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OPTIMIZING TOURISM INFORMATION ACCESSIBILITY: THE DEVELOPMENT OF A TOURISM WEBSITE FOR COUNTRYSIDE MUNICIPALITIES IN THE PHILIPPINES

Ines G. Falcon[1*], Kenneth Jay L. Dugaria[2]

Abstract – *Tourism is the most important engine for growth in the economy. Most rural destinations experience difficulties promoting and managing their destinations, as the methods applied are static; therefore, the need to develop innovative digital solutions is highlighted. This study aimed to develop and evaluate an e-tourism platform for filling the gaps by improving usability, functionality, accessibility, stakeholder engagement, and sustainable tourism development. The platform was created using the spiral model, incorporating iterative phases of planning, risk analysis, design, and development, with inputs from stakeholders in countryside municipalities in Southern Leyte, Philippines. Core functionalities such as destination search, detailed information, and interactive maps were integrated and evaluated using the technology acceptance model and ISO 9126-4 frameworks. The evaluation comprised 138 users, municipal mayors, tourism representatives, Information and Communication Technology experts, tourists, and mixed quantitative surveys with qualitative usability feedback for user-centric improvement. The results showed a consistently high score on key criteria, namely, perceived ease of use, the functionality of hyperlinks, structure, layout, relevance, and completeness, with scores ranging from 4.60 to 4.80, which falls into the highly effective category. Findings represent the strength of the platform's design and content strategy toward the expectations of users who need to improve tourism services. The findings will be beneficial to tourism management agencies in fine-tuning their marketing strategies, improving user engagement, and attracting more tourists through data-driven decision-making and enhanced accessibility of the platforms.*

Keywords: digitalization, information accessibility, tourism website development.

I. INTRODUCTION

Tourism has become a new engine of economic growth worldwide [1]. Despite the chilling effects of the COVID-19 pandemic [2], the industry's growing market and increasing business opportunities should not be ignored [3, 4]. However, many tourist destinations, especially those in countryside areas, face management and promotional challenges because they rely on static methods like brochures, books, posters, and television broadcasts, which lack interactivity [5]. The local government units recognize tourism as a vital contributor to economic development and must address these issues. These municipalities, known for their unique tourist attractions, must adopt advanced marketing strategies and techniques to make information accessible to tourists since digital content marketing has become a leading tool with significant benefits and impacts [6]. This approach enables all stakeholders to utilize the potential of the content specifying tourist destinations and other complimentary services. In addition, the survival and success of tourism depend on an organization's ability to meet quality benchmarks that exceed customer expectations through digitalization [7].

Since the tourism sector encompasses a broad scope, an intelligent management system can bridge the perceived gap that tourists feel concerning relevant content [8]. Such a system needs

[1,2]Southern Leyte State University, Philippines
*Corresponding author: ifalcon@southernleytestateu.edu.ph

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continuous updates and swift information interchange to provide quality content and functionality [9, 10]. It is also a meeting place for rising demand, providing excellent tourist experiences and relationships between suppliers and customers [11]. This system helps improve customer satisfaction and provide memorable experiences to potential tourists [12]. Furthermore, website design and development must adapt to changing customer needs to create effective and efficient platforms, as these are critical for sustaining success in the tourism industry [13]. Digital technologies and innovations fuel the shift toward developing online tourism (e-tourism) systems [2]. This digitalization empowers governments to make access easier and develop smart tourism cities [14] so that the sector stays relevant and competitive in the new digital era.

One of the main gaps identified by tourism experts concerning conceptual modeling is a gap in content marketing toward customer value creation [15]. This gap typically leaves tourists deceived or fleeced during several stages of travel due to the scarcity of in-depth information regarding destinations of worth, inexpensive accommodations, transport options, and price details and travel packages [16]. It remains one of the challenges, mainly in the Philippine countryside, because limited accessibility to credible information is still an essential hurdle [17]. Tourism, one of the significant pillars of the global economy [18], must be developed continuously at the municipal level by adopting and accepting technology to formulate effective marketing strategies for sustainable management and operations [19, 20]. Moreover, technology is essential in promoting sustainable tourism [21].

