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Economic Value Creation in Metro Complexes: Case Study on Sadr Station Complex in Tehran

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Abstract

The main objective of this research is economic value creation methods in metro station centers with the case study of Sadr Station complex in Tehran. The research implements a descriptive approach by benefiting from the data of a cross-sectional survey which was collected by the authors. The target population included all scholars of urban development and transport academics, capitalists and directors of the station complex with the total number of 1,100 people. By using a random sampling, 285 people were surveyed with a 25-item questionnaire developed by the researchers. The results suggest priority of value creation respectively in areas of collaborative, competitive, private, governmental, and personal. The test results also showed that among the components of economic value creation (corporate, individual, competitive, governmental and private), the observed correlation was significant. According to the obtained results, development of economic value creation in station centers seems necessary.

Keywords: Creating value, Economic value creation, Complex station, Metro, Subway.

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Introduction

Nowadays, in urban planning, urban development and transportation cannot be separated from each other. Therefore, both of them undeniably interconnected with each other. Development of cities has always been concerned with the use of potential transport elements at different times and places. In this context and on the eve of the third millennium, it is emphasized to develop the public transportation (Mofidi Shemirani, 2009).

Public transportation, besides of linking land use and transportation, increases efficiency of land (Florida, 1996). Planning is important to develop space around metro stations. Station centers have well explained their role in providing services and products to individuals involved in the transportation process. People spend a significant portion of their valuable time and income for commuting. In modern metropolitan centers, the accumulation transportation network, the value of land and labor can be watched (Leghaee and Mohammadzadeh Titkanlou, 1999; Kirkpatrick, 2001; Green, 2008). This accumulation in larger metropolitan areas causes problems including loss of energy and human resources, optimally ineffective systems, not attracting all possible potentials, pollution, congestion, and so on.

Optimal land use needs to explore a new approach in dealing with the problem of condensation and accumulation. A solution for dealing with the problem in the big cities, especially in Tehran, is processes encouraging development around public transportation network congestion. In addition to high density, mixed land uses create activity centers with emphasis on location and involve the audience, and the environment as an effective step in achieving a coherent balance. In this regard, it is important to plan for space development around metro stations. The construction of metro station complex, is a new way to building a comprehensive management for the city (Calthorpe, 1990; Hedayati, 2002; Curtis Carey and Bertolini, 2009).

In world's most populous cities including Tokyo, Seoul, Beijing, Helsinki, etc. to enhance planning capabilities and availability, station centers have turned to construction station complexes, so construction of this complexes have important strategies for their urban development plan. The benefits of the construction of such complex include economic interests, social interests, the interests of urban development and transportation and environmental benefits (Kirkpatrick, 2001; Landry, 2006; Diaz et al, 2009; Madanipour, 2006; Jahanshahi, 2013).

One of the ways of financing urban rail transit projects, is pursued by urban planners with the tools provided by the Station Centers. According to the literature and theoretical framework,

Station Centers to develop methods of economic value creation concise reviews of view, and the lack of planning was carefully examined from an economic perspective to examine the efficiency and achieve the economic goals of station complex in Tehran.

So by doing the current research, it is intended to achieve the value creation of complex and special attention in their position for urban development. Therefore, the amount of risk reduced by investors and stakeholders and transparency of content as key to the development of public transport of Tehran. The aim of this study is to provide mechanisms for economic value creation Station Centers, providing the practical study for practitioners and those involved in complex projects of the station, review and determining the achievement of a variety of methods available to economic value creation in the complex of the station, and redefining the framework of which was profit.

Methods and materials

The current study aims to develop methods of economic value creation in the construction of Metro Station Centers by implementing an applied research. Studied variables consisted of five methods of Bowman and Ambrosini derived from the model. On initial recognition, three issues of transportation, sustainable development and economic value based on Public Transportation (TOD) was examined and explained. In this research, the sample size was consisted of all scholars (academics), investors and Sadr managers of Station complex in Tehran that estimated about 1,100 people. On behalf of the academia, scholars (academics), on behalf of entrepreneurs, investors, and on behalf of power holders, related managers were selected to be gathering comments from influential people. In this study, a simple random sampling method was used and each person was given the same chance to be selected in the sample (Azizi, 2001; Zahedi Shams and Najafi Gholam, 2005; Ahmadian and Saeidian, 2008). Therefore, in accordance with the Jersey Morgan and Cochran formula, selected sample size in this study was calculated as 285. In this study, a questionnaire was used as tools for data collection. This attitude scale study consisted of the Likert-type five options from very disagree to very agree. This questionnaire was designed to suit the component model. The questions were developed according to research of Bowman and Ambrosini (2000).

