Clustering Public Library Clients according to their Needs Using the Artificial Neural Network, the Analytical Hierarchy Process and the Kano Model

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Abstract

Purpose: Clients are crucial factors in the success of public libraries and each of them has different needs. So public libraries should know their clients and plan to meet their needs in order to ensure satisfaction.

Methodology: In this research a hybrid model based on clustering method which uses the Neural Network, Analytical Hierarchy Process (AHP) and Kano model is used in order to segment public library clients and obtain the value of each segment to provide the services that will satisfy them. The statistical population of this research consists of all public library clients in the Fars province and a sample group of 180 is chosen via simple random sampling. The research tool is a questionnaire based on both the Kano model and the parameters of clients' satisfaction model.

Findings: After data gathering, the Self-Organizing Map (SOM) is chosen for segmenting or clustering clients with the highest quality and four clusters are identified for public library clients in Fars province using MATLAB. Then clusters are prioritized using the Analytical Hierarchy Process in the Expert Choice software package. This means that the cluster with the first priority includes clients who have attractive needs.Novel methods need to be employed to increase the satisfaction of these clients where the building and its location, human resources, material resources, service conditions, the library's peripheral services, etc. Client needs in other clusters are similarly identified, and suggestions for improvement in services are proposed.

Originality/value: In this study through segmenting public library clients based on their needs a model was designed which helps public libraries to best serve the community by clustering clients, prioritizing these clusters and determining the needs of the clients in each cluster.

Keywords: Analytical hierarchy process, Clustering, Artificial neural network, Public library, Kano model, Library clients.