With this, a digital tourism platform is designed to showcase an organization's products and services, enhancing visibility and engagement. This digital transformation addresses the increased demand of end-users toward comprehensive services and information in tourism, which affects each level of the tourism chain and benefits the entire tourism firm stakeholders to travelers, consumers, agents, and tourist destinations [22]. Developing e-tourism is crucial in supporting the mobile marketing of the tourism industry [16, 23]. Moreover, its potential to increase social networking and tourist interest is immense. Correspondingly, this paper seeks to (1) develop an e-tourism platform that meets stakeholder needs and addresses risks and (2) assess the platform's perceived ease of use, functionality, structure and layout, relevance, and completeness through user testing and feedback.

II. LITERATURE REVIEW

A. The role of technology and digitization in transforming the tourism industry

Technological advancement has changed the tourism sector dramatically and opened doors to innovative solutions such as e-tourism and the integration of information and communication technologies (ICTs) [2]. E-tourism uses digital tools to improve the accessibility, convenience, and efficiency of tourism-related services [18]. These technologies have enabled updating information in real-time, giving complete information regarding the destination, accommodations, and travel options at disposal [24]. The digital shift thus allowed the industry to catch up with the fast-changing customer needs [25]. It enabled the industry to create an experience through this seamless and personalized experience [26].

The most significant advantage of digital solutions in tourism is overcoming challenges from distance or inaccessibility [27]. Using traditional print or static marketing methods to reach customers cannot afford to convey the level of interactivity the tourist desires [5]. ICT-enabled platforms bridge this gap by delivering user-friendly interfaces and centralized information systems, which help tourists make informed decisions [9]. Such innovations make travel information more accessible to a broader audience and those with special needs in the most efficient way of service delivery [27].

In addition, the inclusion of ICTs in tourism has changed the way of engaging with customers because digital tools have become part of the customer-oriented management of tourism [28].

E-tourism features, such as virtual tours and interactive maps with online booking systems, enhance the traveler's experience while ensuring that operations are streamlined for service providers [11]. Digital transformation also gives a chance to open new roads for producing unique and immersive experiences in tourism, hence improving customer satisfaction and loyalty [26]. It allows the tourism industry to respond to the needs of the modern traveler effectively, thus ensuring sustainable growth and competitiveness in an ever-evolving market [29].

B. Digital content marketing and its impact on tourism experience

Digital content marketing (DCM) is required for the tourism industry to bring about customer satisfaction and promote the destination [6]. Through digital tools, DCM allows stakeholders to convey interesting and informative information about an aspect of which individuals have been found in their preference [15]. It attracts tourists interested in visiting the place since there is trust when updated accurate information about the destination accommodation or activities is published [24]. Furthermore, DCM can create memorable, practical experiences that influence decisions made by tourists with a focus on storytelling and visually attractive material [6].

In particular, successful DCM should pay great attention to the design and functionality of user interfaces [30]. In this regard, it is a website that functions as an interface between potential travelers and service providers in the field of tourism [31]. The value of intuitive, aesthetic, and informative sites is tremendous [32]. Accessible and credible information, with ease of interface, empowers visitors to make decisions like building itineraries, ensuring comparability of pricing options, and accommodation booking at destinations [9]. The destination sites are often the gateway through which virtual tours, reviews, and multimedia information present the overall experience that results in positive destination choices [24].

With digital technology as the new frontier, DCM is also well placed within the broader digital trend in the tourism industry, positioning itself as a viable means of attaining a sustainable competitive advantage [6]. Tourism organizations place themselves in an ideal capacity to respond to the increasing needs of modern-day tourists by aligning this technological innovation with digital marketing [29]. For example, dynamic content delivery, personalization, and interactivity increase tourist engagement and loyalty. With analytics, DCM facilitates actionable insights for tourism business strategies to remain at the forefront as they adapt to any change in a digital marketplace [6]. This transformational approach makes all the difference because DCM forms the future of the tourism industry and answers demand with innovative, customer-oriented solutions [6].

