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Factors Affecting Functional Changes of Rural Settlements in Southwestern of Tehran in the Post-Islamic Revolution in Iran

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ABSTRACT

Tehran as a metropolitan area and as an economic, social and political area has multiple relationships with its surrounding villages and towns at national and regional levels. Functional changes in the rural areas under the influence of Tehran are among important changes that have occurred in the years after the Islamic revolution in Iran. Accordingly, people living in the villages located at the South West of Tehran began to migrate to Tehran during the last thirty years as a result of changing the political system of the country, the lack of suitable planning, the rage of an eight years war between Iraq and Iran and the lack of resources in most parts of the country, especially in rural areas. Consequently, the villages in the South West of Tehran have undergone radical functional changes. This study examines the functional changes of the rural settlements over 1978-2014. To this end, a descriptive-analytical research design was used. The sample under study consisted of 374 heads of households in the sample villages selected using cluster sampling. The results indicated that villages in the Southwest of Tehran during the revolution years were involved mostly in primary functions such as agriculture, animal husbandry and horticulture while the industry and services in rural areas were at the lowest level. However, the changes made in socioeconomic structure of the whole country plus the developments made in the last few decades have not been aligned with the environmental capabilities. The presence of industries, factories and workshops in agricultural lands surrounding villages, low prices of agricultural lands and the expansion of communication networks have extended various functions including industrial and service functions.

Key words: Functional changes, rural-urban relations, metropolitan area

INTRODUCTION

Urban and rural areas are seen as two separate systems that are interacting with each other in the regional development process (Liu *et al.*, 2009; Chen *et al.*, 2010). Due to functional structure of each village, such interaction involves both endogenous and exogenous development (Hirschman and Holbrook, 1982), leading to the creation of a continuous and long-term changes in the structure of rural areas (Dijst *et al.*, 2010). Maintaining proper balance and interactive relationships between rural and urban areas is the prerequisite for the harmonious development of urban and rural areas (Liu *et al.*, 2014).

Inseparable links between cities and villages especially in suburban areas of metropolitan cities is so strong that rural areas adjacent to cities are called environmental stability factors (Madaleno, 2000), rural tourism and peripheral capital centers (Garrod *et al.*, 2006), the center for employment growth and population survey (Stockdale *et al.*, 2000) and a barrier against horizontal expansion of cities (Amirfakhrian, 2003). So, it is not surprising that concerning changing rural-urban relations; rural-urban differences are used as a strategy for strengthening livelihood basis, the expansion of activities, the penetration of cities in rural areas and the relationship between stability in rural and urban regions (Lynch, 2007).

An important issue in regions facing the rapid growth of urban centers is that how one can predict the impacts of complex urban growth on nearby rural areas (Schmitt *et al.*, 2006). The issue under the name of functional changes of villages surrounding cities has been addressed by many scholars. Since spatial systems are developed according to various dimensions, structural and functional domains can not only be addressed at a large (global or country) scale but also at smaller (urban or rural) scales (Shaffer, 1989).

Functional diversity and evolution of rural settlements because of socioeconomic factors was first taken into account in developed countries. Literature related to functional changes concerning population turnaround, counter urbanization and rural renaissance have been evaluated in many parts of the Western world, leading to the rise of a primary systematic understanding (Alger, 1993; Dahms, 1984, 1986, 1995; Hudson, 1989).

Since, the initial function of rural areas was agriculture, the natural conditions (most notably quality of land and its suitability for farming) are considered to be the key factor when the location of rural settlement is concerned (Unvin and Nash, 1992). However, as economic development progressed (division of labor in society, industrialization and urbanization), the socioeconomic factors have been playing a more important part (Chisholm, 1967) sharply changing the morphology, function and spatial structure of the rural settlement (Zhu *et al.*, 2014).

The rapid growth of urbanization in the past three decades in Iran has not been in line with the ability to equip urban spaces and the development of infrastructures. To make the matter worse, since the spatial distribution of cities and their population has not been taken place within a comprehensive plan based on regional and sectorial coordination, the problems arising from the rapid growth of urbanization are getting complicated dimensions (Ziari, 2008). Functional changes of rural areas are among important changes that are affected by changes in the cities as characterized by some rural areas during the recent decades. In the years after the Islamic revolution, Tehran has changed into the largest center of population and activity and the largest consumer of rural lands in the country. The city has been also developed in all geographical directions (Mehdizadeh, 2006).

