Original Article

The Effect of Decentralized Concentration on the Spatial Organization of Rural Settlements (Case Study: Molkabad Village Town, Mashhad)

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Abstract

Purpose- In the hierarchical planning of central places, systematic and calculated settlement is based on the desired spatial system, and small cities play a major role in striking balance and equilibrium in the residential system. The role and function of this type of rural centers lay the theoretical basis for strategies of developing a balanced settlement model. The proponents of small towns point to importance of these settlements as service centers in rural development, stressing the construction of a cohesive settlement hierarchy and the effects of top-down distribution. According to their view, small towns are at the forefront of rural and regional development in terms of production and institutional structure, preventing the over-concentration of population and activities in large cities. It is an issue that has deprived these cities of proper economic returns and investment.

Design/methodology/approach - In this study, the effect of Molkabad City on the spatial organization of rural settlements is investigated, and research hypotheses are tested using t-test, Wilcoxon, Kruskal-Wallis and WASP.

Finding- Of the sample villages in various geographical areas located at varying distances, Derakht-e Sepidar Village has the highest Qi in WASPAS model and is ranked first, thus having the highest spatial development among the sample villages. It is true because this village is located in a plain area adjacent to a dirt road that leads to Molkabad City. In the same region, Razan Village has the lowest Qi in WASPAS model and is ranked last, mainly because this village is located on a plain, but far from communication routes. Further, this village is within the jurisdiction of Binalood Town rather than Molkabad or even the center of its county, Imam Taghi Village. In general, according to the results obtained from the WASPAS model, it can be mentioned that there is a slight difference between the first and the last village and the rate of spatial development in the studied villages is almost identical. That is, it is not pertained to the remoteness and proximity to Molkabad City.

Key words: Spatial organization, Decentralized concentration, Middle and small city, Hierarchical system of villages, Molkabad city.

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1. Introduction

Most small towns, or more accurately, large villages that have transformed into urban areas over the last decade in Iran struggle with inadequate support services. One of the most basic measures for the strengthening and improvement of living conditions and attraction of small cities is to build up infrastructure and development facilities in these cities. This is the issue that have always posed a barrier economic returns and investment in these cities. However, as noted in the land planning of Islamic Republic of Iran, "Since the economy of these cities is chiefly reliant on agriculture, the industrial development of these cities, without strengthening the income of the agricultural sector might wreak havoc on this sector" (Fani, 2003) On the other hand, in the analysis of urban-rural relations, many theorists recognize that the goals of rural development would not be achieved without considering cities. It is because the markets that are recipient to the surplus of agricultural products are located in urban centers. Small and medium-sized cities, as central areas, have forged complex connections and relations with rural settlements in their jurisdiction. In these cities, the desirable solution for rural development is controlling rural-urban migration and bridging the gap regarding the reception of necessary services needed by rural settlements. With their special function, these cities can exploit the potentials and capabilities of regional development and mobility (Rahnamaei et al., 2009).

Today, "most urban populations in developing countries settle in small and medium-sized cities. The population residing in rural areas have close relations with these cities" (Owusu, 2005) Therefore, the policy of supporting small and medium-sized cities in developing countries has now received growing attention as a way of developing the surrounding areas and distributing services and facilities to the neighboring rural areas (Shokouei, 2006) In fact, developing small and medium-sized cities and decentralization in the spatial organization prompts a direct flow of migrants to these cities. As a result, there will be expansive growth in a certain geographical area, which can drum up the economy of rural areas, reduce migration to large cities, and distribute the benefits of economic growth in backward areas

(Gharkhloo et al., 2008). The city-village nexus is an issue that has been the subject of scholars such as Randalli and Lipton. Sociologists have also shown active interest in the link between the city and its rural hinterland, focusing mainly on changes in rural communities and their spatial organization in the wake of urban transformations (Kaur, 1995). In this sense, the equitable distribution of facilities in the majority of a country's population is a feature of developing societies (Shakour et al., 2013).

The importance of rural development in the spatial organization of rural settlements in less developed countries lies in its crucial role in rural economy (UNDP, 1992). Despite the fundamental role of rural settlements in a geographical area as a spatial organization covering both villages and cities, there is still an imbalance in the settlement hierarchy, which has deteriorated into a critical problem. It has provoked centralism for the urban settlement, leading to the expansion and enlargement of the main urban settlement and gradual funneling of rural capital to the cities, which undermines the balance between the size and rank of the settlements. The first fallout of this imbalance is the evacuation of some villages and stymied growth of small towns entangled in this process. Explaining the role of small towns in the national development of the space agency, Hinrey (2007) attributes bottom-up urbanization to small and medium-sized cities. He considers it a practical tool for developing countries, which is aimed at creating job opportunities, regional growth and meeting the needs of the villagers inhabiting in the vicinity of these cities.

In general, early theorists have addressed the role of small and medium-sized urban centers in rural and regional development within the general framework of modern theories. For this reason, small and medium-sized urban areas are seen as centers that bestow innovation and modernization upon the population of rural settlements (Sarvar & Lalehpour, 2006). On the one hand, these centers can lead to demolition and disarray; on the other hand, it can lead to the reinforcement of relations in the spatial organization of rural settlements. Given that some of the major problems for local and regional planning emerge as at macro scale, these problems can modify planning policies. In the meantime, it should be noted that one of the characteristics of developed societies and also one of the indicators of development is the

decentralization of cities. However, some researcher working on espouse regional balance have dismissed the impact of government intervention in decentralization, and they argue that "any efforts in this area would be a waste of time and financial resources" (Gharkhloo et al., 2008). However, national peace comes from reasonable settlement of the population, and unless such a peace is achieved, other programs, including development plans, would be doomed to failure. Factors such as greater access to welfare facilities, job opportunities, educational and health facilities and better health services, among other things, draw rural groups to urban areas. The inflow of investments, capitals, communications and education, etc. to small and medium-sized cities has altered the spatial organization that cannot be overlooked. Agricultural and horticultural lands or other natural resources as the levels of spatial organization are flushed out of economic cycle, and sometimes coveted by city dwellers for land use change or other purposes.

The theory of decentralized concentration or the establishment of small and medium-sized cities has been proposed by many urban planners as a solution in recent years (Fani, 2003). In this regard, we have attempted to draw on the experience of other countries or even other provinces in this paper, chiefly because this trend has affected all urban areas throughout the country.

With this in mind, the new small city of Molkabad with a long history as a village and more than a decade experience as an urban area, located at a distance of 40 km from Mashhad metropolis, was chosen as the case study of this research. In general, the strategy of decentralized concentration could be highly popular due to environmental considerations. One of the long-term goals of developing Mashhad City is to delegate regional and intra-provincial roles of Mashhad metropolis to other cities in order to decentralize this city and reduce service load and activities with the aim of striking an intra-regional and intra-spatial balance (of course at small scale). Therefore, the spatial development and spatial organization driven by decentralization in rural settlements of Molkabad have come under study. Many case studies have been conducted across the country in the same fashion but with different subjects, some of which will be reviewed here. The new city of Zahedshahr in Fasa and

Humeh County in Harsin City can be cited as successful examples and the city of Deilman and BaghMolk District in Khuzestan Province or the new city of Andisheh in Tehran as unsuccessful instances.

In light of the above, the main question of this research is: How does the concentration of population in small and medium-sized cities affect the spatial organization of rural settlements? Geographically, one should understand natural and human phenomena scattered on the surface of the earth and be cognizant of their position in the space.

Accordingly, this paper aims to study the effects of some aspects of the spatial organization, for example an urban point, on rural settlements so that several trends could be directed to the same urban point. Also, we seek to assess the position of this urban point as a decentralized phenomenon (small and medium-sized towns) and its effect on laws governing spatial organization (i.e. nodes, networks and levels) in the study area and to investigate whether changes have been commensurate with the plans or have sparked trends in the direction of larger cities. The main policy is establishing small and medium-sized cities and reducing population and service pressure load on metropolises. The main research questions would be answered by conducting studies and presenting hypotheses related to the subject.

Q1: Does the concentration of population in new cities affect the spatial development of villages?

2. Research Theoretical Literature
2.1. Definitions and concepts
2.1.1. Space, place and spatial development

Simply put, space is the field of interaction between phenomena. After all, "space is the home to the interactions of factors and phenomena" (Rezvani, 2002) As a result, "recognizing the relevant components and effective factors is the prerequisite of any calculated actions by human beings, which is undertaken for the management of environment" (Zarabi et al., 2012)

In fact, "the growth and development of cities may take the form of horizontal or vertical expansion" (Zamiri et al., 2014). In the wake of spatial growth of cities, new growth centers appear. Of course, "the idea of growth centers do not imply the formation of new settlements, but its true meaning is to reorganize the rural housing

model for the benefit of centers that have the highest potentials for development and transformation into growth centers or services" (Friedman, 1979).