III. RESEARCH METHODS

The development of the e-tourism platform followed the spiral model (see Figure 1) and occurred in two primary phases: development and evaluation. Development was an iterative process that included planning, risk analysis, design, and development. In the planning stage, consultation with the key informants from the involved countryside municipalities in Southern Leyte, Philippines, was held to elicit stakeholder requirements. The consultations made it necessary to have an automated system for posting tourism information online to be accessible to tourists anytime and anywhere before visiting destinations. This input and the fruits of extensive literature reviews shaped the goals for the platform, including user-friendly interfaces, support in multiple languages, and increased accessibility to information regarding tourism. Prototyping in iterative refinements helped reduce risks to system security data, scalability, and usability as much as possible. Core functionalities include searching and exploring destinations by municipality, detailed destination information, interactive maps and visual content, and events and upcoming activities. These have been built and iteratively improved with the help

of modern web technologies and agile development methodologies from stakeholder feedback.

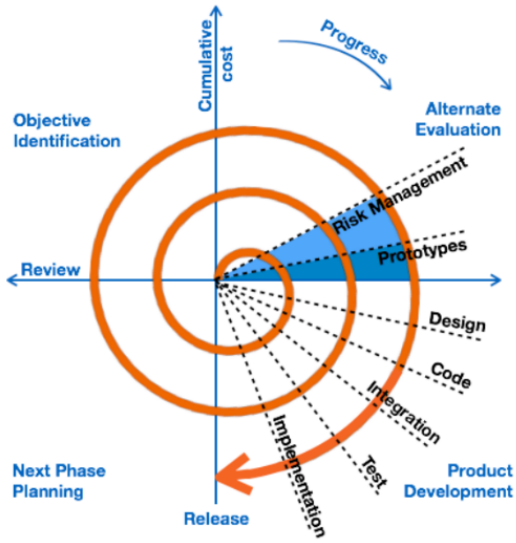

Fig. 1: Spiral model used in the software development [33]

On the other hand, the assessment phase used appropriate and detailed assessment frameworks, including the TAM and ISO 9126-4 frameworks, which laid a basis for assessing the system based on a criterion that involved perceived ease of use, functionality, structure, layout, relevance, and completeness. This phase involved 138 participants, including municipal mayors, tourism representatives, ICT experts, and sampled tourists from the involved municipalities, who completed a 20-item questionnaire adapted from Davis [34] and Elling et al. [35]. According to Isaac et al. [36], a sample size ranging from 100 to 200 is typically considered adequate for descriptive studies to characterize a population's attributes. To complement this quantitative data, usability testing, and feedback sessions offered qualitative insights into the system's performance. A month after the platform's turnover, feedback was solicited to facilitate further refinements and improvements.

IV. RESULTS AND DISCUSSION

A. Development of the tourism website platform

Researchers identified the activities involved in all stages of the development, including strategic goals for local governance of the involved municipalities in delivering essential services. Identification of the development models, administration, domain name, web hosting, number of website pages, text editor, hardware, software, images, videos, logos, online forms, and menus needed for integration were included. Developing a website for the tourism industry, specifically for municipalities, provides a wide range of information and promotes a high level of social networking, increasing tourists with high intention to visit [37]. This e-tourism details information on exciting tourist destinations, the best and most affordable stay options, transport facilities, pricing details, and various tourism packages. Modernization of the municipality's infrastructure and operations through ICT integration has enhanced operational efficiency and interactivity for providers and consumers, thereby improving tourism services [18, 25].

This system was developed using various programming tools, including Visual Studio Code as a code editor, XAMPP as the local web server environment, Bootstrap as a cascading style sheet framework, Chrome for testing and debugging, PHP for the backend programming, and MySQL as the database. This new platform uses mobile devices and websites to advertise tourism products and services, providing easy-to-use services and a more attractive tourist experience [28, 38].

Figure 2 depicts the system architecture, explaining the technical setup of the website tourism platform, which describes the parts and how they interact and communicate pathways between the server and the client-side applications related to the backend database and all user interface modules. This diagram shows smooth working for diverse user groups, such as municipal administrators, tourists, and tourism representatives; this is because the tourist platform is scalable and robust. In the sense that it is visual, the diagram explains how the platform

provides support from real-time updates, secure data storage, and efficient content delivery.