Tehran metropolitan as a socio-economic and political center of the country has different relations with various rural and urban areas at the national and regional level. However, like other cities, this city has had some local affected areas and certain relations with its peripheral areas. It should be noted that unlike the small towns and cities which have a limited peripheral area, Tehran enjoys numerous and vast peripheral extent and hinterland relations (Rezvani, 2007).

Village in the suburban areas of Tehran as metropolis are among the first group of villages that experienced widespread changes and developments induced by Tehran's rapid growth (Rahnamaeei, 1990). The way rural settlements have been established in Tehran province in a territorial land in the south of the Central Alborz and Northern parts of the country, benefitting from natural potential capacities such as meadows,

rich rivers, fertile plains, fields and gardens, the presence of relatively rough irregularities in the Northern parts and the existence of a relatively smooth plains in the south are some of the main factors distinguishing the villages of Tehran from rural areas in Iran. In addition, socioeconomic factors such as the location of Iranian political center in Tehran as a metropolitan, the multidimensional role played by Tehran and being located at the confluence of the most important roads in the country have accelerated the development and growth of settlements in Tehran Province compared to the rest of rural settlements throughout the country. Today, most of the rural and urban areas of Tehran act as Tehran suburbs and as a complementary domain for Tehran. In fact, Tehran uses such areas to complete its functions and has transferred some of its functions to these regions (Rezvani, 2002).

However, people living in the villages located at the South West of Tehran began to migrate to Tehran during the last thirty years as a result of changing the political system of the country, the lack of suitable planning, the rage of an eight years war between Iraq and Iran and the lack of resources in most parts of the country, especially in rural areas. Consequently, the villages in the South West of Tehran have undergone radical functional changes. Gaining an accurate understanding and knowledge of factors affecting functional changes of the villages as the main objective of this study not only provides important findings concerning the quality these changes but also can help planners to take actions to organize villages and make plans for them by referring to such findings. To this end, the present study is going to address the functional changes in villages around Tehran. As such, the main research question is stated as: How functional changes have been made in rural settlements bordering the Southwestern of Tehran after the Islamic Revolution?

To answer this question it, further sub-questions are needed to be raised and discussed in some detail. The specific questions addressed in this study are as follows:

- What are actors affecting functional changes in rural settlements bordering Southwest of Tehran after the Islamic Revolution?
- What are the most important functional changes made in rural settlements bordering Southwest of Tehran?

MATERIALS AND METHODS

Study area: The area of this study included villages located at Southwest of Tehran. These villages are located in Islamshahr and Shahriar. According to the 2011 General Population and Housing Census, the Southwestern part of Tehran has 13 villages and 4 rural districts, with 13492 households and a population of 49381 (Iran Statistics Bureau, 2011) (Fig. 1 and Table 1).

The present study is an applied research concerning the objectives it follows that employs a descriptive-analytical design as a correlational study. A correlational is used mainly to explore the relationship between variables under study. In addition, this study is an ex post facto as the historical data are