2.1.2. Spatial organization

Spatial organization describes the systematic arrangement and distribution of units in a space, which is compatible with the general functions of the complex; "this organization is in a constant state of flux with respect to length, width, height, time and even trends (i.e. the quality of change)" (Masoumi Eshkevari, 1997).

Therefore, small and large settlements in a geographical space together with the diversity and scope of activities related to these settlements and socio-economic links forged through communication networks in temporal-spatial context shape an organization (Molazadeh, 1998). Hossein Shokouei (2007) divides the components of spatial organization as follows:

1- Points or nodes (central location): cities, villages, industrial areas;

2- Networks or links: roads and paths, streets, highways, canals, pipelines, etc.;

3- Stretches or surfaces (area of influence) of agricultural lands, forests, etc.;

Nodes are central locations connected by transportation, communication and other factors. Central locations are at varying distances from each other with divergent accessibility.

Hence, the scope of their influence is also variable with larger nodes, exerting a wide sphere of influence. They are often divided into six categories in terms of their importance: 1) Growth pole; 2) Growth centers, 3) Growth points; 4) Service centers; 5) Central villages; 6) Village (Shokouei, 2007).

2.1.3. Spatial structure

The spatial structure usually reflects the general relations at the levels of spatial organization in the form of communications, showcasing the connections of units through the spheres of influence (Masoumi Eshkevari, 1997). The spatial organization should not be equated with the spatial structure. Organization describes how the elements of a structure are arranged. In other words, natural-human and economic-cultural processes reveal a certain order of those phenomena in a space, which is the spatial structure or the adaptation of the spatial

organization to the physical environment. In this case, the developments and cultural and economic relations of humans or environmental and climatic changes can alter this arrangement of phenomena and the spatial structure.

The spatial reorganization can be performed through the reconstruction of nodes and linking of the sphere of influence, which is known as "multi-level planning". In this process, "centralization is abandoned and decentralization substitutes centrality in human activities so that the reconstructed organization emerges as a multi-level planned spatial organization" (Shokouei, 2007).

2.1.4. Decentralization and spatial organization of the population

Gloeden (1933) proposed the theory of urban complexes for decentralization of cities in accordance with rural examples. These theorists were under the assumption that "new cities play the most important role in decentralization or regional reconstruction". In underdeveloped or developing countries, the decentralization policy was shaped differently so that in the 1960s and 1970s in Asia, Africa, and Latin America, various spatial plans for decentralization and regional balances were developed. One of these policies involves deescalating the growth of large cities by providing the necessary facilities for the growth of middle cities, or the formation of new urban centers (Shokouei, 1994).

The development and strengthening of small towns is an urban policy program compatible with the goals of decentralization, and in the long run build up capacity for productive activities within these urban areas, which can affect the entire region under the influence of its performance and role.

Building new cities, land preparation plans, inclusive plans and urban spheres of influence, rural guide plans, city master planning and other similar plans can be successfully completed when its general policies are in keeping with the country's macro-socio-economic goals and appropriate housing and settlement of the population. This is a fundamental step towards economic self-sufficiency, giving priority to sparsely populated areas as compared with centralized areas (Shia, 2007).

Today, rural-urban development has maintained the organized relationship between cities and villages, placing development factors and areas in the rural spheres of influence. It forges spatial links between agricultural activities and consumer markets, develops

the capacity to provide services and empowers villagers (Mohammadi Yeganeh & Hosseinzadeh, 2013). The village-city strategy, however, has come under a lot of criticism.

In this regard, the spatial planning adopts an integrated approach to land development, regional dimensions and its subdivisions to strikes balance at the international, national, regional and local levels. In the past, there was some evidence for growing social, economic and cultural changes around the world, mainly leading to spatial change. Many communication paths have been built now, residential complexes have been extended and forest lands have been demolished; in fact, the statistical indicators suggest that lands are usually taken from natural space (rural areas) in the development of residential and spatial areas (urban areas). With the development of technology and public access to this technology, it seems that humans' dependence on elements and natural conditions have been largely diminished, while the degree of its dependence on social, economic, cultural and environmental processes has increased.

2.1.5. The impact of small towns on spatial organization

Small towns as central places forge most connections with the surrounding rural settlements, and these relations are shaped in the wake of economic relations, transportation, population mobility, technological advances, service delivery, administrative-political relations, and the extent and functional role of villages. Over time, however, it may undergo profound changes. At present, the impact of cities in all villages is not identical, but the villages in the proximity of cities are more likely to be affected than villages farther away from the city (Nikseresht et al., 2012). It is also considered as a factor to prevent over-concentration of population and activity in metropolises (Amkachi, 2004) The expansion of the road network and convenient access to vehicles has also accelerated the transfer of innovation from small towns to neighboring rural sphere of influence (Fani, 2003).
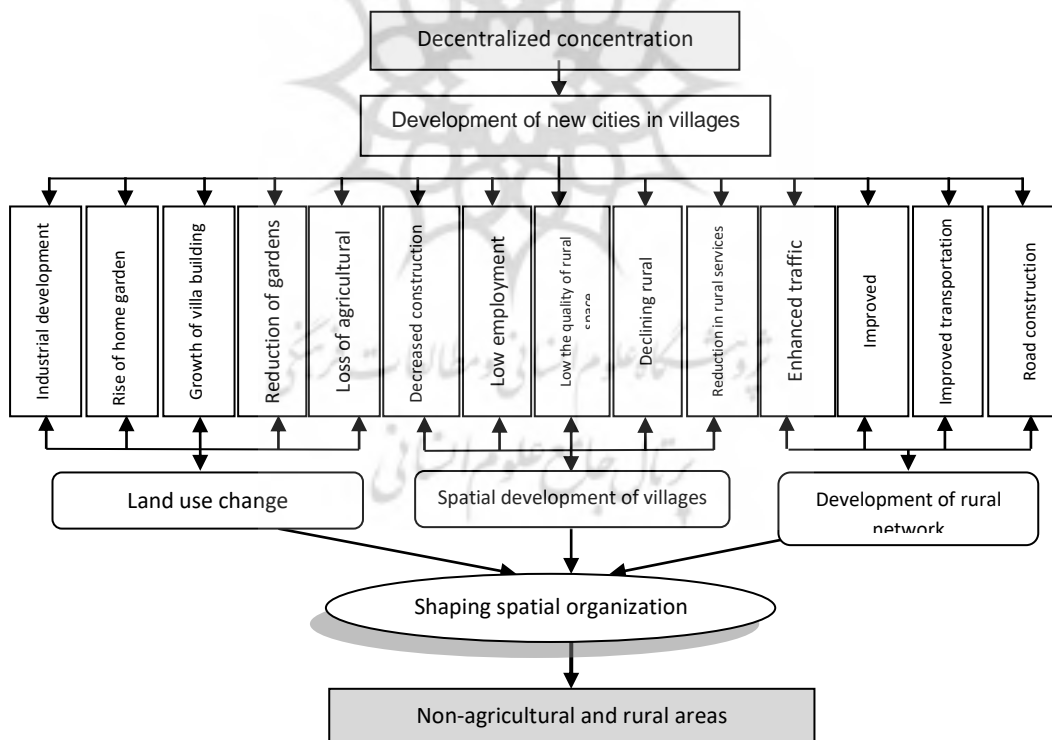
Figure 1. Conceptual model of research
(Source: Authors, 2020)

2.2. Theoretical background of the research
In the review of literature, we did not find a study on this subject, while similar studies have been performed in this field. In the following, some of the relevant research is discussed.

