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E-Turista: A Tourism Management System of the Province of Antique, Philippines

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Abstract: ***The Philippine tourism industry has been recognized as one of the powerful engines for a strong and sustained economic growth. To determine whether the Philippine tourism is moving towards sustainable development, especially in the Province of Antique, this paper explored the possibility of developing an Automated Tourism Management System. It was developed and tested using the ISO 25010 evaluation tool which is composed of functional suitability, reliability, portability, usability, performance efficiency, security, compatibility, and maintainability. This study utilized a developmental type of research with 30 participants. The results of the study revealed that the system was in accordance with the prevailing system standards and the participants strongly agreed to the developed system. Appropriate statistical tools were used in order to treat the data. It is concluded that the system is a well-developed one that could contribute to the tourism growth and economic sustainability of the province.***

Keywords: Tourists, ISO 25010, Tourism Management System, Developmental Research

1. Introduction

Tourism industry contributes significantly to the economic growth of the country and somehow improved the lives of many Filipinos. Hence, the Philippine government at various levels has considered tourism as one of its top development priorities to ensure its sustainability (Añasco and Lizada, 2014). Other than its noteworthy contribution to the Philippine economy, tourism also has an influence on social development, which is broad and limitless because it is both labor and capital intensive. It stimulates skills and vocational development that can be exported, and it promotes a 'culture of tourism' through a safer and cleaner environment that benefits not only tourists but also the entire community.

The unswerving attractiveness of tourism destinations depends on the quality of their natural landscapes, making the environment a noteworthy consideration (Su, 2020). Within the tourism sector where technology is integrated, environmental issues have become an attractive focal point in sustainability. It is further said that maintainable tourism management system is emerging as a significant platform in achieving economic opulence in the sector while preserving social, cultural and environmental integrity (Edgell, 2016). These were the reasons why the researcher was prompted to come up with this study.

2. Research Objectives

General Objective:
This study was conducted to develop a Tourism Management System for the Province of Antique, Philippines

Specific Objectives:
Specifically, this study sought to:

1) Come up with a Tourism Management System that would allow tourists to search for tourists spots, hotels, amenities, and all other tourism-related activities in the Province of Antique;
2) Predict the number of possible tourists who would be visiting the Province of Antique in the coming months and years, and
3) Test the quality of the developed system based on ISO 25010 standards.

3. Methodology

3.1 Research Design

The researcher adopted the developmental type of research to achieve the purpose of the study. To reach the study's goal, the researcher used the developmental research methods. This is a fact-finding investigation that includes a thorough and accurate analysis of data and findings. This approach is helpful whenever the objects in a class differ from one another and one wants to know how the different criteria were applied to different items. The results of a descriptive survey were used to create an influence that may help solve practical problems.

Participants of the Study
There were 30 participants who evaluated the study entitled E-Turista: Electronic Management System of the Province of Antique.

The selected 25 participants were tourists (both Local and Foreign), the other 5 participants were IT experts.

Data Gathering Instruments and Techniques
In gathering the data, the researcher conducted an interview with the concerned authorities who could give reliable data. Furthermore, the researcher was able to search for tourism-related articles and studies in order to make the research undertaking more factual.

Preparation of Instruments
Data Gathering is the most important part in conducting the study. The researcher prepared the checklist that is based on ISO 25010 characteristics, that the participants checked which corresponds to their evaluation in the system.

Data Gathering Procedure
In gathering the data, the researcher personally distributed the standardized questionnaires to the respondents. First, the researcher sent a request letter to the concerned agency of the government, especially the Office of the Tourism Officer of the Province asking permission to conduct the study. Second, the questionnaires were distributed to the respondents. Lastly, the researcher retrieved the questionnaires from the

respondents, and started the interpretation of the data collected. Through these procedures, the researcher was able to get one hundred percent retrieval of the instrument.

Statistical Tools Used

The questionnaires were retrieved and a table was prepared in accordance to the characteristics of the system based on ISO 25010 characteristics analyzed using weighted mean and ranked using ranking.