In this research, to determine the validity, content validity was used. For this purpose, a questionnaire developed by the experts of Islamic Azad University about economic value creation and they were asked to give their opinion on the appropriateness of the questions in the form of options with their respective dimensions fit perfectly, good, fair, poor and very poor (Reza zadeh and Ariafar, 2002; Nelson and MacCleskey, 2007). The expression stated

that after collecting the questionnaires, formal and structural reforms necessary to apply and professors of urban planning, confirmed validity of the inventories. In order to analyze the data, different statistical tests were used. In order to see the analysis of the data by using descriptive analysis to determine the population of the study discussed.

Results

The obtained data from questionnaires were analyzed. After that, according to research questions, Friedman test methods for compiling economic value creation was defined for Sadr Metro Station Centers as a Case Study.

A. Martyr Sadr's Tehran station

Sadr martyr stations opened in 2010 in Tehran and joined the operation cycle of Tehran metro. The station is in the north of the intersection of Dr. Ali Shariati and Sadr highway and despite of severe water loss, dealing with large rocks and soils bearish fields, have been built underground. The depth of station is 19.5 meters. The station launched an important role in reducing the volume of passengers and northern stations of Gholhak and Gheytariyeh. With the aim of easy access of passengers to subway, equipment including six escalators, and four elevators installed. According to the mayor the maps of the original document were 6890 square meter, pitch range after modification and withdrawal was 79.6451, the floor area was 62,600 square meters, occupying basement level was 4386 m, the number of floors were 17 floors (7 floors basement + ground + 9 floors on the ground floor), the floors of 1 to 4 were commercial, 5^{th} was restaurant and business center, the floors 6 to 8 were recreational-entertainment complexes, 9^{th} floor was restaurant, and the floors of -2 to -7 were parking (room on the 7th floor). The number of trip in current situation in each line in peak and rush hour is around 1000.

B. Descriptive statistics

B.1. Demographic characteristics of respondents

The respondents have college or lower, Bachelor of Science, Master of Science, and Ph.D. degrees respectively 15.4%, 51.9%, 25.6%, and 7.1%. 32.7%, 36.1%, and 32.7% of the respondents were academicians, entrepreneurs, and managers, respectively.

Regarding work experience, 33%, 35.8%, 22.1%, 15%, 4.6% of the respondents had 5 years, 6-10 years, 11-15 years, 16-20 years and upper 21 years work experience. 28.4%, 30.5%, 27.7%, and 13.4% of the respondents were younger than 30 years old, between 30-40, 40-50 and older than 50 years old, respectively. 285 of the respondents completely answered to all

collected questions of the study. The highest economic value creation belonged to partnership with the mean score of 4.0765. The lowest mean belonged to "individual economic value creation" and changes fluctuated from 1 to 4. Median and mode showed that greater respondents have chosen items of 3 and 4. Inferential statistics were used to respond to hypotheses and research questions. In all cases, the economic value creation partnership, individual, public and private economic significance value were greater than 0.05. Therefore, there was no reason to reject the assumption of the normal distribution of data for each measured dimension. Therefore, parametric tests can be used.

B.2. Test results

According to the results of Friedman test for prioritizing economic value creation, there is no significant difference between value creation and the test prioritized collaborative value creation in the first place as the most economic value creation, and competitive value creation was in the second place, third place was for private value creation, value creation and value creation of individual state ranks were in fourth and fifth places. The lowest place belonged to economic value creation index in Sadr Station complex in city of Tehran. Pearson test was used to test the hypothesis that the components of value creation (corporate, individual, competitive, governmental and private) observed correlation was significant. So with 95% significant among the components of value creation (corporate, individual, competitive, governmental and private) in the Sadr station complex in Tehran, there is a statistically significant correlation (Table 1).