Table 1. Theoretical background of the research

(Source: Authors, 2020)

Authors	Results
Mohammadi Yeganeh & Hosseinzadeh (2013)	This article explores rural-urban links through a set of flows including the flow of people, technology, capital, resources and data, which have focused on small towns and rural areas in development planning. In this study, apart from explaining the position of village-cities in the hierarchical system, the existing capabilities and limitations in the county-rural areas of Zarrinehrud have been examined along with its positive and negative aspects. The highest effects of village-city in the study area were attributable to the socio-cultural dimension and the village-city of Zarrinehrud has failed to establish the regional balance in the study area.
Mehdibeigi & Mahdavi (2011)	The findings of this study suggest that the urbanization process of Vahidiyeh has exerted a positive impact on the balanced distribution of population and settlement at districts, population stabilization and welfare status of subordinate villages, but the agricultural growth has not been desirable. However, at some point, the growth of the industrial sector in Shahriar and Tehran left a positive effect on population growth due to the low cost of housing for people working mainly in the service and industrial sectors. Finally, the transformation of Vahidiyeh has not played an effective role in the development of the surrounding villages.
Nikseresht et al. (2012)	This article asserts that small urban centers strengthen the organic relationship between urban-rural communities, transferring the areas for development to rural areas. By analyzing and measuring the impact of service functions in Sarablah city on the development of peripheral villages, the spatial distribution of population and resources in the area and position of rural settlements have been studied. Finally, the research results reveal that the city of Sarablah has exerted a direct effect on rural development, leading to greater income, collective participation, increased motivation to stay and life expectancy in rural areas. The models also suggest that centrality plays a dominant role in providing rural services.
Goli (2011)	In this article, in order to reduce the concentration of different functions in a specific point(s), a variety of patterns are utilized by planners and development policy makers to convert rural settlements with appropriate population size into cities and provide urban functions, which is a common approach in many countries. The main goal of turning a village into a city is to promote the sustainability of the population through the development of urban infrastructure and functions, which while meeting the needs of its residents in a wide range of dimensions, reduces the number of visits and referrals to metropolises and large cities. The results of censuses and various studies at the national and provincial scales show that this approach has been largely unsuccessful. The results suggested that this pattern was still associated with the dominance of the provincial capital and large cities over temporary population flows in Fars province, so that most of small urban settlements have turned into rural areas over the past decade, though they play a slight part in fulfilling the needs of the surrounding villages.
Mikaeli & Sajjadi (2011)	The results of this study show that Oshnaviyeh enjoys a better position than other places in terms of providing infrastructure facilities, health status, literacy level, administrative facilities, financial and credit institutions. Oshnaviyeh has also a pivotal role in supplying services to its rural sphere of influence through economic functions reliant on agricultural products, which serve as a market for the exchange of local products of rural residents, and the provision of social, cultural, and economic services.
Taleshi et al. (2019)	This article looks into the spatial-spatial changes of rural settlements that are affected by the type and nature of trends and their spatial relations with cities. The flow of people and money are the major drivers for transformation in the surrounding villages. These developments have been in chiefly in physical and socio-economic structures. Today, these trends are embodied in the framework of new quasi-capitalist relations in rural areas, so that developments in the rural settlement system are directly proportionate to their size. The results show that some small and medium-sized villages can have a higher level of development due to their greater comparative advantage in interacting with cities, and the range of spatial interactions is a key factor in this regard.

In Iran, a host of studies have investigated satellite cities, middle or medium-sized cities, village-city or rural-urban transformation and its effects on these areas or their surrounding regions as well as socio-economic development planning at both regional and provincial levels.

However, the important issue is the paucity of studies on the spatial organization of rural settlements in these areas. Despite the fact that this trend started from the 60's or earlier in developed countries, still the country's planners base their approach on growth poles, regional or local planning, or the establishment of satellite towns in the periphery of metropolis, which may be able to mitigate or eliminate the adverse issues associated with immigration and overcrowding in central cities or growth hubs. However, most of such programs fail to consider the regional spatial organization. The spatial organization of all regions is more or less identical in terms of components. A spatial organization approach consists of 4 main spatial dimensions with 3 components: nodes (urban and rural areas), communication networks (all roads and transportation routes), levels, or stretches of lands between nodes (farms and barren lands, pastures, etc.).

The bulk of articles and theories about spatial organization are in essence concerned with creating new cities or upgrading villages into cities; however, what is often ignored is the effects of creating middle and satellite cities on the rural settlement system, which is the subject of the present study.

3. Research Methodology
3.1 Geographical Scope of the Research
The study area of this research is Molkabad City and the villages in Ahmadabad District of Mashhad City, including two villages of Sarjam and Pivehjan with Molkabad and Imam Taghi (Shah Taghi) as their capitals, respectively. This county is located to the southwest of Mashhad City on Mashhad-Torbat Heydariyeh road and includes 64 villages. Using different sampling methods, 8 villages were selected as the sample. Ahmadabad District has a total area of 1596.1 km^2 of which 935.6 and 660.6 km^2 are the share of Pivehgen and Sarjam villages, respectively. The county is located at 59 degrees and 40 minutes longitude and 36 degrees and 12 minutes latitude with a longitude of 59 degrees and 15 minutes and a latitude of 35 degrees and 43 minutes in the southernmost point. Also, it has a longitude of 59 degrees and 45 minutes and a latitude of 36 degrees and 2 minutes in the easternmost point as well as a longitude of 59 degrees and 15 minutes and a latitude of 36 degrees in the westernmost point.

Fig. 2 depicts the location of Mashhad City in Khorasan Razavi Province, Ahmadabad District in Mashhad City, and Sarjam and Pivehjan villages in Ahmadabad District.
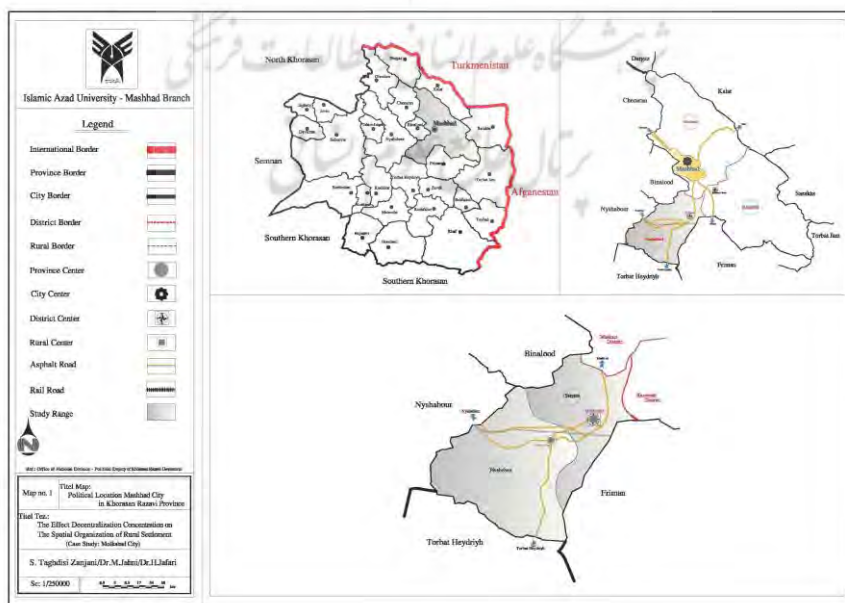
Figure 2. Location of Mashhad in Khorasan Razavi, location of Ahmadabad District and towns and villages of the county
(Source: Authors, 2020)

3.2. Methodology

To explain and clarify the subject, theoretical foundations from domestic and foreign sources are presented in the present study. The results of these studies are analyzed using a descriptive-analytical method. Data collection is also conducted using the library method and online databases. In this study, the dimensions and indicators of the questionnaire are listed in Table 2. The dimensions are presented in terms of components, components in terms of indicators, and indicators in terms of items to determine the items of the questionnaire.

In addition, to gain a more accurate picture of Molkabad City and the immigrants flowing to this city as well as its location in relation to Mashhad, some field visits were made and a number of questionnaires were completed to learn more about the demographic composition of the city residents and the immigrants. The GIS software was used for data integration to identify the rural areas and settlements linked to this city and draw a general map of the distribution of these settlements in relation to the city of Molkabad and Mashhad metropolis, which allows more detailed plans for Molkabad. Moreover, theoretical and statistical models and multi-criteria decision-making methods as a new method of descriptive-analytical research have was also used in this paper.

Table 2. Main components and indicators
(Source: Eftekhari et al., 2019)

Indicator	Index	Item
area	Spatial development (quality)	Expansion or shrinkage of villages
	Environment (quality)	Improving the physical space of village (lighting, asphalt, etc.)
Population	Rural demographic changes	Increase or decrease in rural population
	Immigration control	Immigrants leaving
Non-natives residents	Number of non-native inhabitants	Non-native residents of the city
		Non-native resident of the village
	Return of non-natives to their homeland	Cause and length of residence of non-native inhabitants
Constructions	Number (quantity)	Rising number of residential houses in the village
	Constructions (quality)	Type of materials used in constructions
		Dependence on the supply of new materials to the new city
Employment	Improving the status of existing jobs	The income and its changes in rural areas
	Creating new jobs	Creating jobs related to underlying professions such as handicrafts, greenhouse products and services

The sample size was determined using the Cochran's formula. According to calculations, n=367 questionnaires were required from 8 sample villages (Aghanj, Derakht-e Sepidar, Razan, Baghcheh, Islam Qaleh, Gonbad Deraz, Sarghayeh and Robat Sefid); however, given that 40 questionnaires were completed at the baseline, this figure was decreased to 320 questionnaires. Sample villages were selected from both plain and mountainous areas with the uniform distribution of villages in the entire section. In addition, using stratified sampling based on the population distribution in villages from each demographic class, some samples were selected. As required by the cluster classification, the sample size was estimated at different classes of each village and each group of samples. Then, through simple or systematic sampling, a number of households in the villages were surveyed.

The distribution of questionnaires among households in the sample villages of Ahmadabad District (1491 households from 8 sample villages) is described in Table 3.

