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EXTENDED ABSTRACT

MULTICRITERIA DECISION MODEL TO EVALUATE THE LEVEL OF LOCAL TOURISM DEVELOPMENT OF THE MAGICAL TOWNS OF NORTHWEST MEXICO

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1. INTRODUCTION

In Mexico, the Ministry of Tourism (SECTUR) created the Magical Towns Program (PPM) in 2001 as a strategy to promote tourism activities within the country in localities that have historical, cultural and natural heritage visible through their tangible and intangible heritage. Another purpose was to promote the economic development of localities, raising levels of well-being, maintaining and increasing employment and public investment.

However, it is difficult to evaluate and compare the degree of development that has been experienced since there is no consensus on the ideal indicators for making the comparison. This complexity also permeates the methodological design of those studies that seek to reflect on the PPM. There are publications with a more comprehensive approach than others, quantitative, qualitative and mixed methods have been applied using socioeconomic, environmental, sustainability, geographic, institutional, and stakeholder perception variables, among others.

2. OBJECTIVES

Considering the complexity described in the previous segment, two research questions are established: How to measure the level of local development in those destinations

that hold the designation of magical town? Which magical towns have the best level of local development at the national level? In this sense, the present study has as its general purpose to evaluate the level of local development in 21 localities that participate in the PPM in northwestern Mexico, based on the development and execution of multicriteria analysis techniques.

To meet this objective, the use of multi-criteria decision-making support methodology is proposed. Its experimental models have made it possible to represent the potential behavior of the individual in various situations, regardless of their variants or indicators. These multi-criteria decision support methods play an essential role in helping people and organizations make the most viable decision with the information and data available, in different disciplinary fields such as economic, social and tourism studies.

3. METHODOLOGY

In this study, the ELECTRE III method is used under the multicriteria analysis approach in the construction of a consistent family of decision criteria and their respective weighting. The construction of the evaluation model was developed in eight steps. The first consists of identifying the decision maker, the person or group of people who have knowledge of the subject or economic activity under analysis. In the second step, the identification of the objective is established, in this case the evaluation of the level of local development of 21 localities that participate in the PPM in northwestern Mexico.

Step three consists of establishing the evaluation criteria. To do this, seven indicators extracted from the public database of the National Directory of Economic Units (DENUE), attached to the INEGI , were considered, identifying them with a code: Wholesale trade (CMA); Retail trade (CME); Accommodation (AL); Recreation (ES); Rental (ALQ); Land and water (TTA) and Air (TA). The fourth step consisted of defining the decision alternatives, composed of a finite group that includes 21 elements (magical towns), located in 5 federal entities in northwestern Mexico.

Step 5 focused on the organization and capture of data that were integrated into 122 variables, grouped into indicators. Continuing with step six, using the ELECTRE III method, the weights and thresholds of preference, indifference and veto were defined and integrated into a performance matrix in which the information corresponding to the criteria and alternatives was incorporated. Subsequently, the weights of the criteria or *values of relative importance are included* through the use of the *Simo's procedure*.

As part of the completion of the model construction, step 7 refers to the calculation of the decision matrix (execution of the multi-criteria evaluation model), composed of the 21 decision alternatives and the data corresponding to the different criteria subject to comparison. In the eighth step, the calculation of the final indicator is carried out using the tool called SADGAGE (Group Decision Support System with Genetic Algorithms and ELECTRE III), based on the web, which allows solving multi-criteria ranking problems in small to medium-sized samples and models preferences through a multi-objective evolutionary algorithm.

4. RESULTS

The final product of the procedure is summarized with the ranking of the alternatives generated, that is, the magical towns They have been ordered according to their local development through a class order, which may contain more than one destination. The result expresses a succession of decreasing order of the 21 locations. According to the results obtained, alternative *A1* located in Álamos, Sonora, was positioned as the magical town with the best local tourist development. Followed by 13 destinations that due to their characteristics were placed in class 2. On the other hand, the magical town of Viesca (*C9*) in Coahuila is considered a site with lower development conditions among the group under evaluation.

The results obtained in relation to the multicriteria decision analysis to evaluate the level of local tourism development of the Magical Towns of Northwest Mexico demonstrated the feasibility of managing information expressed in quantitative data at different levels and quantities. Despite the degree of complexity presented considering that one of the characteristics subject to assessment, the ELECTRE III method allows to explain and understand the phenomenon under study in a clear and argued manner.

It is relevant in the evaluation of a PM because criteria such as commerce, accommodation and transport could change over time, which could be due to factors such as poor quality of accommodation, poor service in shops, difficulty in accessing the PM by air or land, low quality leisure services, which could make it difficult to accurately estimate the parameters. The ranking also provides the decision-maker with more information on the performance of the sites, allowing in turn to obtain a final recommendation with a comprehensive view and recommendations at the intermediate hierarchical levels.

Furthermore, the exercise is intended as a contribution to scientific and technical development in this area of knowledge to strengthen the application and use of the methodology developed in similar contexts, which allows public policy makers to include their decisions on the alternatives and criteria in the evaluation, considering that they are integrated into the particularities of the operating environment, so this allows representing the objectives of a government while recognizing that these vary at the municipal, state and federal levels. Therefore, the use of multicriteria models to order the level of local development of a PM and considering the preferences of the decision-maker can present positive results.

5. CONCLUSIONS

Once the problem was formulated based on the multi-criteria methodology, the result obtained in the work facilitated the comparative analysis of the level of local tourist development of the magical towns under study, considering the dimensions of wholesale and retail trade, accommodation, leisure, rental, land, water and air, which allowed generating the ranking composed of 21 alternatives and obtaining an order of decreasing preference. This model demonstrated its usefulness by converting into a measure a comprehensive analysis that allowed to differentiate the local tourist development of the magical towns, thereby identifying strengths and weaknesses, providing information to the participants

and managers of these destinations, relevant information for decision making and construction of public policies in this field of action.

From a practical perspective, the results offer a valuable analytical tool for tourism management and decision-making in the destinations analyzed, since it is possible to understand through the relationship between tourism factors linked to local development, or to include others that are considered pertinent or necessary, in this way the decision-maker will have sufficient elements to plan their investments, promote the destination to increase the influx of visitors, address specific areas that register weaknesses, etc. That is, it allows you to address in an innovative way those results closest to reality.

Finally, the study carried out for the analysis of the local development of the magical towns in northwestern Mexico can be replicated by incorporating a greater number of localities participating in the PPM, even considering other types of destinations, time periods, segments or geographic regions at the international level, considering that this can be adapted, as long as the criteria submitted, regardless of the number, are present in each of the alternatives under analysis.