The interaction process between the user accessing the mapping and the step-by-step flowchart of the tourism website is demonstrated in Figure 3. The flowchart describes several routes available to access different functionalities, including tourist destinations, events, and contact information, among others available on the login or registration page. This visualization proves that this application is easy to navigate and has logically created designs, making the user experience smooth. On the other hand, users like tourists and administrators will be guided toward specific features of this platform and will realize how adaptive it is for multiple needs.

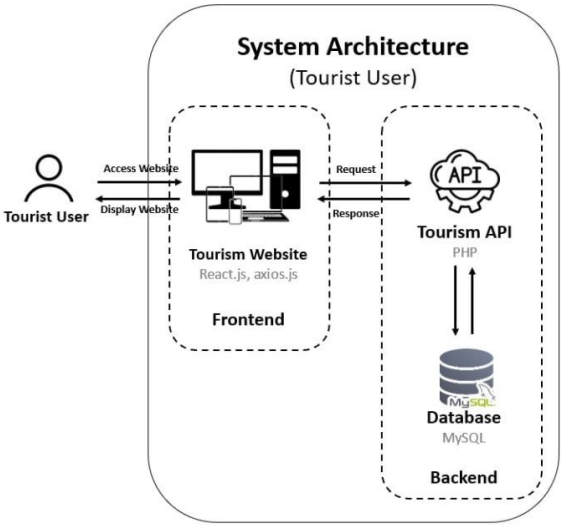

Fig. 2: System architecture diagram

Source: Author's preparation (2024)

Figure 4 is the login page, where all the platform users are given entry. It is user-friendly and has a clean interface and a secure authentication method, such as username-password combination or social media integration. This page is the gateway that provides easy access to personalized content and admin tools with data security. The design prioritizes simplicity and accessibility, ensuring that users of varying technical proficiency can easily navigate the system.

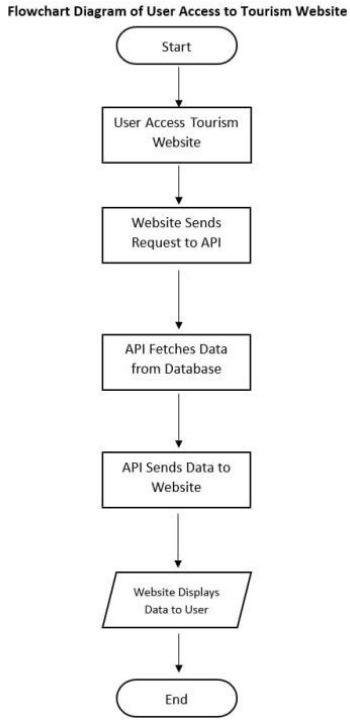

Fig. 3: Flowchart diagram for user access to tourism website

Source: Author's preparation (2024)

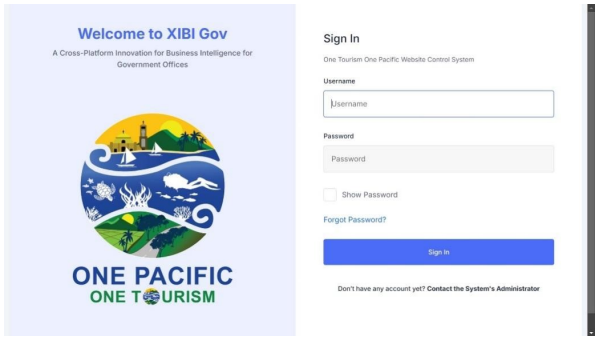

Fig. 4: Tourism website login page

Source: Author's preparation (2024)

Figure 5 is a sample of the home page in the tourism website center containing an interactive and visually enticing interface with which users could engage through features such as featured destinations, events, and links to quick essentials. Interactive media, including photo galleries, videos, and testimonies, disseminate information and ensure user engagement. This design embodies current principles of modern website designing, which means ease of access and maximization of the user's experience.