Table 3. Distribution of questionnaires among households in the sample villages of Ahmadabad District
(Source: Authors, 2020)

Row	Village	No. of households 20016	Population (2016)	questionnaires distributed among households	Description	Class frequency
1	Aqanj	34	100	11	Population class 100-249 people	11
2	Derakht-e Sepidar	61	191	13	Population class 100-249 people	11
3	Razan	85	291	18	Population class 250-499 people	16
4	Baghcheh,	122	451	26	Population class 250-499 people	16
5	Islam Qaleh	145	471	31	Population class 250-499 people	16
6	Gonbad Deraz	236	803	51	Population class 500-999 people	8
7	Sarghayeh	361	1086	78	Population class 500-1000 people	6
8	Robat Sefid	447	1544	92	Population class 1000-2499 people	6
	Total	1491	4937	320	-	-

Note: The total population of Ahmadabad District, excluding villages less than 100 people, covered 8073 households with a population of 26583 people.

The validity of the items explaining social capital was estimated at 0.71. Also, based on the results of structural validity test, the Cronbach's alpha coefficient obtained from the questionnaire which would measure social capital in the studied villages (0.793) and spatial factors (0.883) was estimated, which confirmed the reliability or validity of the questionnaire.

To ensure the reliability of the questionnaire, according to the table below, indices related to the dimensions of items were examined and the Cronbach's alpha was computed. This allows finding more accurate indicators for each category of items.

Table 4. Evaluating the reliability of questionnaire based on dimensions and indicators obtained from the items of the questionnaire
(Source: Research Findings, 2019)

Dimension	Index	Range of items	No. of items	Cronbach's alpha
Agriculture	Employment	5-1	5	0.699
	Marketing	7-6	2	0.275
	Income	10-8	3	0.717
	Investment	13-11	3	0.495
	Agriculture	13-1	22	0.449
Industry	Employment	19-14	6	0.688
	Investment	21-20	2	0.120
	Industry growth	24-22	3	0.720
	Income	26-25	2	0.290
	Industry	26-14	13	0.828
Services	Infrastructure development	29-27	3	0.351
	Employment	33-30	4	0.636
	Income	36-34	3	0.841
	Investment	38-37	2	0.803
	Marketing	40-39	2	0.450
	Services	40-27	14	0.865
Total questionnaire		40-1	40	0.916

In this study, Wilcoxon, t-test, Kruskal-Wallis and Kolmogorov-Smirnov tests were used for data analysis. Along with inferential statistics, descriptive statistics of the data were obtained from 320 questionnaires; data analysis was conducted based on inferential and descriptive statistics using appropriate statistical techniques to test the hypotheses. For this purpose, first the data were analyzed based on descriptive statistics and then the hypothesis was tested to answer the research problem through inferential statistics and appropriate statistical techniques.

4. Research Findings
According to the results, 14.6% of respondents are 20-30 years old, 25% are 30-40 years old, 26.8% are 40-50 years old, 16.8% are 50-60 years old, and 15.7% are 60-70 years old. Also, 15.7% of the respondents are housewives, 23.7% are self-employed, 10.6% are liver stock breeders and

42.7% are farmers. As for the level of education, 52.8% of the respondents have primary education.
4.1. *Statistical description of research findings*
In the following, the respondents' views on the questionnaire items are described. For each item, a valid percentage of each option along with the mean, standard deviation, and significant level of chi-square ($\chi 2$) are presented. Given that the items were evaluated on a 5-point Likert scale (very high = 5, high = 4, medium = 3, low = 2 and very low = 1), a mean value of higher than 3 indicates a higher degree of agreement among the respondents' responses. Chi-square test was performed for each item to check the equal chance of selecting each option by respondents. A significant level of less than 0.05 signifies that the respondents did not select the desired options equally; however, a level of significant greater than 0.05 suggests that the same item has been uniformly selected by the respondents.

Table 5. Statistical description of findings related to the rural areas
(Source: Research Findings, 2020)

Row	Item	Very low	Low	Medium	High	Very high	Mean	SD	Significance of chi-square test
4	How many people have moved to this city since the establishment of Molkabad?	15.7	22.1	54.3	6.4	1.4	2.56	0.88	0.000
5	Have you seen a surge in the return of rural migrants to the villages since the establishment of Molkabad?	18.2	44.3	32.5	3.6	1.4	2.26	0.84	0.000
6	Have you seen a rise in the number of non-natives in the villages since the establishment of Molkabad?	26.4	38.9	25.4	7.9	1.4	2.19	0.96	0.000
7	Have you seen a surge in constructions by villagers since the establishment of Molkabad?	3.9	23.6	43.6	21.1	7.9	3.05	0.96	0.000
8	How you seen an increase in the physical area of villages since the establishment of Molkabad?	5.7	28.2	48.6	10.4	7.1	2.85	0.94	0.000
9	Has the quality materials used in building rural houses improved since the establishment of Molkabad?	6.8	19.3	43.9	26.1	3.9	3.01	0.94	0.000
10	Since the establishment of Molkabad city, there has been an improvement in rural space (sanitation, asphalt and street lighting)	8.6	20.4	57.5	10.4	3.2	2.79	0.86	0.000
11	Since the establishment of Molkabad, public services (baths, parks, playgrounds, etc.) have been improved	12.5	38.9	38.2	9.6	0.7	2.47	0.86	0.000

Row	Item	Very low	Low	Medium	High	Very high	Mean	SD	Significance of chi-square test
12	Has the handicrafts industry thrived in the village since the establishment of Molkabad?	22.5	43.6	26.4	7.5	0	2.19	0.87	0.000
13	Has the income of the villagers increased since the establishment of Molkabad?	14.6	36.1	37.5	9.6	2.1	2.48	0.93	0.000

As shown in the above table, most of the respondents believed that the rural population had increased moderately; however, the return of rural immigrants to the village since the establishment of Molkabad, and the surge in the number of non-natives, the improvement of public services and the prosperity of handicrafts were not significant. Meanwhile, to most of the respondents, the construction by villagers, the physical expansion of villages, the improved quality of construction materials used in rural houses and rural spaces

and the increase in the villagers' income were all moderate.

4.2. Rural spatial development in terms of indicators and components

In this section, the improvement in indicators and components at the level of rural areas is examined. Given that the studied indicators contain a question with an ordinal scale, we used the Wilcoxon test to compare the median of each index (3 out of 5 in the Likert scale). The results of this test are listed in the table below:

Table 6. Results of comparing the median of node indices using Wilcoxon test
(Source: Research Findings, 2020)

Variable	Items	Data	No	Rank sum	Statistics	P-value	Result
Area	Physical expansion of village	> 3	73	6163.5	-0.072	0.943	Medium
		< 3	84	6239.5			
		= 3	123	-			
	Improved rural space	> 3	81	4951.5	-3.858	0.000	Above average
		< 3	38	2188.5			
		= 3	161	-			
	Public service improvement	> 3	144	12891.5	-8.685	0.000	Above average
		< 3	29	2159.5			
		= 3	107	-			
Population	Demographic changes in the village	> 3	106	7109	-7.364	0.000	Above average
		< 3	22	1147			
		= 3	152	-			
	Controlled migration	> 3	175	16632	-10.682	0.000	Above average
		< 3	14	1323			
		= 3	91	-			
Non-native people	Number of non-native residents	> 3	183	19811	-10.493	0.000	Above average
		< 3	26	2134			
		= 3	71	-			
Constructions	Number (quantity)	> 3	77	5720	-1.04	0.298	Below medium
		< 3	81	6841			
		= 3	122	-			
	Construction (quality)	> 3	95	6329	-2.343	0.019	Above average
		< 3	49	4110.5			
		= 3	136	-			
Employment	Prosperity of handicrafts	> 3	185	19809	11.196	0.000	Above average
		< 3	21	1512			
		= 3	74	-			
	Increased income of villagers	> 3	142	12746.5	-7.934	0.000	Above average
		< 3	33	2653.5			
		= 3	105	-			

In Wilcoxon test, if the p-value divided by 2 is less than 0.05, the status of items could be determined by comparing rank sum of data less than 3 and more than 3. Based on the results, the following conclusions could be drawn:

☐ Regarding the index of area, two items of rural space improvement and public service improvement are above average.

☐ Regarding the index of population, both rural population change and migration control items are above average.

☐ Regarding the index of non-native people, the related item is above average.

☐ Regarding the index of constructions, the item of improved rural materials is above average.

☐ Regarding the index of employment, both items of handicraft prosperity and increased income of the villagers are above average.

