor, S. Sura, and ARA Rodzuan, "Assessing the user experience of marker-based 3D WebAR applications using user experience questionnaire," *Int. J. Informatics Commun. Technol.*, vol. 14, no. 1, pp. 31–41, 2025, doi: 10.11591/ijict.v14i1.pp31-41.

[16] G. Taub, A. Elmalech, and N. Aharony, "Trust and attitude toward information presented using augmented reality and other technological means," *Heliyon*, vol. 10, no. 4, p. e25944, 2024, doi: 10.1016/j.heliyon.2024.e25944.

[17] ZS Kabir and K. Kang, "The Impact of Augmented Reality Through User-Platform Interactions Towards Continuance Intention with the Effect of User Generation," *Information*, vol. 15, no. 12, 2024, doi: 10.3390/info15120758.