



CHADA VALENCIA: AN INTERACTIVE TOURISM WEBSITE

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ABSTRACT

The municipality of Valencia, Negros Oriental, despite ranking among the top three most visited destinations in the region, continues to rely on paper-based logbooks and lacks a centralized digital platform for tourism management. This study aimed to analyze, design, develop, and evaluate Chada Valencia: An Interactive Tourism Website, a multi-role web-based platform serving tourists, tourism enterprises, and Local Government Unit administrators. A mixed-methods research design was employed, guided by the Input-Process-Output model and supported by the Hybrid Agile Software Development Life Cycle. Respondents consisted of ten IT experts, ten Valencia Tourism Office personnel, fifty-one tourism enterprise representatives, and one hundred tourist end-users. Pre-development assessment revealed serious operational challenges in tourist influx data collection (grand mean = 3.27, Very Serious), tourist feedback gathering (3.28, Moderately Serious), and access to tourism-related information (3.59, Very Serious), guiding the identification of eleven functional and seven non-functional requirements. The platform was evaluated using the ISO/IEC 25010:2011 Software Product Quality Model and achieved an overall weighted mean of 4.63 (Excellent) across all eight quality characteristics, with Usability rated highest at 4.68. User acceptance measured through the Technology Acceptance Model returned 4.74 (Excellent) from tourist end-users and 4.57 (Excellent) from tourism enterprise respondents, confirming that the platform is both technically sound and genuinely accepted by its intended users.

Keywords: *e-tourism website, ISO/IEC 25010:2011, Technology Acceptance Model, tourist analytics, local government unit, web development*

INTRODUCTION

Tourism is one of the fastest-growing industry sectors in the world, serving as a major driver of economic growth that can transform socio-cultural and environmental landscapes (Wahyuningtyas et al., 2022). In the Philippines, travel and tourism contributed 12.7%, 5.4%, and 5.2% to the Gross Domestic Product in 2019, 2020, and 2021, respectively (Philippine Statistics Authority [PSA], 2022), though the sector was significantly disrupted by the COVID-19 pandemic. The need for reliable and accurate tourist arrival data has since become increasingly critical for strategic planning and industry recovery (De Jesus & Samonte, 2023).

Governments and private institutions invest in attracting visitors through Destination Marketing Organizations, which promote cities, regions, or countries to potential travelers. While these organizations historically relied on printed brochures and television commercials, the tourism industry has undergone a continuous digital transformation driven by modern consumer behavior. Tourists today overwhelmingly prefer digital platforms and social media channels to research destinations and finalize travel decisions, making digital touchpoints essential for building traveler trust (Marcelo et al., 2023). A study on smart tourism readiness in Metro Cebu confirmed that digital infrastructure recorded the strongest influence on visitor satisfaction ($r = 0.68$, $p < 0.01$), establishing that investments in tourism technology directly improve visitor experience (Say, 2024).

Despite these advances, the digital gap remains wide among rural and emerging eco-tourism municipalities. A systematic review of tourism and hospitality challenges in the Philippines noted that inadequate digital infrastructure and limited connectivity continue to hinder tourism expansion in rural areas (Suson et al., 2025). Tourism officers across Philippine LGUs have been documented to rely on manual forwarding of tourist arrival numbers, with officers identifying the absence of a centralized monitoring system as a persistent gap (Rocamora & Aguilung, 2020).

These documented challenges directly mirror the situation in Valencia, Negros Oriental, which, despite consistently ranking among the top three most visited destinations in the region, lacks the digital infrastructure to capitalize on its growing visitor demand. The Valencia Tourism Office and local enterprises continue to depend on paper-based logbooks for recording tourist arrivals, resulting in fragmented data, delayed monthly reports, and an inability to generate reliable analytics for strategic decision-making.

To address these gaps, this study aimed to analyze, design, develop, and evaluate Chada Valencia: An Interactive Tourism Website, a centralized multi-role web-based platform serving tourists, tourism enterprises, and Local Government Unit administrators, designed to digitize bookings, interactive geo-mapping, and automated local tourist analytics for Valencia's tourism sector.

Research Questions

Specifically, the study sought to answer the following questions:

1. What is the demographic profile of the Local Government Unit in terms of:
 - 1.1 income class,
 - 1.2 tourist visits per month,
 - 1.3 number of tourist destinations, and
 - 1.4 types of Tourism Enterprise?
2. What are the challenges encountered by the LGU of Valencia tourism office in terms of:
 - 2.1 tourist influx data,
 - 2.2 tourist feedback, and
 - 2.3 access to tourism related information?
3. What are the functional and non-functional requirements necessary for the development of Chada Valencia: An Interactive Tourism Website?
4. How effective is the developed Chada Valencia: An Interactive Tourism Website based on the ISO/IEC 25010:2011 Software Product Quality Model in terms of:
 - 4.1 functional suitability,
 - 4.2 performance efficiency,
 - 4.3 compatibility,
 - 4.4 usability,
 - 4.5 reliability,
 - 4.6 security,
 - 4.7 maintainability, and
 - 4.8 portability?
5. How do Tourists and Tourism Enterprises evaluate the developed system in terms of:
 - 5.1 perceived usefulness, and
 - 5.2 perceived ease of use?