According to the field findings, the city of Molkabad has produced a greater effect in terms of improvement of rural spatial and public services as well as changes in rural population and migration control, which has reduced this trend to some extent. It is because the vicinity of villages to small and medium-sized cities, especially for access to services, can settle many problems. As for the attraction of non-indigenous people and the improvement of rural materials and its reflection in rural constructions, it appears that a small and medium-sized town can fulfill many of the needs of its hinterland. On the other hand, due to the improved living standards in this category of villages, non-native people from other places, who go through the transition period before entering the metropolis, are drawn to these villages and cities, which can help them prepare for metropolis.

Regarding the employment index, although small towns are expected to mainly contribute to the agricultural sector due to their agricultural potentials, the boom of handicrafts based on livestock breeding can also be seen as a key factor contributing to the agricultural sector and its employees. It is because the handicrafts sub-sector as a small local industry can forge close relations with the sub-sector of livestock breeding, which in turn influences the rural economy and attracts the support of other sectors, including services from local and micro investments and their target market.

Given that the studied components contain more than one index (except for the component of non-indigenous people), they have a quantitative scale, the volume of data exceeds 30, the mean data has a normal distribution according to the central limit theorem, and finally the t-test can be used to compare the mean of the components. The results of this test are listed in the table below:

Table 7. Comparison of the mean value of components related to the node using t-test
(Source: Research Findings, 2020)

Variable	Mean	SD	t statistics	df	p-value	Result
Area	2.76	0.676	5.981-	279	0.000	Below average
Population	2.41	0.681	14.556-	279	0.000	Below average
Constructions	2.95	0.798	1.011-	279	0.313	Average
Employment	2.34	0.695	15.945-	279	0.000	Below average

In t-test, if the p-value divided by 2 is less than 0.05, the status of the component in the question could be assessed considering the positive or negative t-statistic. According to the results, it is observed that the component of constructions is at the moderate level, while the other components are significantly below average.

4.3. Spatial development of rural points in each component in the studied villages

To examine the mean value of components related to the development of rural space by villages, the mean value of these components for each village is presented in the following table:

Table 8. Average components related to the nodes for the sample villages
(Source: Research Findings, 2020)

Village	Population	Non-native residents	Constructions	Area	Employment
Aqanj	2.54	2.91	3.23	2.82	2.04
Islam Qale	2.36	2.46	2.90	2.69	2.29
Baghcheh	2.48	2.56	3.36	2.69	2.38
Derakht-e Sepidar	3	3.37	2.91	3.03	2.95
Razan	2.12	2.25	2.72	2.23	2.12
Robat Sefid	2.21	2.32	2.78	2.73	2.22
Sarghayeh	2.47	2.57	2.59	2.80	2.49
Gonbad-e Deraz	2.61	2.87	3.58	2.95	2.35

As indicated in the table, the population factor in Derakht-e Sepidar Village, the non-indigenous population in Darakht-e Sepidar Village, constructions in Gonbad Daraz, Baghcheh and Aqanj villages, physical area in Darakht-e Sepidar Village, and employment in Darakht-e Sepidar Village had a desirable status.
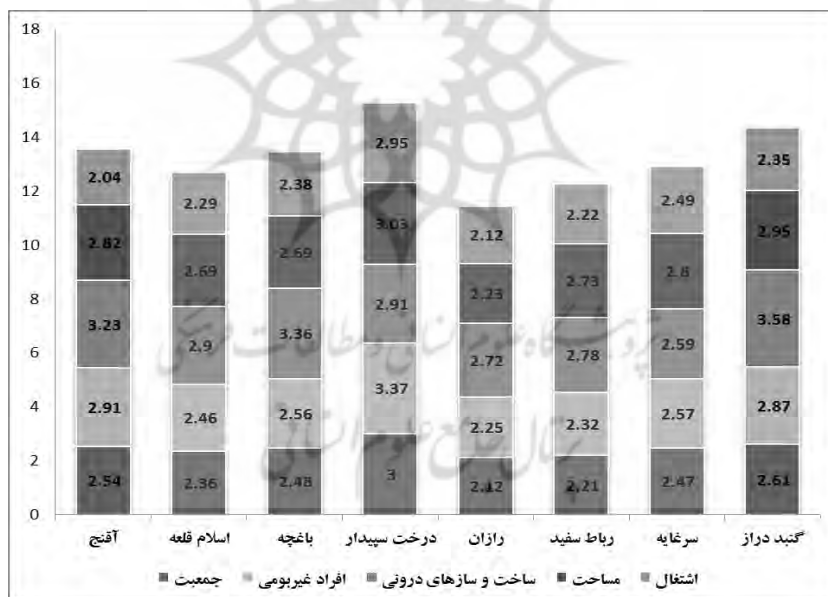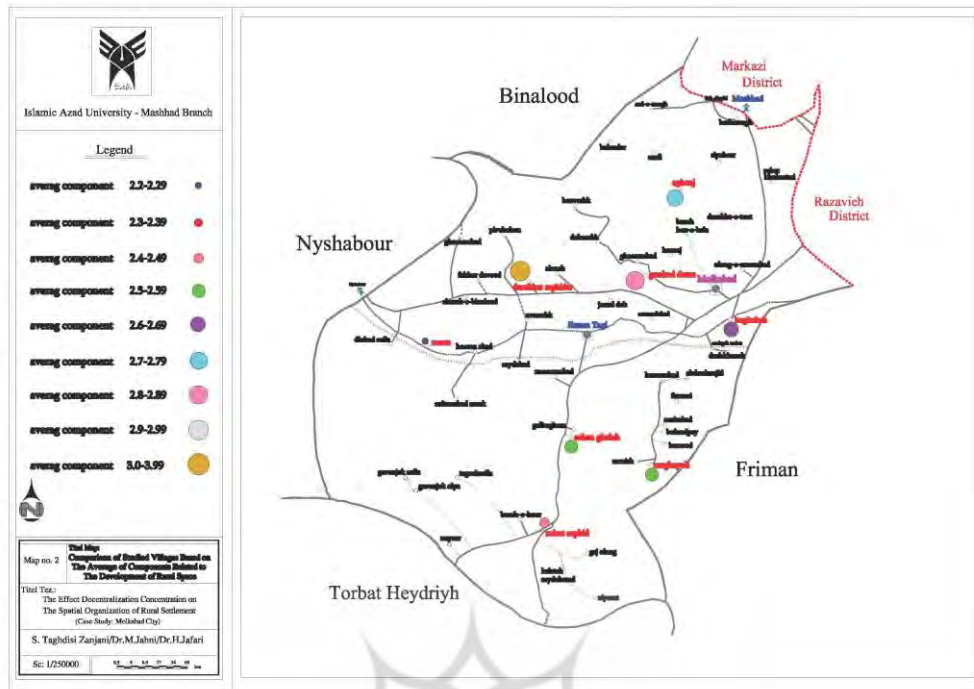

Figure 3. Comparison of the studied villages based on the average value of components related to the development of rural space
(Source: Authors, 2020)

According to the above figure, it can be seen that Derakht-e Sepidar Village has the mode desirable status in terms of all components, while Razan Village has the most deplorable situation with regard to the studied components.

Figure 4. Comparison of the studied villages based on the mean value of components related to the development of rural space
(Source: Authors, 2020)

4.4. Inferences related to research hypothesis

In this section, the research hypothesis is tested to decide about the confirmation or rejection of the hypothesis based on the results. As stated earlier, the research hypothesis is presented as follows:

There is a relationship between concentration of new cities and development of rural space. This hypothesis can be tested as a statistical hypothesis as follows:

H0: The degree of development of rural space following concentration in new cities is below average.

H1: The degree of development of rural space following concentration in new cities is above average.

The present study looks at the development of rural space following the establishment of Molkabad, investigating development in terms of area, population, constructions and employment. The items of the questionnaire are designed in a way that a higher score is obtained in the event that development ensues the concentration of Molkabad City. Therefore, the mean value of relevant components and indicators of rural space development, as discussed in the node section, was compared with the median number in the Likert scale (No. 3) using a single-sample t-test. The results are presented in the table below:

Table 9. Results of the mean development of rural space using t-test
(Source: Research Findings, 2020)

Node	Mean	SD	t statistics	df	p-value	Result
Rural space development	2.58	0.463	-14.973	279	0.000	Null hypothesis is rejected

According to the results of t-test listed in the table above, the p-value of this test is below 0.05; therefore, the null hypothesis is rejected at an error level of 5%. Based on the value of t-statistic, which is a negative number and the mean development of rural space (2.58), it can be concluded that the development of rural space is below average. Hence, the research hypothesis is rejected at an error level of 5%. In addition to the t-test, the hypothesis could be tested based on a

confidence interval for the mean difference and

No. 3, as listed in the following table:

Table 10. Confidence interval for the difference in mean values of components related to the dimension of sustainable development

(Source: Research Findings, 2020)

Node	Mean	Difference of mean and No. 3	Lower limit of CI	Upper limit of CI	Result
Development of rural development	2.58	-0.414	-0.469	-0.360	Below average

In this table, if the confidence interval contains only negative figures, the difference will be negative, and therefore the average would be significantly lower than 3 (average). In other words, the research hypothesis is rejected.