Weighted Mean

The weighted mean for each item was obtained by multiplying the scale value of responses by the total number of responses indicating it to get the total weighted point and dividing them by the total number or responses. The mean is the measure of central tendency. It points to where the majority of the participants answered to a question cluster.

$$\mathbf{X}= \frac{\Sigma fx}{n}$$

Where:
X= Weighted Mean
F=Frequency
X =Scores
n = Total number of participants
∑ = Summation symbol

Likert Scale

In the interpretation of the Weighted Mean (WM), Likert's method was used by the researcher using the following intervals and verbal interpretations. This 5-point scale was used in order to determine the rank of the adjectival description of the weighted mean of the responses. The fields represent the rating, range, and the adjectival description for each rating. These ratings are:

Table 1: Likert Scale with Verbal Interpretation

Value	Range	Interpretation
1	*1.00-1.80*	Strongly Disagree
2	*1.81-2.60*	Disagree
3	*2.61-3.40*	Neither/Nor Agree
4	*3.41-4.20*	Agree
5	*4.21-5.00*	Strongly Agree

The table above shows the Likert Scale of the weighted mean. The weighted mean is categorized in five weighted points. The verbal interpretation for the 5-point scale is shown in Table 1.

Ranking

This was used to get the rank average for each answer and determine whichever is the highest and lowest rank on the results.

Software Model

This section gives a description of the methods used in developing the proposed system. The Software Model was developed using the Rapid Development (RAD) model.

The researcher used this model because the application requirement is well documented, fixed, and clear. The figure below shows the process of Rapid Application Development (1) Requirements Planning, (2) User Design, (3) Construction, and (4) Cutover.

Rapid Application Development Model

Rapid Application Development (RAD) is a team based procedure that speeds up information system development produces a functional information system. Like a Joint Application Development (JAD), RAD uses a group approach, but goes much further. While the end product of JAD is a requirements model, the end product of RAD is the new information system. RAD is a comprehensive methodology, with four-phases. Companies used RAD to reduce cost and development time, and increase the probability of success.

4. Results and Discussions

This part presents the analysis, presentation and interpretation of data based on the appropriate statistical tools.

Table 2: Mean distribution of the Functional Suitability of the System

Functional Suitability	Rating					Mean	SD	Interpretation
	5	4	3	2	1			
Completeness	11	16	2	1	0	4.23	0.71	Strongly Agree
Correctness	13	13	3	1	0	4.26	0.77	Strongly Agree
Appropriateness	13	13	3	1	0	4.26	0.77	**Strongly Agree**

Table 2 shows the mean scores and standard deviation of the Functional Suitability of the system. Results showed that both Correctness and Appropriateness have the highest mean scores of 4.26 and Standard Deviations of 0.77, and interpreted as strongly agree.

This simply states that the system is functional with regards to the different indicators as supported by the computed standard deviation.

Table 3: Mean distribution of the Reliability of the System

Reliability	Rating					Mean	SD	Interpretation
	5	4	3	2	1			
Maturity	12	15	3	0	0	4.30	0.64	Strongly Agree
Availability	15	11	2	2	0	4.30	0.86	Strongly Agree
Fault Tolerance	14	13	3	0	0	4.37	0.65	Strongly Agree
Recoverability	13	10	6	1	0	4.17	0.86	Agree

Table 3 shows the mean score and the standard deviation of the reliability of the system. Results showed that the Fault Tolerance has the highest mean score of 4.37 with a standard deviation of 0.65 which described as strongly agree. Recoverability has the lowest mean score of 4.17 and standard deviation of 0.86 and described as agree.

This presents that the system is reliable with regards to the different indicators as supported by the computed standard deviation.

Table 4: Mean distribution of Portability of the System

Portability	Rating					Mean	SD	Interpretation
	5	4	3	2	1			
Adaptability	10	17	2	1	0	4.20	0.92	Agree
Durability	15	12	3	0	0	4.40	0.66	Strongly Agree
Installability	15	13	1	1	0	4.40	0.71	Strongly Agree
Replaceability	12	15	2	1	0	4.27	0.72	Strongly Agree
Affordability	16	12	2	0	0	4.47	0.62	Strongly Agree

Table 4 shows the mean score and the standard deviation of the portability of the system. Results showed that the Affordability has the highest mean score of 4.47 with a standard deviation of 0.62 which described as strongly agree. Adaptability has the lowest mean score of 4.20 and standard deviation of 0.92, and described as agree.