Fig. 5: Tourism website homepage

Source: Author's preparation (2024)

This communication tool makes information accessible to many users anytime and anywhere, thus ensuring smooth connectivity between the participating municipalities [39]. With Web Maps Service, each city can independently upload content, including tourist destinations, event venues, hotels, and travel data, to achieve real-time updates about road network conditions and operations [40]. These features resonate well with digital marketing trends applied in modern settings, with valuable insights regarding consumer needs and technological advancements [41]. The platform allows for both being an enabler and a tool for the flow of information, giving the tourist the power to make informed decisions regarding the towns they wish to visit [42]. It all depends on the information, how it is readily accessible, and whether social media will be part of their planning to help them achieve the security they would have when deciding where they should travel [23, 43]. This gives tourists relative ease in weighing their options. Consequently, it has become one beneficial channel for tourist destination marketing.

Another crucial success factor in a website's performance would be the user interface, which must be user-friendly and appealing and cater to various user needs in its user interfaces [32]. Hence, it demonstrates extraordinary potential, and this kind of website would reshape tourism services for better transformation. The platform is considered a valuable asset for municipalities aiming to attract and retain tourists in an increasingly digital world.

The use case diagram (see Figure 6) illustrates the functional interactions between user roles and the system. It identifies primary actors, such as tourists, municipal administrators, and tourism representatives, and their corresponding actions within the platform. This diagram gives an overview at a high level of the different functionalities of a system for user registration, content management, event creation, and data analytics. Visualizing those interactions underlines how such a system supports effective collaboration by stakeholders in serving their customers' needs.

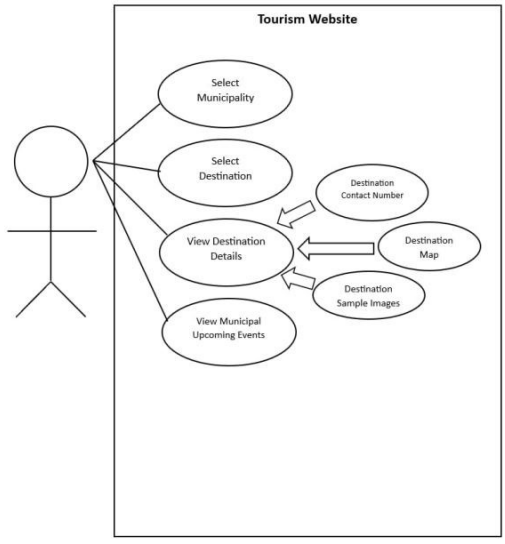

Fig. 6: Use case diagram

Source: Author's preparation (2024)

The data flow diagram (DFD) (see Figure 7) illustrates the data movement within the tourism

website platform, highlighting interactions between users, processes, and the central database. It begins with user inputs, such as login credentials, search queries, and event details, and outputs relevant information like search results and personalized content. Some key processes are user authentication, data retrieval, content management, and analytics to process all requests. Centralized data stores utilize information on tourist destinations, events, and user accounts. In contrast, the interaction of user interfaces with server processes and back-end databases allows for effective data transfer. The DFD emphasizes the platform's efficiency, scalability, and ability to provide accurate and secure digital services, making it a reliable tool for enhancing municipal tourism management.

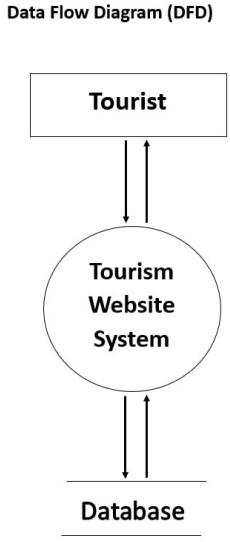

Fig. 7: Data flow diagram

Source: Author's preparation (2024)

After a sequence of tests, the system was validated to be ready for turnover and utilization by the municipality administration. After a month of being used, feedback was gathered, and a meeting was set up with mayors of municipalities, tourism representatives, and ICT experts to discuss possible upgrades. This approach emphasizes focusing on user decisions in the developmental stage of system adoption [44]. The final rollout was made after correcting some minor errors and implementing amendments according to the municipality's needs – Figures 4 and 5 represent screenshots of the system at this phase.

