Ranking Urban Regions and Identifying Citizens’ Satisfaction Factors Concerning the Performance of Bus Transportation in Zanjan City Using the Kano-TOPSIS Integrated Model

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Extended Abstract
1. Introduction
Developments in the urbanization phenomenon have resulted in more complicated urban problems, making the issue of urban transportation one of the main concerns for urban planners. As a result, providing appropriate transportation structures as well as encouraging the citizens to use various means of public transport has become one of the significant challenges urban managers face (Beyti, Panahi, & Salimi, 2014). Transportation is one of the preconditions of economic and social development (Sharafi, Yaghafori, Jafari, & Gordani, 2013). Its geographical purpose is to overcome space (Ziari, Manoochehri, Mohammadpour, Ebrahimpoor & Ebrahimpoor, 2011) and its transportation planning aim is to provide access (Seifodini & Shoorcheh, 2014). Consequently, fair-minded planning with emphasis on providing everyone’s rights and interests in urban development is necessary for designing a public transportation system, especially bus system (Khalilabadi, 2011).

2. Methodology
In terms of the nature, data collection method and purpose, the present study is considered as descriptive, descriptive, non-experimental (Sarmad, 2003), and applied, respectively (Sakaran, 2007). The total population in this study consists of the citizens of Zanjan city who use city buses as a means of daily transport. Given the vagueness of the number of such population, the citizens’ satisfaction ratio is used to indicate the sample size. Fifty five questionnaires were distributed among the passengers of city buses for trial and based on the information obtained from the pilot study, the clients’ satisfaction ratio was found to be equal to 0.84; sample size was estimated to contain at least 302 people, according to this information. Nine experts on urban planning and transportation commented on the validity of questionnaires used in the study. The results of the survey demonstrated the fact that the questionnaires were of desirable validity. Furthermore, Zanjan’s bus transportation service performance was studied and examined with a focus on hypotheses including:

1. There is a significant difference between the users’ expectations of bus transportation services and their perception.

2. Citizens in different regions of the city have different expectations of bus transportation services.

Overall, the present study seeks to achieve these purposes:
2. Identifying the citizens’ expectations and perceptions concerning bus transportation services in various regions of the city.

3. Results
To evaluate the citizens’ satisfaction with bus transportation services, 14 factors were asked through questionnaires. Investigations on the frequency of responses to functional and non-functional questions showed that 35% of such factors are regarded as necessary requirements which include fleet count (n=239), location of bus station in terms of easy access (n=197), the bus fares (n=307), drivers’ skill (n=202), and not using worn-out buses (n=181). Following these factors, one-dimensional and motivational requirements were in the next place, both with 28% frequency. Finally, the factor of passengers’ proper attitude in the fleet with a frequency of 373 people and less than 7% was identified as the ineffective, indifferent requirement. Kano matrix analysis showed a general dissatisfaction relative to bus transportation service performance with a dissatisfaction index of -0.54. Citizens of district 3 make the least use of city buses while the citizens of district 2 still use this form of public transport, in spite of present dissatisfactions. This could serve as a warning for urban transportation planners; because, in case the welfare and financial capabilities of citizens in district 2 increase, they would prefer driving in their personal vehicles over public transport. As a result, it can be stated that the general acceptability of bus transportation in district 2 of Zanjan is a temporary and vulnerable matter.

4. Conclusion
The historical trend in urban transport planning began with the subject of city traffic in 1930 and has led to the integrated planning of transportation and land use, following suburban living development and the construction of highways in 1990. Subsequently, attention is given to fast, inexpensive, and clean public transport due to rise in fuel costs, general health subjects, and increase in population of the elderly. Paying attention to the public transport fleet as well as increasing facilities is one of the initial steps toward quantitative implementation of bus transportation system throughout the city. The results of Kano matrix implementation analysis showed a general dissatisfaction relative to bus transportation service performance with a dissatisfaction index of -0.54. The major factor in citizens’ dissatisfaction was the worn-out bus transportation fleet with the highest dissatisfaction index of -0.86. Following this component, lack of optimal bus transportation lines were in second place with an index of -0.81. The least extent of dissatisfaction with an index of -0.50 were related to passengers’ proper attitude in the fleet. Regarding the satisfaction index, passengers’ proper attitude in the fleet were of the highest index of satisfaction (i.e., 0.07). Following this index, appropriate bus station locations were in the second place with an index of 0.82. As for ranking urban regions, the weakest district in terms of the leading component of using bus transportation was district 3. In conclusion, it must be stated that district 2 is the optimal region with respect to the application of bus transportation and it is considered as one of the most developed regions of the city in this regard. Given the findings of the study, the following suggestions are recommended for improving bus transportation performance:

1. Renovation of the fleet and increasing welfare equipment in public transport
2. Increasing the capacity of busy travelling lines with flexible bus plans during peak hours
3. Increasing special and speedway lines to reduce the time of travels
4. Establishing various applications around bus stations to provide attractions

Key words: Bus transportation, Public transport, Zanjan, Kano Matrix, TOPSIS Model
References (in Persian)


References (in English)


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