

Identify and prioritize environmental quality indicators in coastal areas

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Highlights

- Prioritization of Environmental quality indicators were done by structural equation modelling (SEM) method.
 - Smart PLS software was used in order to analyzing data.
 - Environmental quality indicators of coastal areas were investigated based on users' opinions.
 - Permeability is the most efficient factor in desirability of coastal areas.
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Extended abstract

Introduction

Human societies have always been interested in beaches and their surrounding areas. This can be attributed to the existence of two territories of land and water in these areas, which lead to the creation of competitive advantages in social, economic, physical, and other aspects. The considerable demand of the population for exploitation of coastal areas has caused systematic problems and disruptions in these areas. As explained by Iran's Vice President for Strategic Planning and Supervision, these problems have a variety of dimensions, such as environmental, land use, political and security, and regulatory and legal aspects. Therefore, these areas require the adoption of an integrated planning and management approach. Hence, the comprehensive integrated coastal zone management plan has begun to link planning at the national, regional, and local levels since the early 90's around the world and after less than a decade later in Iran (in the late 90's).

Theoretical Framework

Since 1976, the concept of environmental quality has been examined in the field of urban studies (urban planning and design), which addresses all the aspects of urban environments and spaces (Rafieian et al., 2013). It has been discussed and developed by many theorists over the past few decades. In terms of content, the previous decade can be regarded as the period of maturity of this notion, but there are still a large number of challenges involved in the implementation and operation. The need for a comprehensive, integrated approach to coastal areas at the micro and macro scales, as well as the multidimensional concept of environmental quality, has provided an opportunity to view coastal areas from the perspective of this notion, to identify its indicators, and to prioritize them. Based on a review of the literature on coastal areas and environmental quality, the authors found that coastal users can provide one of the most important links between them.

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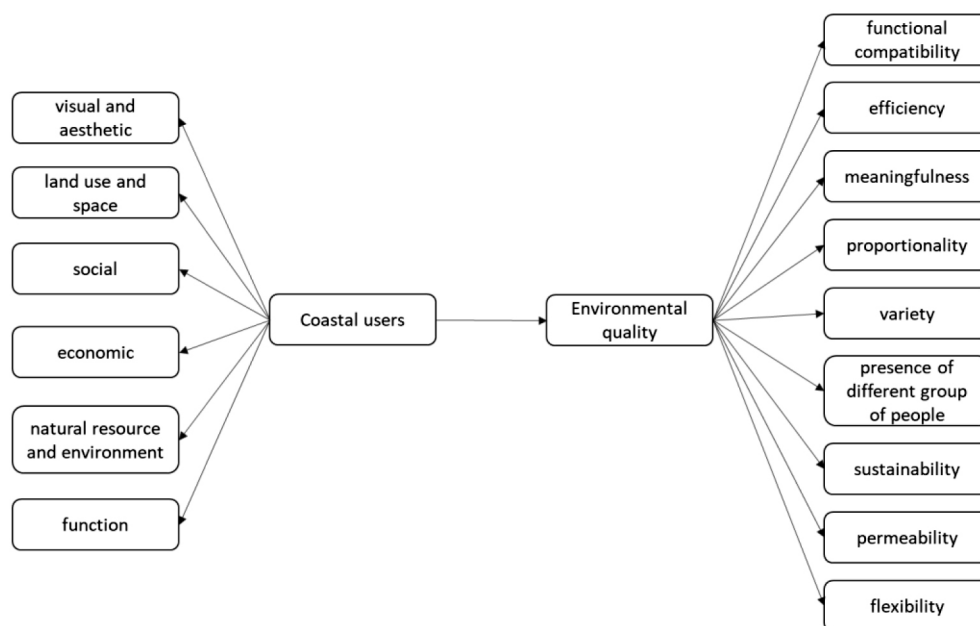


Fig. 1. Theoretical framework

Methodology

Most of the dimensions that affect citizen satisfaction are determined by the concept of environmental quality. This study sought to prioritize the components of environmental quality based on user opinions. According to the literature, national and international documents, and authors’ views, a questionnaire was made to collect different indicators of the nine components. Moreover, coastal areas have some aspects that have been identified by other studies. Fig. 1 shows the theoretical framework of this study, which involved different aspects of coastal areas and environmental quality.

The method of analysis used in this study is based on Structural Equation Model (SEM). The data were analyzed using the SmartPLS 3 software. For testing the model, data were collected from 160 questionnaires based on the Likert spectrum distributed in the coastal area of Bandar Anzali. According to the SmartPLS outputs, space users had an indirect impact on the nine indicators of environmental quality derived from the theoretical framework.

Results and Discussion

Desirable environmental quality zones have nine features, of which permeability is the most powerful. According to this model, changes in environmental quality affect those in the permeability of the coastal zone by up to 87%. In this study, permeability is defined through four indicators, including absence of space confusion, quality of bike paths and sidewalks, visibility of natural and significant sights, and walkability and cyclability. According to coastal users, therefore, these four features are the most significant in this type of area.

In addition to permeability, the flexibility variable is more influential than the others. In this research, flexibility was defined by four indicators: flexibility of outdoor spaces, services for individuals with disabilities, flexibility of buildings, and individuals’ unblocked access to spaces. If environmental quality is there in a coastal zone, therefore, the above four indicators are expected to be in desirable conditions.

According to earlier experts’ and researchers’ findings on the indicators of environmental quality and a comparison to the results of the present study, we found that the proportionality indicator has been neglected in the definitions of environmental quality, as well as efficiency. Moreover, the comparison demonstrated that the present study examined

a larger number of indicators over Iran, and considered issues such as meaningfulness, proportionality, flexibility, and functional compatibility for the first time.

Conclusion

Coastal areas are one of the most important zones around the world as they have a variety of advantages. Since there are different aspects to be considered in regard to coastal areas, it requires a comprehensive approach to plan and manage this kind of area. Theoretically, environmental quality can be addressed given a range of indicators corresponding to different dimensions of coastal areas. This research considered coastal users as the link between environmental quality and coastal areas, using structural equation modeling to examine the theoretical model. According to the PLS outputs, the indicators of environmental quality in coastal areas are prioritized as follows: permeability, flexibility, functional compatibility, efficiency, meaningfulness, proportionality, variety, presence of different groups of individuals, and sustainability. Thus, permeability is the most significant factor affecting the desirability of this kind of space.

Key words

Urban coast, Environmental quality, Structural Equation Modeling, Coastal user, Bandar Anzali.

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