Testing procedures should be efficient and user experience optimized and accessible in today's rapidly changing digital landscape [45]. Towards this end, the system was put through rigorous debugging and testing phases. Participants consisted of six municipal mayors, six tourism representatives, six ICT experts, and a selection of tourists chosen through convenience sampling. Realistic testing emphasizes testing how the system should work and behave from the user's perspective in the life cycle of software [26, 46]. Continuous testing and feedback should ensure iterative refinement, ensuring the process is efficient, usable, and meets user expectations.

B. Evaluation of the developed tourism website platform

The evaluation of the developed tourism website platform focuses on assessing its effectiveness and efficiency in meeting user needs. The platform was evaluated based on key criteria, including perceived ease of use, hyperlink functionality, structure and layout, relevance, and completeness, as rated by municipal mayors, ICT experts, tourism representatives, and tourists. These variables were chosen to provide a comprehensive understanding of the platform's usability, functionality, and overall impact on information dissemination in the tourism sector. The results show the platform's strengths and offer insights into what needs to be improved to ensure that diverse users have expectations met so that the tourism services it provides are enhanced through innovative interactive digital solutions.

Table 1 shows that summative evaluation for the developed tourism website platform portrays consistently high ratings across all the variables. The mean scores for perceived ease of use, hyperlink, structure and layout, relevance, and completeness were well at the very high effectiveness level between 4.60 and 4.80. These ratings

show the platform's performance is good since it meets the users' expectations in different criteria. Finally, the low standard deviation values (SD = 0.43 to 0.57) indicate that the respondents had a high level of concurrence with one another towards the overall effectiveness of this platform.

All the variables are uniform, with minimum and maximum scores ranging from 3.00 to 5.00. This range suggests that the system can provide a good experience to most respondents while flagging areas for improvement with few. Relevance is the highest rated with M = 4.80 and SD = 0.43, implying that the platform can stay in line with what its users need and will eventually expect, thus restating its utility as an application for engaging and information-packed tourism content. Similarly, consistency of very high rankings in completeness, perceived ease of use, hyperlinking, and structure/layout indicates that its interface functionality and completeness of the package are all well within expectations for quality in a resource like that for digital tourism.

Strong scores across all parameters here mean that there has been a robust design and content strategy. These can then be pointed out as models for similar programs. However, low scores across most aspects, with at least 3.00, mean that it should strive at further refinements that could answer some of the criticisms from the users and ensure that the platform remains helpful and responsive to diverse user needs. These areas for improvement will be critical to sustaining user satisfaction and further improving the overall effectiveness of the platform.

Collecting all the ratings and the performance of the tourism website for municipalities indicates that e-tourism platforms play a pivotal role in determining tourists' choice of travel destinations. It directly influences tourists through the website's ease of use, increasing its perceived usefulness. Moreover, the direct relationship between perceived ease of use and usefulness further stresses that the platform is efficient enough to provide a smooth, user-friendly experience [24, 30, 47]. In other words, the platform enables activities such as informing tourists about travel details, managing website content, posting relevant updates, conducting events, and improving the user experience. This is because e-tourism has effectively solved problems within the tourism industry [27].

The findings suggest that respondents can have an enriching virtual experience by exploring tourist destinations online, enabling augmented reality without physical movement [48]. This will increase user satisfaction and contribute to building knowledge and skills of local governance stakeholders, such as mayors, tourism representatives, and ICT experts [42]. Furthermore, taking the digital route to combine web-based services, especially in the tourism industry, streamlines how citizens receive information and public services and, in turn, encourages greater accessibility and efficiency in public service delivery [3].