METHODOLOGY

Research Design

This study employed a mixed-methods research design, integrating qualitative and quantitative approaches across two distinct phases of the Hybrid Agile Software Development Life Cycle (SDLC). The qualitative component was applied during the requirements-gathering phase through interviews, direct observation, and open-ended feedback sessions with the Valencia Tourism Office. The quantitative component was applied during the system evaluation phase through structured survey questionnaires based on the ISO/IEC 25010:2011 Software Product Quality Model and the Technology Acceptance Model (TAM), administered using standardized five-point Likert scales.

Research Environment

The study was conducted in Valencia, Negros Oriental, Philippines. The primary environment was the Valencia Municipal Tourism Office, which served as the institutional stakeholder. The secondary environment comprised local tourism enterprises operating within the municipality, including accommodations, restaurants, adventure facilities, and community-based tour guide associations.

Respondents and Sampling

Respondents were selected through purposive sampling and classified into four groups as shown in Table 1. Ten (10) IT professionals were selected to evaluate the platform using ISO/IEC 25010:2011. All ten Valencia Tourism Office personnel participated in the pre-development survey through total population sampling. From a registry of 58 registered tourism enterprises, a sample of 51 was determined using Slovin's formula at 5% margin of error. From an accessible population of 133 tourists, a sample of 100 was determined using the same formula.

Table 1: Distribution of Study Respondents

Respondent Category	Frequency	Percentage
Tourist End-Users	100	58.48%
Tourism Enterprise Representatives	51	29.82%
Tourism Office Personnel	10	5.85%
IT Experts	10	5.85%
Total	171	100%

Research Instruments

Four primary instruments were used. First, a pre-development survey questionnaire and semi-structured interview were administered to Tourism Office personnel to document existing operational challenges. Second, an ISO/IEC 25010:2011 evaluation questionnaire was administered to IT experts assessing eight quality characteristics. Third and fourth, separate TAM questionnaires were administered to tourist end-users and tourism enterprise owners measuring perceived usefulness and perceived ease of use. All instruments used a five-point Likert scale. Reliability of the pre-development instrument was confirmed through Cronbach's Alpha: tourist influx data challenges ($\alpha = 0.819$), tourist feedback challenges ($\alpha = 0.724$), and tourism information access challenges ($\alpha = 0.962$), all exceeding $\alpha \geq 0.70$.

Data Gathering Procedure

Data gathering was conducted in three systematic phases. Phase 1 (pre-development): a formal transmittal letter was submitted to the Valencia Tourism Office; structured surveys and semi-structured interviews were conducted with Tourism Office personnel to document operational challenges and define system requirements. Phase 2 (development and technical evaluation): the platform was built through Agile development sprints with continuous LGU stakeholder demonstrations; upon completion, ten IT experts evaluated the system using the ISO/IEC 25010:2011 instrument. Phase 3 (user acceptance testing): the completed platform was presented to tourist end-users and tourism enterprise respondents for hands-on testing, after which both groups completed their respective TAM surveys.

Statistical Treatment

Frequency and percentage were used to describe respondent distribution. Weighted mean served as the primary analytical tool for quantifying responses across all evaluation instruments. Standard deviation was computed as a complementary measure to quantify dispersion and assess respondent consensus.

RESULTS

Demographic Profile of the LGU of Valencia, Negros Oriental

The demographic assessment confirmed that Valencia is a financially capable 1st Class Municipality under DOF Order No. 074-2024 (effective January 1, 2025), with a minimum average annual regular income of ₱200,000,000 supplemented by royalties from the Palinpinon Geothermal Power Station. The municipality recorded 20,066 overnight tourist arrivals in 2022, averaging approximately 1,672 per month, and ranked among the top three most visited destinations in Negros Oriental. Tourist arrivals nearly tripled in the first half of 2024 compared to the same period in 2023. Valencia has ten confirmed tourist destinations (seven natural and ecotourism sites and three historical and cultural sites) and 53 DOT-endorsed tourism enterprises across six categories.

Challenges Encountered by the Valencia Tourism Office

Table 2 presents the quantitative assessment of challenges across three operational dimensions. All three areas were rated at serious to very serious levels, with access to tourism-related information recording the highest grand mean.

