Assessment of Regional Competitiveness in Functional Urban Regions by Cluster Analysis, Mazandaran, Iran

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Extended abstract

Introduction
In the recent two decades with acceleration of globalization process and increase in the extent of information economics, concept of competitiveness and its measurement in cities have attracted the attention of many experts, planners, and decision makers in regional and urban fields of study. However, there are many ambiguities for definition and measurement of the concept. Increase in competition changed the city as the main core of a region. The changes in function of the urban areas are also dependent upon the structure of global development. Creativity and staffing of resources are critical for economic performance and competition. Mazandaran Province is one of the few provinces with high productivity in using spaces. The province has the least dependency on oil incomes. There are some conceptual models for competitiveness studies. The study attempts to measure the competitiveness criteria and incorporate them in a mathematical and statistical model. The statistics of the counties of the province have been compared with the theoretical fundamentals. Porter (2002) model for regional foundations of competitiveness is based on interaction of infrastructure and institute strategy, demand condition, input condition, and competition of dependent companies. The model of Gardiner (2003), in a pyramid shape, determined the source of regional competitiveness in economy, structure, innovation, business development, and skills of workforce. The purpose of this present research is to present a clear and comprehensive definition of the concept to analyze functional urban regions of Mazandaran Province using cluster analysis.

Methodology
This present study is a descriptive and analytical research. We have used library and document methods to gather data and cluster analysis method for ranking of the functional urban regions. To determine the functional urban regions, we have used the results of Mazandaran Landuse Planning Act of 2009. To gather data, addition to the data, we have used Mazandaran Investment and Employment Development Act and statistical Annuals of the province.

The indicators of the analysis have been initially extracted from the literature, then the criteria have been compared with the conceptual design of the research, and finally the data of

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the province have been compared with the theoretical indices. The main elements of competitiveness indicator are the results of annuals of the province about innovation, skillful workers, and employability of workforce, entrepreneur environment, establishment life, business size, industrial specialism, and industrial composition.

Results and discussion
The results of the research have indicated that the functional urban regions have been assessed in three levels. The results of cluster analysis have also indicated that three high populated urban regions of Sari, Amol, and Babol are in the first cluster. The economic structure and heritage of the cities are the most important characteristics for the position. For example, Amol has an industrial function, Babol a commercial function, and Sari has an administrative function. The three urban regions have supplementary roles that encourage their functions. This supplementary situation can be observed in workforce market and innovation.

The second cluster is urban regions in the second population group. The cluster includes the cities of Ghaemshahr, Tonekabon, Babolsar, Behshahr, and Chalus. Therefore, the geographical distribution of the cities cannot be considered in their position, but the economic and social heritage of the regions are effective in their position.

The cities in the third cluster have lower production capacity. This is mainly resulted from institutional capacity that impedes their cooperation to use synergy for better performance. Some of the cities were not able to develop useful tourism activities.

The cities of Amol, Babol, and Sari have the highest rank in industrial specialism because they have suitable concentration of population. The three urban regions have also the highest quantity of institutes and employment rate. This is typical of dynamics of workforce and investment in the regions. In terms of company size, Amol City is in the first cluster. Entrepreneur environment of the cities of Amol, Babol, and Sari are in the first cluster and the Ghaemshahr and Tonekabon are in the second cluster. The cities of Savadkuh, Babolsar, Noshahr, Neka, Noor, Chalus, Jooybar, Mahmudabad, Behshahr, and Ramsar are in the final cluster in terms of entrepreneurship properties. The two cities of Amol and Sari have the highest ranks among the functional urban regions of the province in terms of employability of workforce. The skillful workforce is the best in the cities of Sari and Chalus as the first cluster. Sari has the highest rank of innovation potential among the urban regions of Mazandaran.

Conclusion
The ranking of the regional competitiveness of the urban regions as an interesting issue for both academic literature and policy making projects has been considered in this research based on present resources and the outcomes of competitiveness process. There is no consensus in the ranking of competitiveness. We have initially defined the concept and then analyzed the present state with the theoretical situation.

The results of this research have indicated dispersion and preference of three functional urban regions of Sari, Amol, and Babol. The cluster with spatial and urban advantages was able to attract investment. Thus, this prosperous environment is dependent upon geographical location and economic structure. Natural characteristics of the functional urban region formed a special structure that concentrated many settlements in the region. Spatial vicinity reinforced the spatial ties in the region and made it as an inter-related spatial cluster. The second group of urban regions including Ghaemshahr, Tonekabon, Babolsar, Behshahr, and Chalus are located in the second cluster. Access to skillful workforce, employability of the workforce, and innovation capacity are considered as the opportunities giving the potential to this cluster to compete the first cluster. The urban regions of this cluster cannot support entrepreneur

environment and attract investment. The third cluster includes the urban regions of Noshahr, Savadkuh, Neka, Mahmudabad, Noor, Ramsar, and Juybar. The cluster also contains all the seven fields of competitiveness. The power points of the cities in the cluster are innovation capacity and skillful workforce.

The most important subject that should be considered in the priority of policy making in the province is to promote spatial competency to support economic development. Therefore, specialism in the functional urban regions and reinforcement of transportation system can improve spatial and functional integrity in entire province.

Keywords: competitiveness, functional urban region, Mazandaran, workforce.