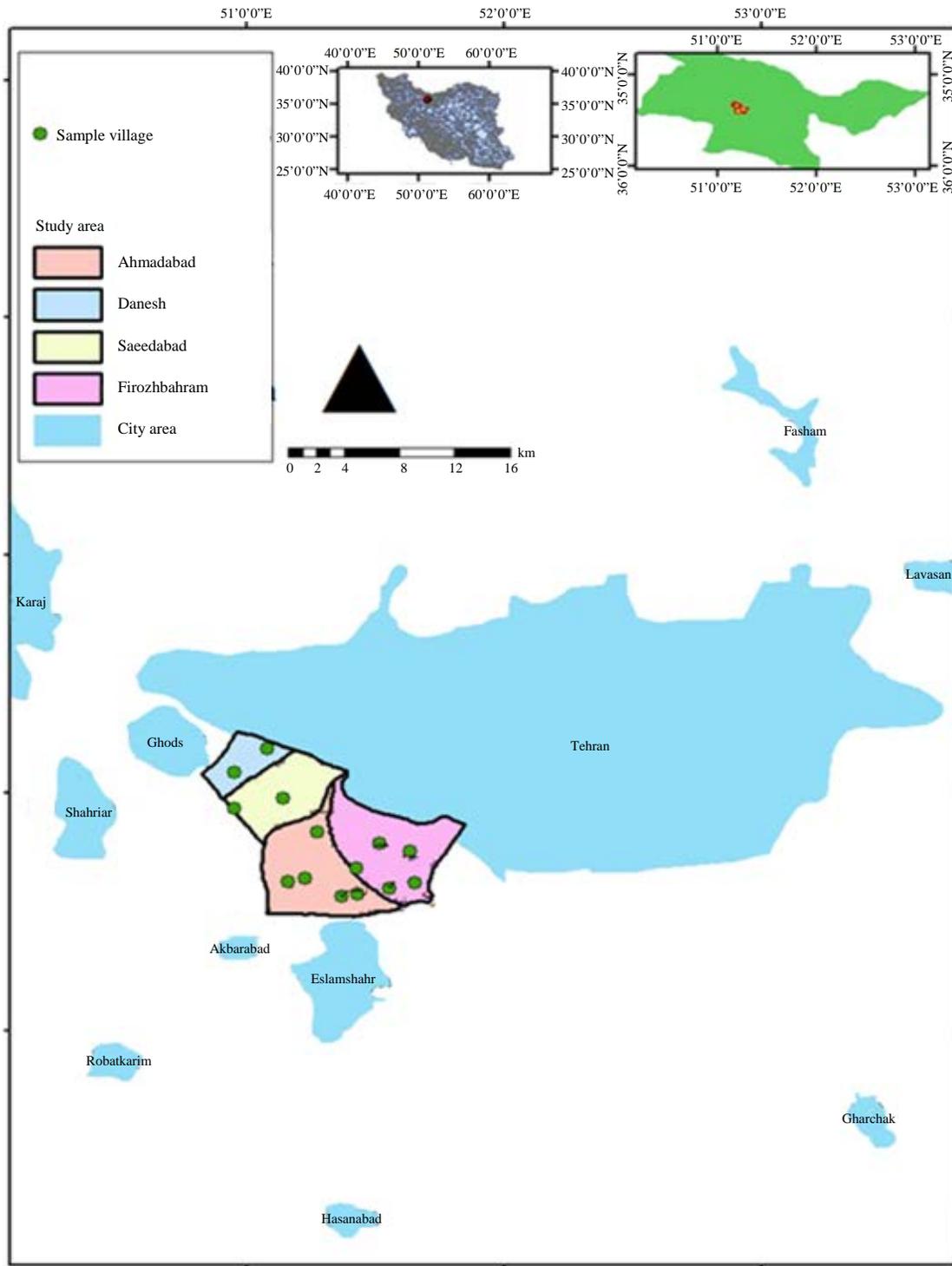


Fig. 1: Location of villages in Southwest of Tehran in the land area

used to answer questions. The data in this study was collected through library studies, contacts with local authorities to prepare the community in the region, visiting the boundary under study and filling out questionnaires. The population

under study consisted of 13492 households and the same number of heads of households according to the 2011 General Population and Housing Census. Besides, the sample was a group of 374 heads of households that were interviewed. The

sample size was determined using the Cochran formula. Since the population under study involved rural households, there was no estimate of the sample variance available. Accordingly, the maximum distribution of characteristics in question were considered, assuming to have two values ($p = 0.5$ and $q = 0.5$). In addition, the possibility sampling error was determined to be lower than 0.05 with a possible accuracy of 0.05. Since, the population under study consisted of 13492 households and the same number of heads of households according to the 2011 General Population and Housing Census, the sample size was 374 persons using the Cochran formula at 95% significance level as shown in Eq. 1-2:

$$n = \frac{Nt^2pq}{Nd^2 + t^2pf} \quad (1)$$

$$n = \frac{13492 \times 3 / 8416 \times 0.25}{13492 \times 0.0025 + 3 / 8416 \times 0.25} = 374 \quad (2)$$

The respondents in the research sample were selected through cluster sampling. To this end, the total villages in the population were divided into several parts (clusters), each being sampled systematically. The data collected through questionnaires and a field study by the researcher was then analyzed using the SWOT model to recognize strengths, weaknesses, opportunities and threats in the region under study. The functional changes components of the rural settlements of Southwest of Tehran are shown in Table 2.