Also, the components of rural spatial development were compared with the median (No. 3) using t-

test and Wilcoxon test, with the results suggesting that out of 5 components, four components of area, population, employment and non-native residents were below average and only the component of construction was at the moderate level.

Table 11. Results of comparing node-related components with number 3 using t-test and Wilcoxon test

(Source: Research Findings, 2020)

Variable	Test	df	P-value	Result
Area	T	279	0.000	Below average
Population	T	279	0.000	Below average
Non-native residents	Wilcoxon	279	0.000	Below average
Constructions	T	279	0.313	Medium
Employment	T	279	0.000	Below average

Testing hypotheses for each village- In order to test the research hypothesis for each village, first the normality of variable distribution was assessed using the Kolmogorov-Smirnov test in villages with a sample size of less than 30, the results of

which are listed in the table below. In villages with a normal variable distribution or a sample size of above 30 (based on the central limit theorem), the t-test was used to compare the mean with No. 3, and in other cases, the Wilcoxon test was utilized.

Table 12. Results of testing the normality of variable distribution in rural spatial development of villages with a sample size of below 30

(Source: Research Findings, 2020)

Village	Sample size	p-value	Result
Aqanj	11	0.785	Normality is confirmed
Islam Qala	26	0.376	Normality is confirmed
Bagcheh	25	0.517	Normality is confirmed
Derakht-e Sepidar	11	0.429	Normality is confirmed
Razan	16	0.993	Normality is confirmed

The result of testing hypothesis for each villages using t-test is listed in the following table:

Table 13. Results of comparing the mean spatial development of villages with No. 3 using t-test
(Source: Research Findings, 2020)

Village	No.	Mean	SD	t-statistics	df	P-value	Result
Aqanj	11	63.2	473.0	–611.2	10	026.0	Below average
Islam Qale	26	52.2	224.0	–918.10	25	000.0	Below average
Baghcheh	25	71.2	441.0	–307.3	24	003.0	Below average
Derakht-e Sepidar	11	88.2	199.0	–969.1	10	077.0	Medium
Razan	16	27.2	507.0	–709.5	15	000.0	Below average
Robat Sefid	86	47.2	496.0	–819.9	85	000.0	Below average
Sarghayeh	60	56.2	345.0	–914.9	59	000.0	Below average
Gonbad Deraz	45	83.2	533.0	–098.2	44	042.0	Below average

According to the results, the first hypothesis is rejected in all of the studied villages except Derakht-e Sepidar Village. In other words, after the establishment of the new city of Molkabad, the development of rural areas has been below average. **Evaluating the weight of each dimensions' indices-** In order to evaluate the weight of each index, the structural equation method and PLS software were used. Given that research dimensions had to be defined as a composite construct to calculate the weight of each index, other structural equation software such as LISREL or AMOS could not be used. The weight of indicator in each dimension is listed in the table below:

Table 14. Results of indicators' weight for each dimension
(Source: Research Findings, 2020)

Index	Weight	t-statistics
Population	0.061	9.893
Area	0.729	11.247
Employment	0.238	2.90
Non-native people	0.222	3.083
Constructions	0.098	1.145

According to the table above, it seems that in rural spatial development, the index of area has the highest weight, while population has the lowest weight.

In the table below, the weight of each dimension in the concentration of new cities is listed. As can be seen, the highest weight is related to land use change.

Table 15. Results of investigating the weight of research components in the concentration of new cities
(Source: Research Findings, 2020)

Dimension	Weight	t-statistics
Node	0.480	17.360
Level	0.208	7.067
Network	0.454	18.206

In the rest of study, WASPAS technique was employed to analyze the spatial development of rural areas in the sample villages. One of the parameters that have a bearing on the selection of multivariate decision-making method is the accuracy of these models. These researchers suggest that "merging these two models can enhance its accuracy". The accuracy of the results of multi-criteria decision models WSM (weighted sum model) and WPS (weighted production model) models are well recognized. The accuracy of hybrid models has been analyzed and corroborated by researchers in previous studies. Accordingly, these models have been shown to

have significantly higher accuracy compared to individual models. The WASPAS model is a common hybrid model that can be highly efficient in complex decision making problems, and the results of this model have been shown to be considerably accurate. The WSM is one of the best and notable decision-making models used for solving multi-criteria problems. In WASPAS, attempts have been made to use a hybrid measure to determine the ultimate significance of each option. In this composite criterion, an equal share of WSM and WSP is assigned for the final evaluation of options. The goal of WASPAS model is to determine the rank of villages based on obtained indicators and their weight .

Table 16. Calculation of λ and Qi and rank of villages
(Source: Research Findings, 2020)

Village	λ	Qi	Rank
Islam Qale	0.751	0.335	6
Aqanj	0.727	0.359	3
Baghcheh	0.738	0.356	4
Derakht-e Sepidar	0.693	0.412	1
Razan	0.766	0.304	8
Robat Sefid	0.760	0.322	7
Sarghayeh	0.743	0.343	5
Gonbad-e Deraz	0.723	0.379	2

According to the table above, Derakht-e Sepidar Village has the highest Qi in WASPAS, and therefore ranks first. As a result, it has the highest spatial development among the sample villages, mainly because it is located in a relatively plain area adjacent to a dirt road leading to Molkabad City. Razan Village has the lowest Qi in WASPAS, and is therefore ranked last. It is due to the fact that his village is located in the plain, which is not adjacent to the communication routes. Moreover, this village is mainly under the jurisdiction of Binalood Town rather than Molkabad or even the capital of the village of Imam Taghi. In general, in light of the final score obtained from the WASPAS model, it can be argued that there is a slighter difference between the first and the last villages, and the degree of spatial development in the studied villages is almost comparable.
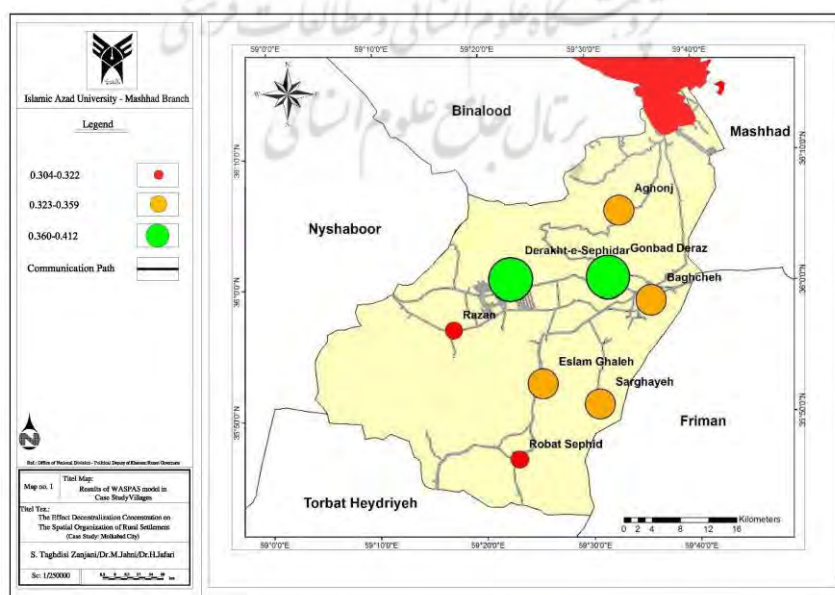
Figure 5. Results of WASPAS model in sample villages of Ahmadabad District
(Source: Authors, 2020)

5. Discussion and Conclusion

A general analysis of the study area and research findings suggest that the city of Molkabad, informed by its rural background and the history of residence for years, has not been successful in embracing the potentials of the region and completely reflecting feedbacks from distant and nearby villages.

Spatial ranking is necessary for ranking rural centers, because each rural space is home to a number of population centers and activities with constrained and extensive functional areas. Of these settlements, there are a few centers with the capacity and potential to provide services for the entire area. They could relied upon to strengthen the network of rural settlements. The rural centers are small towns in the county, which shape the last link between the urban and rural system in the structure of the urban system. These centers represent "the centers of growth for rural areas and the basis of coordinated and balanced urban and rural development" (Nouri & Hosseini Abri, 2009).

The comparison of the results obtained from previous research on Zarrinehrud in Khodabandeh, Vahidiyeh in Shahriyar and Tonekman Village in Karaj City, and several small cities in Fars Province as well as Molkabad City in the present study suggest the similarity of findings in the above studies. The city of Molkabad, like the aforementioned cities, cannot be economically, socially, culturally effective for its hinterland villages. Although these cities might have wielded influence on cultural and social issues, they had no effect on the spatial organization of rural settlements. As a result, in response to the research question, it is concluded that the population concentration in new cities does not affect the spatial development of villages.