Table 1. Pearson correlation test

Private economic value creation	Governmental economic value creation	Competitive economic value creation	Value creation of individual economic	Participatory economic value creation	Variables	
				1000	Correlation coefficient	Participatory economic value creation
				0.000	Significant	
				285	No	
			1000	**0.560	Correlation coefficient	Private economic value creation

			0.000	0.000	Significant	
			285	285	No	
		1000	**0.424	**0.493	Correlation coefficient	Competitive economic value creation
		0.000	0.000	0.000	Significant	
		285	285	285	No	
	1000	**0.489	**0.321	**0.563	Correlation coefficient	Governmental economic value creation
	0.000	0.000	0.000	0.000	Significant	
	285	285	285	285	No	
1000	**0.579	**0.430	**0.336	**0.405	Correlation coefficient	Private economic value creation
0.000	0.000	0.000	0.000	0.000	Significant	
285	285	285	285	285	No	

** Correlation is significant at the 0.01 (source: writer) level (2-tailed).

B.3. Other Findings

Point of view on the three aspects of research were used by One Sample T-test. Data were collected by Likert scale (5 degree) and the number 3 was considered as the average (midpoint) of Likert scale. Because, this study was performed at the level of 95% significant threshold, therefore in calculating the mean of each dimension, a significant amount of error was 5% smaller than the null hypothesis was rejected and the claim of confirmatory test was confirmed and in these conditions t-test was larger than the critical value of $t_{0.05}$ ie larger than 1.96. Both confidence intervals were also positive. The average of respondents' views on the collaborative value creation was obtained 4.0765 that was larger than the Likert scale. Also, significant amount was obtained, which was smaller than the error level of 0.05, so the mean was significant. T-statistic was calculated as 34.845 that was larger than the critical value of 1.96. Also, each lower and upper bound of the confidence interval value was greater than zero (positive) and test claim was approved. According to each of these statistical findings it can be said that with 95% confidence; collaborative value creation was in good condition. The mean view of the respondents in the individual value creation was 3.6898, which was greater

than the mean of Likert scale. Also significant amount was obtained 0, which was smaller than the level of 0.05, so, the observed mean significant value and T also achieved as 17.986 that was larger than the critical value of 1.96. Also, both the upper and lower bound on confidence gap was greater than zero (positive) and test the claim was approved. By virtue of these statistical findings, it can be said that with 95% confidence; individual value creation was in good condition.

The mean of respondents' views on the competitive value creation was 3.708, which was greater than the mean Likert scale. Also significant amount was obtained 0, which was smaller than the level of 0.05, the observed mean was significant. T –statistics also was 28.129 t which was larger than the critical value of 1.96. Both the upper and lower bound on confidence gap value was greater than zero (positive) and claim of the test was approved. By virtue of these statistical findings it be can said that with 95% confidence; competitive value creation was in good condition.

The mean of respondents' views were obtained at 3.8477 after the government creating value that was larger than the Likert scale. The significant amount was achieved 0 that was smaller than the error level of 0.05, so the observed mean was significant. The amount of t-statistics was obtained 26.179 that was larger than the critical value of 1.96. Both upper and lower bound on confidence gap value was greater than zero (positive) and test the claim was confirmed. By virtue of these statistical findings, it can be said that with 95% confidence; value creation was in the desirable state.

Respondents' views were mean at 3.8589 in private value creation that was larger than the Likert scale. Meaningful was achieved 0 that was smaller than the error level of 0.05, so the observed mean was significant. The t-statistic was estimated as 26.860 that was greater than the critical value of 96.1. Also, both lower and upper bound of the confidence interval value was greater than zero (positive) and test claim was confirmed. By virtue of these statistical findings, it can be said that with 95% of private value creation was in good condition.

Discussion and conclusion

The present study aimed to develop methods of economic value creation in Sadr Metro Station Centers, Tehran. According to the results of economic methods to value creation in station complexes that can be developed and evaluated. According to field studies done (previous studies in this field); for economic value creation in Station Centers, there were five methods including economic value creation partnership, individual, competitive, governmental and private that have fundamental difference between the two methods in terms of the nature and different styles of running demanding. Given that academics (scholars),

investors and managers, collaborative value creation as their first selection can be determined in other words, it can be said, economic value creation and an option is defined as a highly valued partnership. Given that the appropriate method is defined in theory, it seems the results from this study were reliable. In the plan of creating value for customers, non-valued activities will be deleted and chain activities and processes that shaped its beginning and its end customer demand and satisfaction of his needs (Abaszadgan et al, 2011). This beneficial value creation can be sustained as long as the participation as continuous phenomenon.