Table 2: Challenges Encountered by the Valencia Tourism Office (n=10)

Challenge Area	Grand Mean	SD	Interpretation
Tourist Influx Data Collection	3.27	0.47	Very Serious
Tourist Feedback Gathering	3.28	0.53	Moderately Serious
Access to Tourism-Related Information	3.59	0.68	Very Serious

The semi-structured interview confirmed these quantitative findings. The Tourism Officer reported complete reliance on manual logbooks and paper-based DAE and VAR forms for tourist data collection, with no real-time visibility on tourist influx. Social media pages served as the only digital presence but were not regularly updated. Tourists reported difficulty finding accurate information online, encountering outdated prices and the complete absence of reviews or ratings.

Functional and Non-Functional Requirements

Eleven functional requirements were identified across three user roles: the Tourist, the Administrator, and the Tourism Enterprise. These covered destination information access, interactive geo-mapping, a feedback and rating system, user authentication, content management, data analytics, report generation, business profile management, tourist tracking, targeted feedback viewing, and booking lifecycle management. Seven non-functional requirements were also established, covering usability, performance efficiency, security and privacy, compatibility, reliability and availability, maintainability, and mobile responsiveness, all aligned with the ISO/IEC 25010:2011 framework.

Platform Effectiveness Based on ISO/IEC 25010:2011

Table 3 presents the IT experts' evaluation of the Chada Valencia platform across all eight quality characteristics of the ISO/IEC 25010:2011 Software Product Quality Model.

Table 3: IT Experts' Evaluation Based on ISO/IEC 25010:2011 (n=10)

Quality Characteristic	Weighted Mean	SD	Interpretation
Functional Suitability	4.57	0.32	Excellent
Performance Efficiency	4.60	0.26	Excellent
Compatibility	4.45	0.37	Excellent
Usability	4.68	0.25	Excellent
Reliability	4.47	0.28	Excellent
Security	4.52	0.24	Excellent

Maintainability	4.62	0.20	Excellent
Portability	4.63	0.37	Excellent
Overall Weighted Mean	4.63		Excellent

Note. Scale: 4.21–5.00 = Excellent; 3.41–4.20 = Good; 2.61–3.40 = Moderate; 1.81–2.60 = Poor; 1.00–1.80 = Very Poor.

The platform achieved an overall weighted mean of 4.63 (Excellent) across all eight quality characteristics. Usability received the highest grand mean (4.68), with operability and accessibility both scoring 4.80, reflecting an intuitive and inclusive interface accessible to users across varying levels of digital literacy. Fault Tolerance under Reliability was the only sub-characteristic that did not reach the Excellent threshold at 4.20 (Very Good), reflecting the system's current dependency on a stable internet connection, a known infrastructure constraint in remote eco-tourism areas within Valencia.

User Acceptance Based on the Technology Acceptance Model

Table 4 presents the comparative TAM evaluation results across tourist end-users and tourism enterprise respondents.

Table 4: Comparative TAM Evaluation by User Group

TAM Construct	Tourists WM	Tourists SD	Enterprise WM	Enterprise SD
Perceived Usefulness	4.74	0.43	4.59	0.60
Perceived Ease of Use	4.75	0.44	4.55	0.57
Overall Mean	4.74		4.57	

Note. Both groups rated Excellent across all indicators (scale 4.21–5.00 = Excellent).

Both tourist end-users and tourism enterprise respondents returned Excellent ratings across all twelve TAM indicators. Tourist end-users rated Perceived Usefulness at 4.74 and Perceived Ease of Use at 4.75. Tourism enterprise respondents rated Perceived Usefulness at 4.59 and Perceived Ease of Use at 4.55. The indicator 'The system makes my work easier' received the highest individual score among tourists (4.90), while 'My interaction with the system is clear and understandable' scored highest across both groups. The ability to use the system without outside guidance was the lowest-rated indicator across both respondent groups, suggesting that an onboarding guide would further support adoption, particularly for enterprise users whose dashboard is more operationally complex.

DISCUSSION

The demographic findings confirm that Valencia operates at a scale that manual, paper-based systems can no longer adequately support. This is consistent with Cabahug et al. (2022), who documented that the absence of an official digital tourism portal is a persistent strategic weakness for Philippine municipalities regardless of the strength of their physical tourism assets. Valencia's profile confirms it has reached the threshold described by Smart Tourism Theory (Buhalis & Amaranggana, 2015), at which a centralized technological platform becomes a necessary condition for sustainable destination management. The documented operational challenges are anchored in the Smart Tourism Theory (Buhalis & Amaranggana, 2015), which identifies fragmentation of data, feedback, and information as the core problem in under-digitalized destinations. Rocamora and Aguilung (2020) and Rebuya and Gasga (2022) similarly documented this pattern across multiple Philippine LGUs, reinforcing that the challenges observed in Valencia are systemic rather than isolated.