According to the research findings, several suggestions can be made. These suggestions might be in line with review strategies, or in some cases, as described below, they might be creative strategies, and even national, provincial or regional goals:

❖ Improving the economic performance of Molkabad City to forge economic ties and interactions with its hinterland;
❖ Resolving the drawbacks of existing infrastructure networks and providing opportunities for the participation and investment of the private sector in the agricultural sector;
❖ Using the geographical location of other important villages, strengthening leading sectors for the growth of the desired area, fostering connections with Molkabad and decentralize Mashhad metropolis;
❖ Considering successive droughts and their adverse effects;
❖ Promoting supplementary activities that can be conducive to agriculture and livestock breeding;
❖ Building an atmosphere of confidence to draw in private investment inside and outside the city of Mashhad to inhibit changes in the method of transferring the ownership of agricultural lands;
❖ Defining the national development model based on the Islamic-Iranian model with the proper implementation of land management;
❖ Establishing engineering services office for monitoring rural constructions in Molkabad City and its agencies in one or more villages in order to improve the quality of life and internal constructions of villages;
❖ Achieving long-term goals requires consistent and unceasing growth in certain areas in less developed areas, which are not directly related to the city of Molkabad
❖ Strategies for maintaining the rural population through a hierarchical migration policy by strengthening small or medium-sized cities;
❖ Increasing incomes and quality of life in rural areas and bridging the gap between urban and rural life;
❖ Directing government subsidies to rural households by considering minimal costs;
❖ Creating and strengthening ties between rural and urban society through the growth of small and medium-sized cities;
❖ Forging a direct connection in various fields between Molkabad City and Imam Taghi Village (the center of Pivehjan rural district) and gaining the trust of people in the neighboring villages to utilize some services;
❖ Providing incentives to eliminate unreal attractions of city life and planning to mitigate rural repulsions by directing urban concessions to villages and reducing taxes on rural and service and tourist activities;

❖ Supporting industries in several large villages which offer relatively good services;

❖ Delegating some of the functions of Mashhad metropolis to Molkabad;

❖ Identifying potentially underdeveloped agricultural areas and recognizing the unknown capabilities of these areas;

❖ Creating sustainable cities and supporting rural constructions, attracting non-natives, fostering sustainable employment and population sustainability and preventing the expansion of villages;

❖ Middle cities with a high degree of public participation provide a greater chance for the development and social solidarity, which prevents the change of agricultural and horticultural land uses and hampers the expansion of non-agricultural and non-rural areas.

The goals of hierarchical transformation of rural settlements into middle city has benefited rural settlements rather than neighboring large cities. If all the facilities are available in the villages proportionate to their level, it will gradually promote social and economic justice and ultimately will lead to a regional balance, which will then maintain the size and area of the nodes.

References

1. Amkachi, H. (1383/2004). *Middle cities and their role in the framework of national development*. Tehran: Center for Architectural and Urban Studies and Research. [In Persian].

2. Fani, Z. (1382/2003). *Small towns (another approach in regional development)*. Tehran: The Organization of Municipalities of the Country. [In Persian].

3. Friedman, J. (1979). *Regional Planning*. Routledge

4. Gharkhloo, M., Hosseini Amini, H., & Rajaei, S. A. (1387/2008). The role of middle cities in regional equilibrium (Case Study: Isfahan Shahreza middle city). *Journal of Regional Geography and Development*, *11*, 147 - 166. [In Persian] https://jgrd.um.ac.ir/article_26149.html

5. Goli, A. (1390/2011). Evaluation of the role of rural to urban conversion in intra-provincial trends from a social network analysis approach (Case study: small towns in Fars province). *Proceedings of the First National Conference on Geography and Rural Development Planning*. Ferdowsi University of Mashhad, Faculty of Literature and Humanities, 23 and 24 October, p.49. [In Persian].

6. Hinrey, N. (2007). Small Towns and urban planning in Developing Country. *Urban Studies*, 33, 946. [In Persian] https://www.sid.ir/en/journal/ViewPaper.aspx?ID=355236

7. Kaur, R. (1995). *Urban – Rural Relations: A geographical Analysis*. India: Anmol Publications PVT LTD.

8. Masoumi Eshkevari, S. H. (1997/2006). *Principles and foundations of regional planning*. Soomeh Sara: Payam press. [In Persian].

9. Mehdi Beigi, H., & Mahdavi, M. (1390/2011). The role of villages-cities in regional balancing (Case study: Borojed county). *Sarzamin Geographical Quarterly*, 8 (31), 1-16. [In Persian]. http://jshsp. iaurasht. ac. ir/ article _513883.html .

10. Mikaeli, J., & Sajjadi, J. (1390/2011). The function of small towns in rural development (Case study: Oshnoyeh). Pro*ceedings of the First National Conference on Geography and Rural Development Planning*. Ferdowsi University of Mashhad, Faculty of Literature and Humanities, 23 and 24 December. [In Persian]. http://www.jgrd.um.ac.ir.

11. Mohammadi, Yeganeh, B., & Hosseinzadeh, A. (1392/2013). The functional role of village-cities in the development of surrounding villages (Case Study: Zarrinrood, Khodabandeh). *Regional Planning Quarterly*, *3*(11), 55- 64. [In Persian]. http://jzpm.miau.ac.ir/article_190.html

12. Molazadeh, M.A. (1377/1998). *An introduction to scientific research in geography*. Ahvaz: Shahid Chamran University Press. [In Persian].

13. Nikseresht, M., Dadourkhani, F., Rostami, Sh., & Shohaninejad, M. (1391/2012). Analysis and evaluation of the function of small towns in the development of surrounding villages (Case study: Sarableh, Shirvan, Chardavol). *Regional Planning Journal*, *2*(7), 44-53. [In Persian]. http://jzpm.miau.ac.ir/article_53.

14. Nouri, H., Hosseini Abri, S.H. & Khademi, H. (1388/2009). The role of small towns in balancing the rural housing system of Yazd Province. *Quarterly Journal of Geography and Development, 13,* 61-77. [In Persian].

15. Owusu, G. (2005). *The Changing Views on The Role of Small Town's Rural and Regional Development in Africa, Cities in the world*. London: SPMA/Maney Publications.

16. Rahnamaei, M. T., Shabanifard, M., & Saraskanrood, M. (1388/2009). Strategic development of central cities of iran with emphasis on CDS Approach as a road to regional development. *Journal of Land Management*, *1*, 21-54. [In Persian] https://jtcp.ut.ac.ir/article_20006.html

17. Rezvani, A. A. (1382/2003). *The relationship between city and village (urban and regional studies)*. Tehran; Makan. [In Persian].

18. Rokanuddin Eftekhari, A.R., Mahdavi, D. & Pourtaheri, M. (1389/2010). The process of localizing indicators of sustainable development of rural tourism in Iran. *Quarterly Journal of Rural* Research, 4, 1-42. [In Persian] https://jrur.ut.ac.ir/article_22685.html

19. Sarvar, H., & Lalehpour, M. (1385/2006). A glance at the central role of small and medium-sized cities in regional development. *Municipalities Monthly, 74*, 9-20. [In Persian] https://www.Sid.ir/fa/journal/View Paper.aspx? ID=135698

20. Shakour, A., Shamsoddini, A., Zare, A., & Karimi, F. (1392/2013). Quantitative Analysis of Rural Development in Marvdasht using Morris model and Coefficient of Variation. *Journal of Research and Rural Planning*, 2(2), 49-74. [In Persian] doi: 10.22067/jrrp.v2i4.19368

21. Shia, I. (1386/2007). *Along with the city and region in Iran*. Iran University of Science and Technology Publishing Center. [In Persian].

22. Shokouei, H. (1373/1994). *New perspectives on urban geography* (Vol. I). Tehran: SAMT. [In Persian].

23. Shokouei, H. (1386/2007). *Environmental philosophies and geographical schools*. Tehran: Gitashenasi.

24. Statistics Center of Iran. (1398/2019). Results of the General Census of Population and Housing in 2006 and 2011. [In Persian]. www.sci.org.ir.

25. Taleshi, M., Azizpour, F., & Dolati, Gh. (1398/2019). Analysis of the effect of spatial trends on key spatial-physical changes in Pirashahr villages (Case study: rural settlements around the metropolis of Karaj, North Tonekman district). *Quarterly Journal of Housing and Rural Environment*, *38*(166), 79-94. [In Persian] http://jhre.ir/article-1-1520-fa.html

26. The United Nations Development Programme (UNDP). (1992). *Human Development Report*. World Development, 19(10), 1451-1460.