On account of the role of individual economic value creation in the Sadr station complex in Tehran, it can be said that from the perspective of academics (scholars), investors and managers that individual applicants as a value-creating economic Station complex in Tehran Sadr could almost succeed (Ahmadian and Saeidian, 2008). They said the next priority for Tehran's willingness to invest in Sadr station complex individual, then time, the cost of necessary and sufficient individually, in the fourth priority of individual value creation for the removal of illegal intermediaries and supply goods directly and the lowest priority of individual leadership and management have placed in Sadr Station complex. Given that academics (scholars), investors and managers have chosen fifth item as clear value creation individual it can be said that at the level of individual value creation of individual attitudes may be provided as the basis for the development of practical mechanisms and the value of individual entrepreneurs' business values.

On account of the role of competitive economic value creation in the Sadr station complex in Tehran, it can be said that, from the perspective of academics (scholars), investors and managers, chairman of Tehran applicants as a value-creating economy can be competitive in the station complex and would be relatively successful. Given that academics (scholars), investors and managers, have marked competitive value creation as their second choice, it can be said that competition in creating value allows value creation more carefully done. In fact, there was an interrelated relationship between competition and value creation. In fact, it is caused by the activities of value creation but also the value creation is an outcome of such competition (Madanipour, 2006; American Public Transportation Association, 2010). The evidence suggested that the level of competition, increase access to innovative solutions which will value creation. Participation in competitive value creation in the design and planning competition informal organizations like NGOs drawn up by the Station Centers which reflects positively on the future cooperation in the implementation of programs and sets goals stations. Of effective factors on competitive factors in creating value in station complexes can be cumbersome to reduce decrees, laws with international law, integration of

parallel administrative institutions and decision-making, property rights that should be also noted (Litman, 2008; Rafieian and Asgari tafreshi, 2009).

On account of the role of government in economic value creation, it can be said that Tehran's top station complex from the perspective of academics (scholars), investors and managers, value-creating economic state as possible, have the necessary costs. The second priority was that they believed that the public sector can be succeed in economic value. The third priority can lead and manage complex monitoring station that could be better managed government. Given that academics (scholars), investors and managers, government economic value creation has chosen their fourth item of the government's economic value creation Station Centers it can be said that the main objective of the government's economic value creation Station Centers was to use of resources, including money and mobile workforce with a high level of productivity (Mirabzadeh, 1995; Willis, 2006; Soltani et al, 2011). To achieve productivity growth, economic value creation process must be continuous growth that requires progress and innovation to be done boundless which could lead to government intervention to reconstruction.

On account of the role of private economic value creation in the Sadr station complex in Tehran, it could be argued that, from the perspective of academics (scholars), investors and managers, administration and management of the station complex was topped by the private sector would be more coherent. Given that academics (scholars), investors and managers of private value creation, it can be said that as the third choice elected; there incentive for private economic value creation of Sadr station centers profitability lied that this can be done at the cost of removing part of the aspirations of citizens (Mineta Transportation Institute, 2000; Mahmoudi, 2004; Tweed and Sutherland, 2007). Bowman-Ambrosini's model is one of the ways to evaluate the economic value creation Station Centers. In the views of experts on economic value creation, cooperative methods, competitive, private, public, individual had the highest priorities to create economic values in the complex, respectively. Creating value as the participatory would have the highest yield and economic value creation that mean individual economic value creating had the lowest returns for the Sadr station. Due to the model Bowman-Ambrosini, to provide mechanisms for economic value creation was achieved in Sadr station. According to the questionnaire of the first people involved in such projects, the release of the project and the possibility of access to these research stakeholders and individuals involved in complex projects stations, this goal was fully achieved.

The aim of the last part of this study was to respond directly to reviews prioritizing methods of views with experts, under these priority method, that seemed possible to achieve this goal to be clearly part of the process of returning capital to investors by the planning process.

According to proprietary research purpose, it seemed researchers to realize the objective of defining and redefining the role of the Station Centers them was not enough profit.

Recommendations

To performing of this study in another station:

Use other patterns of economic value creation,

Review and recognize the economic value creation capabilities in complex station,

Make a feasibility study for the development of economic value creation in other passenger stations,

Analyze and formulate legal issues surrounding the development of economic value creation,

Review basic infrastructure to expand complex economic value creation station,

Implement various models to increase the economic value creation,

Review key factors in improving the quality complexes station,

Follow-up and implement private value creation station centers,

Form committees regarding the evaluation of complex economic value creation station.

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