The identified system requirements are consistent with Saura et al. (2025), who confirmed that well-designed destination management platforms serving tourists, enterprises, and government administrators simultaneously represent the most scalable and sustainable model for tourism digitalization in emerging destinations. Ismail et al. (2022) similarly found that effective tourism websites must address informativeness, interactivity, and aesthetics together. The ISO/IEC 25010:2011 results confirm that the Chada Valencia platform meets international software quality standards and is technically ready for full municipal deployment. This is consistent with Mamani Mamani and Torres-Cruz (2024), who confirmed that ISO/IEC 25010 is a reliable evaluation standard for tourism-specific web systems and that performance efficiency and usability are the quality characteristics most directly correlated with user satisfaction. Ilustrisimo (2026) similarly demonstrated that locally developed digital tourism portals in Philippine municipal destinations can achieve high scores across all ISO/IEC 25010 quality characteristics when properly designed and tested.

The TAM results confirm that the platform is not only technically sound but is genuinely welcomed by its intended users. This is consistent with Acosta et al. (2022), who confirmed that perceived usefulness and perceived ease of use are the strongest positive predictors of digital tourism platform adoption among Filipino users, and with Li et al. (2024), whose meta-analytic structural equation modeling across 33 samples and 13,635 respondents confirmed that perceived usefulness is the strongest driver of adoption intention across all cultural contexts while ease of use shows stronger effects in Eastern cultural settings, a finding particularly relevant to the Philippine context of this study.

Conclusions

The study demonstrates that Chada Valencia: An Interactive Tourism Website successfully addresses the documented operational gaps of Valencia's tourism sector through a technically sound, legally grounded, and user-accepted digital platform. The municipality's 1st Class standing, accelerating tourist arrivals, and diverse tourism

ecosystem confirm that it has outgrown what manual, paper-based systems can reasonably manage. The platform's overall ISO/IEC 25010:2011 rating of 4.63 (Excellent) across all eight quality characteristics confirms its readiness for full municipal deployment. Fault Tolerance was the only sub-characteristic rated Very Good (4.20), reflecting a connectivity constraint external to the platform design. The Technology Acceptance Model results, 4.74 (Excellent) from tourists and 4.57 (Excellent) from tourism enterprises, confirm that sustained voluntary adoption at the municipal level is highly likely. The convergence of technical soundness and genuine user acceptance positions Chada Valencia as a viable model for digital tourism governance in rural eco-tourism municipalities across the Philippine context.

Recommendations

Future development should prioritize: (1) an offline browsing capability to address the Fault Tolerance limitation in remote eco-tourism sites; (2) an integrated onboarding tutorial within the platform to reduce the learning curve for first-time enterprise users; and (3) the integration of machine learning-based tourist arrival forecasting and AI-driven destination recommendation features to further enhance the platform's strategic value for the LGU.

Compliance with Ethical Standards

The researcher affirms that this study was conducted in full compliance with established ethical standards across all phases of data collection, system development, and evaluation. Prior to participation, all respondents were provided a written informed consent form disclosing the purpose of the study, the nature of their participation, the type of data to be collected, and how the data would be used. Participation was entirely voluntary, and respondents were free to withdraw from the study at any time without penalty. All personal information and individual responses were kept strictly confidential, anonymized, and reported in aggregate form only. The study complied fully with Republic Act No. 10173, or the Data Privacy Act of 2012 (Philippine Government, 2012), in the collection, storage, processing, and disposal of all data; at the platform level, access to the analytics dashboard is restricted to authorized LGU personnel, and only the minimum data necessary for tourism analytics is collected, consistent with data minimization principles. The researcher further declares that the respondents' well-being was safeguarded throughout the study, that no conflict of interest exists in its conduct, that plagiarism was strictly avoided, and that no bias was introduced in the interpretation of the findings, which were used purely for research purposes.

In the interest of full disclosure, the researcher declares that three artificial intelligence tools were used in the conduct of this study and the preparation of this manuscript. Claude was used to assist in drafting the narrative interpretation and discussion of the data tables, specifically the ISO/IEC 25010:2011 evaluation and the Technology Acceptance Model evaluation tables; all AI-generated discussions were reviewed line by line and validated by the researcher to ensure accuracy, contextual alignment, and consistency with the researcher's independent conclusions. QuillBot was used to rephrase selected portions

of the manuscript to improve clarity, coherence, and academic tone, particularly in the introduction and the discussion of the problem's context and rationale; the output was reviewed line by line and revised by the researcher to ensure that the original ideas and intent were preserved. Grammarly was used to identify and correct grammatical, spelling, punctuation, and sentence-structure errors to ensure adherence to formal academic writing standards, with its suggestions selectively accepted after careful review by the researcher. The researcher affirms that all AI-assisted output was critically evaluated, verified, and revised, and that final responsibility for the content of this manuscript rests entirely with the researcher.

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