27. Zamiri, M. R., Nastaran., M., & Mohammad zadeh, H. (1393/2014). An analysis of the shape and trend of spatial and physical development of Bojnourd in the 2000s (Using Shannon's Entropy, Global Moran Coefficient and Geary Coefficient). *Environmental Planning Quarterly, 23*, 167–180. [In Persian] http://ebtp.malayeriau.ac.ir/article_528932.html?lang=fa

28. Zarabi, A., Divasalar, A., & Kanani, M. R. (1381/2012). Spatial Analysis of urban settlements based on environmental capabilities (Case study: Mazandaran Province). *Scientific Journal of Spatial Planning and Planning (Teacher of Humanities)*, *16* (2), 77 - 100. [In Persian]. https://hsmsp.modares.ac.ir/article-21-9731-fa.html

Original Article

نقش تمرکز غیرمتمرکز در سازمان‌یابی فضایی سکونتگاههای روستایی

(نمونه موردی: روستا شهر ملک‌آباد – شهرستان مشهد)

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۲. مبانی نظری تحقیق

برنامه ریزی سلسله مراتبی مکانهای مرکزی، مبتنی بر استقرار آگاهانه و سنجیده نظام مطلوب فضایی است و شهرهای کوچک و محلی به عنوان یکی از این مراکز، نقش عمده ای در ایجاد تعادل و توازن نظام سکونتگاهی به عهده دارد. نقش و عملکرد متعددی که برای این نوع مراکز روستایی برشمرده می‌شود، در واقع پایه‌های نظری راهبردهای توسعه الگوی سکونتگاهی متوازن و متعادل را تشکیل می‌دهد. طرفداران شهرهای کوچک جنبه‌هایی از اهمیت این سکونتگاهها را به عنوان مراکز خدمات منطقه ای در توسعه روستایی مطرح می‌کنند و بر ایجاد سلسله مراتب منسجم سکونتگاهی و نیز اثرات توزیع و رخنه به پایین تأکید دارند. به نظر آنها شرایط شهرهای کوچک از نظر تولید و ساختار، پیشتاز توسعه روستایی و منطقه‌ای است و عاملی برای جلوگیری از تمرکز بیش از حد جمعیت و فعالیت در شهرهای بزرگ می باشد.

۳. روش تحقیق

با تکمیل پرسشنامه ها و استفاده از روشهای مختلف آماری و از سطوح مختلف طبقات جمعیتی و عرصه ای روستاهای این بخش، اطلاعات ابعاد، مؤلفه‌ها، شاخص‌ها و گویه‌های تحقیق به دست آمده است.

چکیده مبسوط

۱. مقدمه

درکشورهای در حال توسعه به دلیل تمرکز زیرساخت‌ها و امکانات در شهرهای بزرگ، شبکه شهری زنجیره ای است. در این کشورها برای آهسته کردن رشد بزرگترین شهرها نقاط جدید شهری در سطح میانی و کوچک را با امکاناتی فراهم آورده‌اند. شهرهای میانی وکوچک با پذیرش سهم قابل توجهی از عوامل تولید، سرمایه‌گذاری‌ها و نیروی انسانی و جمعیت، در فواصل متناسب با پهنه منطقه، عمل کرده و قادر به تثبیت مجموعه عوامل لازم برای شکوفایی ناحیه پیرامونی خود می‌گردند. با این کار، به همراه کاهش تفاوتهای مرکز با پیرامون می‌توان به تعادلی موزون در سراسر منطقه دست یافت. در ایران نیز رشد شهرها، علی‌رغم گسترش برنامه های شهری، ماهیتی برونزا (درآمدهای نفتی) به خود گرفته است. نوشهرهای کوچک و اقماری با دیدگاه شهری شکل گرفته ولی بیشتر سعی در رفع مشکلات شهرهای بزرگ داشته تا روستاها. در این تحقیق، به تأثیر شهر ملک آباد به عنوان یک شهر کوچک (تمرکز غیرمتمرکز) در مرکز بخش احمدآباد و در جوار کلانشهر مشهد بر روی سازمان یابی فضایی سکونتگاههای روستایی پسکرانه آن پرداخته شده است

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در نهایت، این نتیجه به دست آمده که این شـهر فقـط بـر روی روستاهای همجوار خودش تا اندازه ایـی تأثیرگـذار بـوده و بـر روی روستاهای با مسافت بیشتر در حـوزه نفـوذش کـوچکترین تـأثیری نداشته و حتی به دلیل همجواری با کلانشهر مشهد، بـه ایـن شـهر کوچک مراجعه نمی کنند. زیرا مسافت اندک این شهر بـا کلانشـهر مشهد و پیشینه روستایی آن و عدم وجود امکانات و زیرسـاخت هـا باعث شده نقش آن، تحقـق نیابـد. از سـویی تغییـرات در گرههـا و کاهش سطوح یا اراضی کشاورزی و گسترش شبکههای ارتباطی، بـا وجود شهر ملک آباد با توجـه بـه مسـافت تغییـر مـی یابـد کـه بـا آزمونهـای ماننـد آزمـون t، ویلکاکسـون، کروسـکال – والـیس و کلموگروف ــ اسمیرنوف و تکنیک WASPAS به بررسـی فرضیه این تحقیق پرداخته شد.

۴. یافتههای تحقیق

در بررسی توسعه فضای روستاها به تفکیک شاخص ها و مؤلفه هـا این نتیجه حاصل شده که شهر ملک آبـاد از نظـر بهسـازی فضـای روستایی و ارتقاء سطح خدمات عمومی و همچنین تغییرات جمعیت روستاها و کنترل مهاجرتها توانسته تأثیرگـذاری بیشـتری داشـته باشد و تا حدی این روند را کاهش دهد. در بررسی وزن هر شـاخص در تشکیل هر بعد از پژوهش، از روش معادلات ساختاری و نرم افزار pls استفاده شده و با توجه به این که ابعاد پژوهش به صورت سـازه ترکیبی تعریف می شود تا وزن هر شاخص به دست آید، با سایر نرم افزارهای معادلات ساختاری این کار قابل انجام نبود و نتـایج نشان می دهد که در توسعه فضای روستاها، شـاخص مسـاحت بیشـترین وزن را داشته و شاخص جمعیت از وزن کمتری برخوردار می باشد. در ادامه بـرای تحلیـل توسـعه فضایی نقاط روسـتایی از تکنیـک WASPAS نیز استفاده شد. در این تکنیک نشان داده شـده کـه روستای درخت سپیدار بیشترین توسعه فضایی را در بین روستاهای نمونه داشته، به این دلیل که از نظـر طبیعـی در یـک پهنه نسبتاً دشتی و در جوار جاده عبوری خاکی است که بـه شـهر ملـک آبـاد منتهی می شود و در مقابل روسـتای رازان دارای کمتـرین میـزان Qi بوده است. زیرا این روستا به دلیل موقعیـت جغرافیـایی دشـتی

ولی همجوار راه ارتباطی نبوده است و این روستا کاملا تحـت تـأثیر عامل دیگری به نام شهرک صـنعتی بینـالود اسـت. در مجمـوع بـا توجه به امتیاز نهایی به دست آمده از مدل WASPAS می تـوان این نکته را ذکر نمود که بین روستای اول و روستای آخـر اخـتلاف کمتـری وجود دارد و میـزان توسـعه فضـایی در روسـتاهای مـورد مطالعه همه تقریباً در یک سطح می باشد.

۵. بحث و نتیجهگیری

سطح بندی فضاها، بستر لازم برای سطحبندی مراکز روستایی است. زیرا هر فضای روستایی، عرصه استقرار تعدادی از کانونهای جمعیت و فعالیت با حوزههای عملکردی محدود و گسـترده اسـت. در میـان این سکونتگاهها، مراکز معدودی وجود دارند که قابلیت ارائه خدمات برای کل محدوده را دارند که با اتکا به این مراکز میتوان به تقویـت شبکه سـکونتگاههای روسـتایی اقـدام نمـود. مراکـز منظومـههـای روستایی، شهرهای کوچک منطقه هسـتند کـه در سـاختار نظـام شهری، آخرین حلقه اتصال نظام شهری با روستایی می باشند. ایـن مراکز نقش کانونهای رشد نواحی روستایی و بستر توسعه هماهنگ و متعادل شهری و روستایی محسوب میگردند.

با دستیابی به اهداف سلسله مراتبی سکونتگاههای روستایی به شهر میانی (تمرکز غیرمتمرکز)، کمک به سکونتگاههای روستایی شده نه شهر بزرگ هم جوار آن. اگـر همـه امکانـات در روسـتاها بـه تناسب سطح آنها وجود داشته باشد بـه تـدریج عـدالت اجتمـاعی و اقتصادی را بهوجود میآورد و در نهایت به تعادل ناحیه ایـی منجـر می گردد که باعث ابقای اندازه و مساحت گرهها می‌شود.

کلیدواژهها: سـازمان فضـایی، تمرکـز غیرمتمرکـز، شـهر میـانی و کوچک، نظام سلسلهمراتبی روستاها، شهر ملکآباد.

تشکر و قدردانی