Table 1: Summative evaluation of the developed tourism website platform across different respondent groups

Variables	Mean	SD	Min	Max	Effectiveness Level
Perceived Ease of Use	4.60	0.57	3	5	Very high
Hyperlink	4.60	0.56	3	5	Very high
Structure and Lay-Out	4.60	0.55	3	5	Very high
Relevance	4.80	0.43	3	5	Very high
Completeness	4.78	0.48	3	5	Very high

Note: 1.00–1.79 – Very low; 1.80–2.59 – Low; 2.60–3.39 – Average; 3.40–4.19 – Moderately high; 4.20–5.00 – Very high

The results of the Kruskal-Wallis test, summarized in Table 2, indicate no statistically significant differences among respondent groups for all evaluated variables. For Perceived Ease of Use, the test statistic (χ^2 = 1.08, p = .782, ε^2 = 0.01) shows that the medians of the groups are highly similar, reflecting consistent perceptions of usability. Similarly, the variables hyperlink (χ^2 = 4.74, p =.192, ε^2 = 0.03) and structure and layout (χ^2 = 5.07, p =.167, ε^2 = 0.04) show no differences across groups, meaning that users from different categories evaluated the functionality and design aspects of the platform equally.

The variables relevance (χ^2 = 3.59, p = .309, ε^2 = 0.03) and completeness (χ^2 = 2.68, p = .444, ε^2 = 0.02) show results which further strengthen the evidence for consistent ratings across groups. Small effect sizes (ε^2 ranging from 0.01 to 0.04) across all variables suggest that any differences found in ratings are negligible and practically insignificant. These results indicate that this portal is perceived similarly within differing respondent groups, with a highly aligned outcome to the overall user expectations.

Table 2: Kruskal-Wallis test results for platform evaluation variables across different respondent groups

Variables	Mean	SD	Min	Max	Effectiveness Level
Perceived Ease of Use	4.60	0.57	3	5	Very high
Hyperlink	4.60	0.56	3	5	Very high
Structure and Lay-Out	4.60	0.55	3	5	Very high
Relevance	4.80	0.43	3	5	Very high
Completeness	4.78	0.48	3	5	Very high

The lack of significant differences in respondent groups' ratings demonstrates how the platform is broadly functional and appealing, thus making it a good tool for promoting tourism. The same findings also refer to the point where improvement might be particular. As the differences were not considerable, more qualitative insight for minimal user preferences will improve things, but it doesn't have to be captured by those quantitative data. It makes things work and, therefore, perfect and sustains relevance in the various demographics of users.

Although the municipal mayors admit tourism is driving development, challenges such as poor accessibility and competing priority items like transport infrastructure and innovation support, entrepreneurship, and cultural events tend to affect their evaluations [7]. On the other hand, tourism representatives directly involved in managing tourism activities and promoting exceptional services likely share comparable views with municipal mayors. Similarly, no difference is seen between the city mayors and the ICT experts in terms of their views on the usefulness and performance of the platform. The ICT experts, who are more focused on the technical aspects of the website, may have different criteria for its evaluation, such as the system standards and functionality. However, the typical managerial role of both groups creates mutual recognition of the development of a website as an essential tool for delivering credible and trusted information [42].

V. CONCLUSION

The digital tourism platform is very significant to the stakeholders of the municipality because it enables them to upload content that meets their needs, thus enhancing the publicity of tourism information among local and international tourists. This innovation can significantly help the growth of the municipality's economy because it improves the accessibility and reach of vital tourism data. E-tourism will ensure that information presented to tourists is complete and reliable and, therefore, does not have the common problem of inconsistency or old data. Website administrators are equipped with tools to deliver accurate and relevant content based on the needs of the tourists for an improved user experience. The system is user-friendly and functional due to its intuitive navigation and well-structured layout, simplifying the user process.

The platform provides tourists with essential travel information on destinations, accommodation, transportation, souvenir shops, tour packages, and other complementary services. The ease of use makes a big difference in how they can better plan and organize trips and fosters greater awareness and interest in local tourism offerings. The resulting higher tourist engagement could translate into better employment opportunities and increased income for local businesses. The platform promotes regional tourism by being a business marketing tool and providing information. Furthermore, municipal mayors, tourist representatives, ICT experts, and other administrators will also be facilitated by easy access to adequate and updated information that will enable efficient e-tourism management. Consequently, this innovation will improve judgments

and enhance good governance within the tourism sector.

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