RESULTS

Various rural functions before and after the Islamic revolution: The results the respondents' data show that the most frequent functions in rural regions before the Islamic revolution were agriculture, horticulture and animal husbandry. In contrast, the least frequent functions were service functions. In addition, our findings suggest that the most frequent functions in rural regions under study after the Islamic revolution were service and industrial functions and the least common function was animal husbandry followed by a sharp reduction in the share of agriculture in the economy of the sample villages as shown in Table 3.

As can be seen in the above table, the functions seen in the region under study before the revolution were much more limited than post-revolution period. This suggests that the nature of villages did not change significantly. However, after the revolution the rural areas absorbed a large population as a

Table 1: Distance of Southwestern villages to Tehran after the Islamic revolution

Village name	1976	1999	2010
Shams abad	11.0	7.0	5.0
Tarashtebe	13.0	11.0	10.0
Aliabad	4.0	2.0	0.5
Firouzbahram	10.5	8.0	6.0
Goldasteh	12.0	10.0	8.0
Ahmedabad	19.0	10.0	6.0
Razi Abad	22.0	14.0	10.0
BahmanAbad	22.5	14.5	10.5
Hasanabad	17.0	12.0	8.0
Saidabad	10.5	7.5	4.0
Danesh Town	12.0	5.0	1.0
Kuy-e Sazmani	7.0	2.0	-
Zarnan	16.0	8.0	5.0
Parnan	17.0	8.0	-
Varmink	13.5	11.0	9.0

Table 2: Functional change components of the rural settlements

Index	Measurement items
Frequency and percentage of different functions of rural settlements	Agriculture, horticulture, livestock, industrial and service
Changes in sample villages	Recession of economic activities due to migration from villages to cities, improved functions due to absorption of rural population because of migration, the presence of experts in villages, replacement of old functions with new ones, greater functional diversity, population absorption and replacing new functions
Villages' functional changes after the revolution	Lifestyle changes, land use changes, migration from rural areas, diversification of needs, migration to rural areas, urban development planning, proximity to Tehran, the expansion of communication networks, the use of new technologies and the population growth
Important development time lines	1978-1992, 1993-2002 and 2003-2014
Villagers' satisfaction with functional changes	Yes/No
Reasons for the diversity of functions in the sample villages	Proximity to Tehran, the penetration of urban functions into rural area, population growth and migration to the villages, the existence of permanent markets and demand in Tehran, increased commutes to Tehran, enhanced public education and awareness
Internal and external factors affecting the development of rural areas	Strengths, weaknesses, opportunities and threats

Table 3: Distribution of the various rural functions before and after the Islamic revolution

No.	Functions	Before the revolution		After the revolution	
		Frequency	%	Frequency	%
1	Agriculture	147	39.30	42	11.22
2	Horticulture	108	28.87	19	5.08
3	Livestock	87	23.26	16	4.28
4	Industry	17	4.55	140	37.44
5	Services	15	4.02	157	41.98
Total		374	100.00	374	100.00

Table 4: Changes in rural regions after the Islamic revolution

No.	Changes	Frequency	%
1	Migration from rural areas has caused economic recession	38	10.16
2	High population absorption as a result of migration to rural areas has created many functions	83	22.20
3	Presence of experts in villages	12	3.20
4	Old functions have been replaced by new ones	31	8.29
5	Greater functional diversity, high population absorption rate, replacement of new functions	210	56.15
Total		374	100.00

Table 5: Main causes of functional changes after the Islamic revolution

No.	Changes	Frequency	%
1	Lifestyle changes	32	8.55
2	Land use changes	38	10.16
3	Migration from villages	25	6.69
4	Diversification of needs	25	6.69
5	Migration to villages	56	14.98
6	development of urban patterns	65	17.38
7	Proximity to Tehran	47	12.55
8	Expansion of communication networks	17	4.55
9	The use of new technologies	8	2.14
10	Population increase	61	16.31
Total		374	100.00