This shows that the system is portable with regards to the different indicators as supported by the computed standard deviation.

Table 5: Mean distribution of the Usability of the System

Usability	Rating					Mean	SD	Interpretation
	5	4	3	2	1			
Appropriateness Recognizeability	15	11	4	0	0	4.37	0.71	Strongly Agree
Learnability	20	7	2	1	0	4.53	0.76	Strongly Agree
Operability	18	7	4	1	0	4.40	0.84	Strongly Agree
User Error Protection	14	13	3	0	0	4.37	0.65	Strongly Agree
User Interaction Aesthetics	15	13	2	0	0	4.43	0.61	Strongly Agree
Accessibility	**15**	**13**	**0**	**0**	**0**	4.43	0.61	Strongly Agree

Table 5 shows the mean score and the standard deviation of the usability of the system. Results showed that the Learnability has the highest mean score of 4.53 with a standard deviation of 0.76 which described as strongly agree. Both Appropriateness and User Interaction Aesthetics have the lowest mean scores of 4.37 and standard deviations of 0.71 and 0.65 respectively, and described as strongly agree.

This simply states that the system is useable with regards to the different indicators as supported by the computed standard deviation.

Table 6: Mean distribution of the Performance Efficiency of the System

Performance Efficiency	Rating					Mean	SD	Interpretation
	5	4	3	2	1			
Time-Behaviour	20	7	3	0	0	4.57	0.66	Strongly Agree
Resource Utilization	16	12	1	1	0	4.43	0.71	Strongly Agree
Capacity	17	9	4	0	0	4.**43**	0.71	Strongly Agree

Table 6 shows the mean score and the standard deviation of the performance efficiency of the system. Results showed that the Time Behaviour has the highest mean score of 4.57 with a standard deviation of 0.66 which described as strongly agree. Resource Utilization and Capacity have the lowest mean scores of 4.43 and standard deviations of 0.71, and described as strongly agree.

This proves that the system is efficient with regards to the different indicators as supported by the computed standard deviation.

Table 7: Mean distribution of the Compatibility of the System

Compatibility	Rating					Mean	SD	Interpretation
	5	4	3	2	1			
Co-Existence	16	12	2	0	0	4.47	0.62	Strongly Agree
Interoperability	16	12	1	1	0	4.43	0.71	Strongly Agree

Table 7 shows the mean scores and standard deviation of the compatibility of the system. Results showed that the Co-Existence has the highest mean score of 4.47 with a standard deviation of 0.62 which described as strongly agree. Interoperability has the lowest mean score of 4.43 and standard deviation of 0.71, and described as strongly agree.

This shows that the system is compatible with regards to the different indicators as supported by the computed standard deviation.

Table 8: Mean distribution of the Maintainability of the System

Maintainability	Rating					Mean	SD	Interpretation
	5	4	3	2	1			
Modularity	17	11	2	0	0	4.50	0.62	Strongly Agree
Reusability	18	8	4	0	0	4.47	0.71	Strongly Agree
Analysability	11	18	1	0	0	4.33	0.54	Strongly Agree
Modifiability	18	9	2	1	0	4.47	0.76	Strongly Agree
Testability	16	12	1	1	0	4.43	0.71	Strongly Agree

Table 8 shows the mean scores and the standard deviation of the maintainability of the system. Results showed that the Modularity has the highest mean score of 4.50 with a standard deviation of 0.62 which is interpreted as strongly agree. Analysability has the lowest mean score of 4.33 and standard deviation of 0.54 and described as strongly agree.

This presents that the system is maintainable with regards to the different indicators as supported by the computed standard deviation.

5. Conclusion

After the thorough analysis and evaluation of the data gathered from the participants through the initial testing and their evaluation, the researcher came up with the following conclusions:

The Province of Antique had helped tourists find it easy to explore all the tourist spots in the province, book for hotel stay, and navigate of what are in store in the system.

Weighted mean, Standard Deviation, and Likert Scale with verbal interpretation were used to analyze and evaluate the system.

The respondents strongly agreed in all aspects of the developed system based on ISO 25010 characteristics which are functional suitability, reliability, portability, usability, performance efficiency, compatibility, and maintainability.

It is further concluded that the system has really helped the tourists in exploring all the tourism potentials of the province.

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