Table 6: Main functional changes time lines

No.	Time lines	Respondents	
		Frequency	%
1	1978-1992	56	14.98
2	1993-2002	177	47.32
3	2003-2014	141	37.70
Total		374	100.00

Table 7: Villagers' satisfaction with functional changes

No.	Satisfaction	Yes		No		Total	
		Frequency	%	Frequency	%	Frequency	%
1	Respondents	369	98.66	4	1.34	374	100

Table 8: Causes of functional diversity in rural areas

No.	Factors	Respondents	
		Frequency	%
1	Proximity to Tehran	163	43.58
2	Penetration of urban functions into rural areas	56	14.98
3	Population growth and migration to rural areas	54	14.43
4	Permanent markets and demand in Tehran	26	6.95
5	increased commutes to Tehran	45	12.04
6	enhanced public education and awareness	30	8.02
Total		374	100.00

result of migration. Therefore, industrial and workshop functions in Tehran were transferred to nearby rural regions due to topographical conditions. Historically, these regions were involved in farming and animal husbandry. This trend, however, changed as a result of changes in lifestyles, increased public awareness, the replacement of old functions by new ones and thus the rural regions have mainly turned to industrial and service functions. Besides, it is likely that in the not too distant future the rural region under study witnesses the dominance of service functions.

Changes in sample rural villages after the Islamic revolution: Our findings suggest that the most common changes in rural areas after the Islamic revolution includes a

greater functional diversity, population absorption and replacement of new functions accounting for 51.94% of changes. However, the least frequently observed change was the presence of experts in the villages which accounted for 3.19% of the changes. Therefore, it can be acknowledged that one of the factors that caused considerable changes in the villages before and after the revolution is the population absorption (Table 4).

Main causes of functional changes in rural areas after the revolution: The results of this study concerning main causes of functional changes in rural areas after the revolution indicated that development of urban patterns as the most important factor accounted for 17.38% of functional changes in the villages while, the use of new technologies was the least commonly mentioned cause of such changes accounting only for 2.08% of them. On the whole, development of urban patterns, population growth, migration to villages and the proximity to Tehran were the main factors inducing functional changes among rural populations. Other factors had a relatively small contribution to the development of functional changes of the region under study (Table 5).

Major development time lines: An analysis of the major rural developments in different time periods according to the respondents' views is shown in Table 6. As can be seen, the most frequent changes in the rural areas have occurred over 1993-2003, i.e., at a time when villages were absorbing more populations and thus more immigrants have settled in the villages. On the other hand, functional changes have occurred the least frequently from 1978-1992 in the region under study.

Villagers' satisfaction with functional changes: The findings of the study concerning villagers' satisfaction with functional changes are shown in Table 7. The respondents were asked this question: "Are you satisfied with functional changes made in your village compared with the period before the Islamic revolution?" As is evident in the following table, 98.9% of the respondents were satisfied with functional changes made in villages under study after the Islamic revolution while 1.06% of the respondents were not satisfied with such changes.

The respondents' satisfaction has been increased to the establishment of facilities in the villages under study so that 98.9% of them were satisfied with the services offered compared with pre-Islamic revolution.

Causes of functional diversity in rural areas: Table 8 shows the results of study with regard to functional diversity in the region under study as reflected in the respondents' opinions.

Table 9: Internal factors affecting rural development based on respondents' views

Strengths	Frequency	Weaknesses	Frequency
Fertilized soil	73	Water shortage	153
High yields of products	60	Crop failure	113
Farming diversity	53	Reduced underground water	145
Existence of markets and proximity to Tehran	119	The high percentage of barren and salt lands	120
Existence of deep wells	28	Lack of healthy water	84
Existence of flat/level lands	40	Lack of water for agriculture	140
Existence of needed infrastructures	40	Loss of pastures	94
Cheap labor	68	Traditional animal husbandries	87
Vast farmlands	40	Reduction of fertile lands	116
Existence of manufacturing industries	47	Inconsistency in the industries	95
Service delivery	53	Lack of facilities	68
Quiet environments	50	High irrigation cost	121
Increased public awareness about environment	33	Inconsistency in the industries	43
Existence of development infrastructures needed	73	Unawareness of geographical locations	34
Appropriate transit roads	97	Addiction	65
Accessibility to Tehran	119	Lack of security	78
Rising land values	30	Dormitory nature of villages	32
Large pieces of land	84	Old texture of villages	25
		Endowment of lands	32
		High levels of unused land	46
		Lack of infrastructures	81

Accordingly, the most important cause of functional diversity is the proximity in Tehran, while the least important cause is the existing permanent markets and demand available in Tehran.

Internal and external factors affecting the development of rural areas: Given the studies conducted on the strengths and weaknesses, opportunities, external threats and considering the questions posed in the city and village councils questionnaire and interviews with planners and managers, it can be said that strategic planning through SWOT analysis can be an effective approach to the analysis of the functional changes in rural settlements in the Southwest of Tehran in the post-Islamic revolution. In fact, this approach can be used as a tool for identifying strategic issues and provide appropriate strategies. First, a list of strengths, weaknesses, opportunities and threats are identified by measuring internal and external environments. Then each factor is weighted through making use of the feedback provided by the public, planners and officials. Next, the most important factors are identified and rated by calculating and analyzing them through the SWOT diagram. Finally, appropriate solutions and strategies are offered.

Internal factors (strengths and weaknesses) affecting functional changes in rural settlements: To provide appropriate solutions and policies concerning functional changes in the rural settlements, a recognition of the above four factors is indispensable in order to eliminate weaknesses, threats and reinforce strengths and opportunities. In this section, we assess the internal environment of the region under study to identify the strengths and weaknesses as dimensions that are facilitating or inhibiting the achievement of planning objectives and implementing them (Table 9).

External factors (opportunities and threats) affecting functional changes in rural settlements: Based on studies conducted and the assessment of the environment surrounding the region under study, available and effective opportunities and threats are presented in Table 10.

Effective strategies for improving relations between the center and nearby villages in Southwest of Tehran
SO strategies:

- Revising the quality and manner of planning, the government support for production regions, the rational use of institutions and supportive rules and regulations to develop infrastructures, facilities, equipment and allocate public funds
- Allocation of land consecrated to the appropriate applications or people to prevent farmland use changes and to avoid land non use
- Encouraging the private sector to invest in rural development infrastructures to prevent the migration of youth and providing special investment facilities and privileges for the purpose of constructing production, service and reception complexes
- Organizing industries by defining appropriate types to generate returns in the region to increase employment
- Creating markets to supply products directly to prevents comings and goings by manufacturers and also introduce villages to investors accordingly
- Putting emphasis on providing infrastructural and superstructural facilities

ST strategies:

- Codification of especial laws and regulations to protect the environment, prevent degradation and pollution of its resources and thus, using resources efficiently

Table 10: External factors affecting rural development based on respondents' views

Opportunities	Frequency	Threats	Frequency
Sand and gravel mines	53	Unauthorized construction	78
Large lands	45	The problem of surface water disposal	48
Good climate	60	Brickyard furnace	23
High quality lands	68	Water scarcity and high cost of water transport	58
Great populations	60	Noise and environmental pollution	75
Diversity of products	45	Discharging construction debris into farmlands	65
Sales market	87	Decline of private investment	48
Cheap lands	32	Obsolescence of livestock	64
Low investment risk	29	Decline of production	45
Existence of production workshop	47	Dormitory nature of villages and their social problems	48
Secure markets	76	Destruction of gardens	112
High level of people skills	23	Willingness to do false job	107
Appropriate roads	80	Land use change by mass constructors	98
Access to pathways	88	Increasing numbers of Afghan immigrants	92
Proximity to Tehran	124	Emigration	36
		Lack of security	56
		Lack of cooperation between people and councils	21
		Immigration of the rich	26
		People's unwillingness to involve in farming	79
		Lack of awareness of village position	45
		Tower construction in villages by some institutions	58
		Failure to maintain the rural identity	59
		Spatial chaos	123
		Low housing quality	76
		Encroachment of people in Tehran to buy lands	94
		Taking possession of lands by Martyr and Veterans Foundation	35
		Lack of facilities	46
		Reduced utilization of farmlands	57

- Preventing land use changes through specifying the type of uses in rural development planning
- Preserving farmlands (orchards) and monitoring the construction of villages in order to prevent the destruction of agricultural lands or using them for purposes other than agriculture (e.g., villa house construction)
- Establishing the rural lands protection councils by local people to prevent land use change
- Development of advanced irrigation systems to reduce water loss and increase production efficiency in the agricultural sector
- Expansion of cooperatives to create cooperative spirit among villagers for the development of villages and further economic activities
- Creation of changes in the physical and applied contexts of villages based on rural people's needs and also prevent exploiters from taking possession of lands in rural areas via concerned organizations
- Construction of reservoir dams and pressurized irrigation systems to solve water shortage problems

WO strategies:

- Planting profitable crops suitable for the climate of the region to persuade villagers to work in manufacturing and agriculture
- Expansion of domestic jobs to empower women and the disabled, using them in the production process and increase their self-esteem and human dignity
- Creating a sense of belonging to the village for greater prosperity and creating security by making use of local residents

- Strengthening agriculture-related industries for the purpose of economies of scale and reducing commuting costs
- Implementation of support programs in the field of employment and housing to control reverse migration

WT strategies:

- Creating security and prevention of disorders to reduce violations
- Careful monitoring of foreigners, especially Afghans and Pakistanis and developing a codified plan concerning occupation and ownership of land by villagers and also obliging them to comply with safety and hygienic regulations
- Modernization of places and houses in rural areas to encourage villagers to live in the village
- Closure of contaminating industries to protect for the rural environment
- Increasing greenhouse cultivation and changing cropping patterns to improve productivity
- Providing the necessary context to increase cooperation between villagers and the private sector in creating new practices
- Imposing appropriate regulatory policies to closely control buying and selling of farmlands, preventing land use change in rural areas through the coordination between local institutions and organizations
- Developing appropriate and practical programs for disposing construction and household debris or recycling them through the research and administrative capabilities of organizations

DISCUSSION AND CONCLUSION

In recent decades there have been many researches about metropolises impact on peripheral rural areas some of this studies is in favor of this study. For example, According to Rezvani (2007), rural area's functional changes in Rudbar Ghasran region (Tehran-Iran), these changes have been mainly in form of tourism, especially in the area of second homes, the development of industrial, residential functions and urban population growth in Rudbar Ghasran. Unfortunately, there has been no effective management governing these changes. As a result, these circumstances have led to some unpleasant consequences especially with regard environmental and ecological issues.

Also, this study is in line with Gwiazdzinska-Goraj and Jezierska-Thole (2013) research in terms of the variety of functions. According to the results obtained from this research, there was a greater diversification of rural areas in the Warmińsko-Mazurskie Voivodship (Poland) in terms of their functional structure. This is because with socio-economic development, the functional diversity of communities increases. The development of non-agricultural activities is mainly concentrated in the communities adjacent to the major cities of the region, Olsztyn and Elblag, characterized by high tourist values and situated in the central and eastern parts of the region.

Liu and colleagues have also investigated the mechanism of change of the urban-rural development transformation index (in the Bohai Rim Region, China) at county level, summarizing five main factors: (1) Radiation from the surrounding big cities, (2) Acceleration of the urbanization process, (3) Upgrading of the industrial structure, (4) Publishing and implementation of a macro development strategy and regional policy and (5) Natural factors such as topology.

Functions of the villages around Tehran in the past years, i.e., before the presence and influence of urban functions, were considered as totally primary functions such as agriculture, livestock and horticulture. According to environmental data, these functions met the needs of the residents through transactions with adjacent cities in the past. However, as a result of changes made in socioeconomic structure of the whole country plus the developments made in the last few decades in rural regions neighboring Tehran due to the increased population and space limitations, there have been some developments not been aligned with the environmental capabilities of the regions. Such developments affected different aspects of life in rural communities. Before these changes, most villages were mainly involved in agriculture, horticulture, animal husbandry where industry and services were at lower levels. However, after new developments, the presence of industries, production and workshop units in farmlands of the surrounding rural areas as well as low prices of lands and the development of communication networks all together affected the functioning of rural communities. In other words, industrial units forcibly occupied the fertile

agricultural lands and induced the development of various functions not to mention industrial and service functions. With the passage of time, the increased facilities in these rural communities imposed on Tehran have led to increased immigrants' populations in the villages.

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